Carolina Plaza-Pust
Bilingualism and Deafness

Sign Languages and Deaf Communities

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Volume 7

Carolina Plaza-Pust

Bilingualism and Deafness

On Language Contact in the Bilingual Acquisition
of Sign Language and Written Language

DE GRUYTER
MOUTON   ISHARA PRESS

For my family and friends

Acknowledgements

After all, we are all of us explorers, and we all have much to bring to each other from our own journeyings.   *(Ladd 2003: 20)*

With the present volume I wish to share not only the knowledge gained about bilingualism and deafness throughout the last years but also the enthusiasm that has guided me all along since I began to work on this project. When I engaged in the endeavour I did not know with precision the details of the journey that lay ahead. Yet I took up the challenge with curiosity and determination. As it turned out, sign bilingualism revealed itself as an intriguing and enriching object of scientific enquiry. Not only does it confront us with a myriad of interrogations, it also compels us to extend our knowledge in multiple areas.

From the beginning, this work has been inspired by a dialogue not only with scholars and professionals, but with all sorts of people who expressed their interest in sharing their questions, ideas and experiences.

I want to extend my sincere gratitude to all those who so generously contributed, in one way or another, to this work over the last years. As a hearing multilingual who is not a member of the deaf community I would like to express my gratitude first and foremost to all deaf people, children and adults, whom I have met over the last years. Thank you for sharing your views and experiences, and for expressing your enthusiasm about this project, which has provided additional motivation for its completion. In particular, I wish to thank Knut Weinmeister. Knut and I worked together on several different phases of the longitudinal investigation. Without his efforts, the realisation of the part of the study dedicated to the acquisition of German Sign Language (DGS) would not have been possible.

Very special thanks to Helen Leuninger for her guidance throughout my academic life, and the confidence she has placed in me. Her profound knowledge of sign language linguistics (and many other intricate areas of psycholinguistics) as well as her commitment to the recognition of sign language and their users in Germany have been a constant source of inspiration. I am grateful for her encouragement from the beginning to conduct a study on sign bilingualism, and for her thoughtful feedback to previous versions of the present manuscript.

I am indebted to many people for their support and cooperation throughout the years dedicated to the present work. In particular, I would like to thank Klaus-B. Günther for making it possible for me to conduct a longitudinal study with deaf students attending the bilingual programme established at the Ernst-Adolf-Eschke school in Berlin. The opportunity to carry out this research came at a time when I realised that the methods controversy consisted not only in a debate over different educational philosophies but that it had also created a climate of

suspicion about scientifically based research into deaf students' linguistic skills. Thank you also for the thoughtful and thorough feedback to an earlier version of the present work.

I wish to acknowledge with gratitude the collaboration with the members of the research team concomitant to the bilingual education programme over the years, their readiness to share materials, time for discussions, providing support wherever and whenever needed. Special thanks for all of this to Beate Krausmann, Claudia Wilsdorf, Johannes Hennies, and, again, to Knut Weinmeister.

I also extent my gratitude to the headmasters, Ulrich Möbius and Veronika Fuchsmann, who allowed research to be conducted in their school. My sincere thanks to the students for their participation in this study, for their readiness to produce signed and written narratives, even though they were faced with the task of recounting the same picture story time and again.

I am also grateful to all participants in the survey on the status of deaf education in Europe, to the participants in the interviews I have conducted over the last years at various educational institutions in several countries, and to headmasters and teachers who have facilitated my sitting in several bilingual classes so that I could get a glimpse of actual teaching practices. To undertake a longitudinal study in the distance (Berlin) would not have been possible without the aid of good companions on the spot. Hence, I extend *un grand merci* to Marie-Caroline and Joerg for the provision of the logistics, and their unparalleled hospitality and friendship.

The sign language research community is a small community compared to the communities of researchers dedicated to the investigation of other topics. Since I engaged in the journey of investigating sign bilingualism I have come across many colleagues who helped to sharpen my own views about sign bilingualism and deaf education. For stimulating discussions over the many years dedicated to this work I wish to particularly express my gratitude to Agnès Millet, Anne Baker, Anne-Marie Parisot, Annette Hohenberger, Astrid Vercaingne-Ménard, Bencie Woll, Beppie van de Bogaerde, Brigitte Garcia, Daniel Daigle, Esperanza Morales-López, Eva Waleschkowski, Mar Pérez Martín, María Massone, Marie-Anne Sallandre, Marie-Thérèse L'Huillier, Merle Mahon, Mieke van Herreweghe, Victòria Gras, and Wolfgang Mann. In particular, I would like to thank Esperanza for her confidence in many common projects and for her enthusiasm in envisaging new projects to come.

Special thanks to the editors of the Sign Language and Deaf Communities series, Markus Steinbach and Annika Herrmann, for guiding me with patience and support through the publication process.

I am indebted to my friends and to my family for always being there. Thank you for your continued patience and caring love. Thank you also for your support and motivation to bring this work to a good close. To you I dedicate this work.

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Notation conventions for sign language examples*

The notation devices used in transcriptions of our DGS examples are as follows (note: we use the original notation in citations of examples from other authors; only the glosses of signs in DGS examples were translated into English):

SIGN	Approximate English glosses of signs appear in small upper case. We use English verb stems in transcription of DGS verbs.
SIGN-SIGN	Where one sign corresponds to more than one word in German, the words are connected with a hyphen.
SIGN^SIGN	Compounds are indicated with a caret between component signs.
SIGN$_1$	Nouns are marked with subscripts to mark agreement with a verb. Numbers are used to indicate person agreement. Letters from the Latin alphabet are used to indicate locations. (In examples from our empirical study subscripts are numbered according to the relative order of introduction of the protagonists in the narrative).
SIGN+++	+++ indicates reduplication to express grammatical features.
SIGN(1x)	In other cases, the number of repetitions of the sign appears in brackets.
SIGN[?]	A question mark in brackets following the gloss indicates an unclear sign.
SIGN$_{NEG}$	The subscript NEG is used to indicate negation through derivation.
[– dom] [+ dom]	The simultaneous articulation of signs in two-handed constructions is represented on two separate lines. [- dom] indicates the sign(s) produced by the non-dominant hand, [+ dom] those by the dominant hand.
[SIGN---]	Where signs are retained over a long stretch of signing (e.g. h2 classifiers in simultaneous constructions, or discourse buoys) this is indicated by a dotted line following the gloss.
<u> manner</u> SIGN	A line above glosses indicates the scope of non-manual markers that co-occur with signs (the type of marker is indicated at the end of the line).

$_1$<___> SIGN	Shifted referential frameworks are indicated by a line above glosses with angle brackets marking beginning and end of referential shifts. Subscripts mark co-reference.
BEM	Abbreviation used for *benefactive marker*.
CL:FORM	Classifiers are indicated by the abbreviation CL, followed by a description of the meaning in English in brackets.
$[\text{DET}_{\text{ART}}]_1$	DET is used for determiners, pronouns, possessives, locatives. Subscripts are used to distinguish determiners: LOC for locatives, ART for articles, EXIST for existential determiners, POSS for possessive pronouns, SELF for focus pronouns. Co-reference is marked by subscripts after the square brackets.
PAM	Abbreviation used for *personal agreement marker*.
$[\text{PRON}_{\text{PERS}}]_1$	$\text{PRON}_{\text{PERS}}$ refers to personal pronouns. Co-reference is marked by subscripts after the square brackets.
$_1\text{VERB}_2$	Person agreement verbs are marked with subscripts at the beginning to indicate onset location, and/or at the end to indicate endpoint location.
VERB_X	The subscript x is used to mark unclear reference.
VERB_A	Location agreement verbs are marked with subscripts to indicate locations.
$\text{VERB}_{\text{ON-A}}$	English prepositions indicate location or movement from one location to another.
$\text{VERB}_{\text{CL}:\lambda}$	Verbs with classifiers are marked with a subscript. CL is used as an abbreviation for classifier, Greek letters (λ, μ, θ) indicate agreement with arguments.
:	Main and embedded clauses in complex sentence constructions are separated by a colon.
'(I) help (her)'	Free translations into English are provided in inverted commas; arguments that remain unexpressed overtly but are licensed by grammatical/discourse mechanisms appear in brackets.

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* Original notations of sign language examples are provided in Appendix A. A German version of the notation of DGS examples discussed in the empirical chapters is available in Appendix B.

List of acronyms for sign languages

ASL	American Sign Language
Auslan	Australian Sign Language
BSL	British Sign Language
CSL	Chinese Sign Language
DGS	*Deutsche Gebärdensprache*, German Sign Language
HKSL	Hong Kong Sign Language
ISL	Irish Sign Language
LSA	Argentine Sign Language
LSE	*Lengua de Signos Española*, Spanish Sign Language
LSQ	*Langue des Signes Québécoise*, Quebec Sign Language
NGT	*Nederlandse Gebarentaal*, Sign Language of the Netherlands
SAL	South African Sign Language
SSL	Swedish Sign Language
VGT	*Vlaamse Gebarentaal*, Flemish Sign Language

1 The path toward sign bilingualism: a cross-disciplinary perspective

1.1 (Sign) Bilingualism as an object of scientific enquiry

As global inter-dependencies increase following rapid changes in economy, demography, and information and communication technologies, traditional views about languages and their users, based on the ideal of monolingualism as the norm, are being challenged by evolving language communities, ways of communication, and the emergence of new language contact situations. Despite the dynamics and the diversity of people's language practices, measures adopted at the political level targeting languages and their users in a given social space seldom promote bilingualism as a *resource*. Indeed, language policies in the greater part of the Western world continue to be predominantly monolingual, based on the tradition of the one nation-one language ideal that originated in the 19th century. This ideal, which implies an identification of language, culture and nationality (Siguán 2001: 16), has served as a basis for monolingual state ideologies and nationalistic claims of linguistic minority groups alike.

Bilingualism as a dynamic and diverse phenomenon contrasts sharply with the ideal of linguistic homogeneity. On this view, bilingualism is regarded as a *problem*. Not only is linguistic diversity associated with a potential for socio-political conflict, it is also related to problems at the individual level. Full competence in monolingual speakers is commonly contrasted with a diversity of linguistic profiles of bilingual individuals that goes well beyond the idealised notion of a bilingual that would have a balanced competence in two languages (cf. Grosjean 1992; Romaine 1996). Negative attitudes towards child bilingual learners and adult bilingual users are often associated with the idea that bilinguals are unable to keep the languages separate. Indeed, one of the most persistent myths about bilingualism concerns language mixing as an indicator of linguistic confusion vis-à-vis the idealised notion of a strict separation of the two languages in the ideal bilingual.

Sociolinguistic and psycholinguistic research undertaken in the last decades has shown that the view of bilingualism as a problem is unfounded and that rather than confusion language contact phenomena reflect bilinguals' creative use of their linguistic resources. There is agreement that the human mind is well equipped to deal with the acquisition of more than one language. A wealth of studies into bilingual language acquisition has shown that the two languages

develop separately early on and that language contact phenomena, where they occur, are tied to language learning processes involved in the organisation of multilingual knowledge (Tracy 1994/5), reflecting also patterns of language use in the environment of bilingual learners (Lanza 1997; de Houwer 2007). There is a consensus today in bilingualism research that underdevelopment or academic failure are brought about by diverse external variables, including socio-economic and educational factors, which points to the relevance of considering the socio-political response to the abilities and needs of bilingual individuals.

The progressive convergence of different lines of research dedicated to various acquisition situations and their outcomes is contributing to an integrated view of bilingualism and a better understanding of how innate and environmental factors conspire in shaping the outcomes of language contact situations (Winford 2003). We know today that human beings have a biological predisposition to acquire one or more languages. However, whether they will ultimately become bilingual users depends on an intricate interplay of internal and external variables, as it has been documented in numerous studies dedicated to diverse oral languages and their hearing users. Bilingualism in deaf individuals, by contrast, has been largely ignored as an object of scientific enquiry.

1.1.1 Narrowing the focus on sign bilingualism

The language lives of Deaf people involve constantly moving between languages.
(Padden 1998b: 100)

Research into deaf individuals' bilingualism involving the sign language of the surrounding deaf community and the oral language of the majority hearing society, commonly referred to as *sign bilingualism*, is a relatively new phenomenon. This is related to the circumstance that deaf individuals have been perceived as *bilingual* language users only upon the gradual recognition of sign languages as fully-fledged languages as of the 1960s (Grosjean 2008; Padden 1998a). Signers' reports on their own language socialisation and their lack of awareness that they were bilingual (Kuntze 1998) are an indication of how monolingual (oral only) education and the lack of recognition of sign languages as a full languages affected the identities of deaf individuals. Padden and Humphries (2005: 157), two renowned deaf scholars working in the USA, highlight the sense of pride brought about by the recognition of sign languages as full languages when they state that "[t]o possess a language that is not quite like other languages, yet equal to them, is a powerful realization for a group of people who have long felt their language disrespected and besieged by others' attempts to eliminate it."

Breaking with the monopoly of a pathological view of deafness, political activism of deaf associations and related interest groups over the last decades has led to a wider perception of deaf individuals as bilingual language users in the academic area and society at large. Studies dedicated to language contact in deaf communities have provided valuable insights into sociolinguistic and psycholinguistic aspects of patterns of language use and cross-modal language contact phenomena (cf. Boyes Braem & Sutton-Spence 2001; Brentari 2001; Lucas & Valli 1992). Sign bilinguals, like other bilinguals, have been found to code-switch for stylistic purposes or an increase in communicative efficiency, using not only a sequential combination of elements of the two languages, as it commonly occurs in spoken language contact situations, but also a simultaneous type of mixing of the two languages (*code-blending*, cf. Emmorey et al. 2008), which can be taken as an indication of the sophistication of language contact phenomena involving two languages that differ in their modality of expression. However, little is known about bilingual language acquisition in deaf learners, whose language development has been traditionally regarded as an idiosyncratic phenomenon owing to hearing loss.

What ethnographic studies into the bilingual lives of deaf signers have revealed over the last years is that there are multiple routes to bilingualism in deaf communities (cf. Yang 2008; Lane et al. 1996). While deaf bilinguals' testimonies reflect unique personal histories, they all mirror the intricate interplay of internal and external factors that determines sign bilingualism. Certainly, internal and external factors conspire also in other types of language development, as we pointed out previously. Yet variation in deaf individuals' linguistic profiles makes apparent that sign bilingualism is determined by two fundamental variables, namely, timing of exposure and accessibility of the languages involved. Crucially, while exposure to a natural, fully accessible language from birth can be taken for granted in hearing children, this is not always the case in deaf children.

Language acquisition in deaf children is bound to supportive measures because of two main circumstances, namely, (a) the unequal status of the languages at the level of parent-child transmission (more than 90 % of deaf children are born to hearing non-signing parents) and (b) the unequal accessibility of the languages (no or only limited access to auditory input). Because of these circumstances the path toward bilingualism in deaf children is not primarily bound to the family, but to linguistic experiences in their social environment. Education, as we know from bilingualism research is also a crucial factor for the development and maintenance of other types of bilingualism. However, in the case of sign bilingualism supportive measures are a fundamental requirement for deaf children's acquisition of *either* language, which points to the relevance of an alignment of research, policy and practice when it comes to the conception and implementation of sign bilingual education programmes.

It becomes apparent then that the cross-disciplinary approach advocated previously for a comprehensive understanding of bilingualism is even more pertinent for an appropriate comprehension of the development of bilingualism in learners for whom exposure and use of the languages they acquire are crucially determined by socio-political factors. Consequently, in our study on language contact in the development of bilingualism in deaf learners we are confronted, on the one hand, with the task of addressing questions concerning scope and quality of the measures provided to foster the acquisition of sign language and oral language in this population, and, on the other hand, with the challenge of accounting for the development of two languages that are not equal to deaf learners, in terms of accessibility and use.

Bilingual education, used as a notion to refer to education including the use of sign language as the primary language of deaf individuals, is one of the central demands of deaf associations and related interest groups. Yet, little is known about how this concept is translated into the reality of the bilingual classroom with deaf students. Several reports about individual bilingual education programmes established as of the late 20th century are available. However, there is no systematic study of the educational conceptions implemented. Could it be the case that despite the common goal of promoting sign language as a primary language, variation also occurs in the education of deaf students along components identified for bilingual education in general, revealing that different, possibly contradicting, objectives are pursued?

Turning to bilingual deaf learners, we acknowledge that only little is known about their bilingual development. Longitudinal studies of family bilingualism, unlike in research on hearing children's bilingual development, are rare, which comes as no surprise given the aforementioned circumstance that the path toward sign bilingualism is seldom determined by the family. Several cohorts of bilingually educated deaf students have been investigated in the context of research concomitant to bilingual education programmes. Yet, for their greater part, the available studies represent statistical correlation studies undertaken from an educational linguistics perspective that offer little insight into learners' progressive attainment of two distinct language systems. Other studies have been dedicated to the attainment of linguistic skills in either sign language or oral language, providing a fragmented picture of an acquisition situation that is rather marked by intensive language contact, which is, however, seldom taken into consideration. As Padden (1998b: 102) puts it, "the result is an incomplete view of the dual language lives of Deaf children."

Given the attention that has been paid to cross-modal language contact phenomena in the productions of adult signers, the little interest in the investigation of these phenomena in young bilingual learners is all the more surprising. Indeed, a review of the available literature reveals that the interaction of the two

languages is investigated primarily with a view to determining the impact of sign language knowledge on bilingually educated deaf learners' literacy skills, in the spirit of Cummins' Interdependence hypothesis (1991).

Studies that would specifically address similarities and differences between bilingual deaf learners and other bilingual learners in the light of current hypotheses in bilingualism research are virtually non-existent. The specific circumstances that determine exposure and access to the two languages in deaf children raise a number of issues concerning the organisation of multilingual knowledge in these learners. For the majority of deaf children with non-signing hearing parents, for whom exposure to both languages is commonly delayed, the question arises as to whether the development of their learner grammars equally reflects a progressive structural expansion, as has been found to be the case of other types of learners. The question is not only critical concerning their written language development (deaf learners are commonly assumed to reach learning plateaus relatively early in their development); it is of equal relevance concerning their sign language development because of the specific input conditions (delayed exposure, limited use in the family).

In research dedicated to hearing bilingual learners of two spoken languages it has been argued that the sophisticated combination of two distinct grammars in learners' mixed utterances not only reveals the structures available in either language, but also shows that learners tacitly know, by virtue of their innate language endowment (that is, universal grammar), that grammars are alike in fundamental ways (Gawlitzek-Maiwald & Tracy 1996; Genesee 2002, among others). Deaf children are confronted with the task of acquiring two languages that differ in their modality of expression. Questions that arise in view of the modality difference concern the potential interaction between two languages that seem so far apart if regarded at the surface level only. In other words, and more in line with the creative aspect of language contact mentioned previously: *Do bilingual signers, like other bilinguals, too, pool their linguistic resources?* And if so: *What are the biological and environmental factors that enable them to creatively profit from their bilingualism?*

As we are about to embark in the endeavour of clarifying the questions raised it will be useful to briefly outline the journey ahead.

1.1.2 Outline of the work

We begin our work on bilingualism and deafness with a section dedicated to the broader framework of bilingualism as a societal phenomenon (section 1.2). The discussion will focus on the variables that distinguish different types of bilingualism at the societal level and language planning measures in a given social

space (section 1.2.1). We will then narrow the focus on sign bilingualism (section 1.2.2) with a view to identifying the main factors that determine the development and maintenance of this type of bilingualism, intimately bound, as will become apparent, to the status attributed to sign languages and related language planning policies (section 1.2.3). Education, the domain of language policy *par excellence*, is the topic of section 1.3. In this section we provide a critical appraisal of sign bilingual education by examining the main objectives of this type of bilingual education (section 1.3.1) and the spectrum of its variation (section 1.3.2).

In chapter 2 we turn our attention to bilingual language acquisition in deaf children from a developmental linguistics perspective. We elaborate on the theoretical framework of the empirical study we have undertaken on the bilingual acquisition of sign language and oral language in deaf children. In section 2.1 we sketch the type of knowledge that is acquired at the grammatical level. In section 2.2 we summarise the main hypotheses about how this knowledge is acquired and sketch the UG based dynamic model of language acquisition we developed in earlier work and used as a framework in this work. Current hypotheses about language separation and interaction in bilingual language acquisition are summarised in section 2.3. We then narrow the focus on bilingual deaf learners (section 2.4), and address the main questions that arise regarding their acquisition of two languages that differ in their modality of expression and accessibility. Because of the specific circumstances that determine the acquisition of the written language in this population special attention is paid to available assumptions about the relationship between the spoken language and the written language. Another central issue concerns the role of language contact phenomena in the course of the bilingual development.

Chapters 3 and 4 concern our investigation of the acquisition of German Sign Language (DGS, *Deutsche Gebärdensprache*) and written German in bilingually educated deaf students. For each of the two languages we elaborate a descriptive framework of the grammatical properties investigated as well as the diagnostic criteria we used to assess the participants command of DGS and German, based on what is known about the main developmental milestones in either language. The participants' profiles in DGS and German are presented and discussed in chapters 3 and 4 respectively. We conclude with a final discussion and summary in chapter 5.

1.2 Sign bilingualism: sociolinguistic aspects

Language has consequence. (Bialystok 2007: 393)

Most of the world's speech communities are multilingual with varying types and degrees of bilingualism (cf. Baker 2001; Grosjean 1982; Romaine 1996; Siguán 2001).

Given that bilingualism is a reality for the greater part of the world population the question arises as to whether and how linguistic resources are organised at the socio-political level. Sociolinguistic studies over the last decades have shown that language contact situations are not treated alike by political and educational institutions. As pointed out by Romaine (2004: 391) conceptions of bilingual education differ markedly depending on whether they target majority or minority populations within nation-states. This variation makes it apparent that differences in language planning measures reflect the symbolic value of the languages affected and the unequal distribution of power in a given society. Because language is regarded as one of the most powerful guarantors for social cohesion, multilingualism in speakers of non-territorial languages (mostly with a migration background) is associated with a potential for socio-political conflicts that would derive from a lack of integration into the mainstream society. The language of exclusion that becomes apparent in notions used to refer to minority languages and their users, such as *non*-territorial, *non*-regional, *non*-indigenous, or *non*-European reflect a "restrictive interpretation of the notions of citizenship and nationality" (Extra 2007: 179).

While the linguistic capital of a changing demography continues to be largely ignored, if not suppressed, the promotion of multilingualism as a commodity or qualification is on the agenda of educational authorities in many countries worldwide, as social and economic advantages are attributed to the ability to use various *prestige* languages. Clearly, the inconsistency that becomes apparent in policies adopted toward different types of bilingualism reflects the symbolic and economic value attributed to languages and the status of their speakers. Crucially, the apparent discrepancy in the socio-political response to the abilities and needs of bilingual individuals needs to be considered when it comes to generalised attributions of success or failure in the raising of bilingual children.

In the following sections, we will introduce the main criteria used to distinguish different types of bilingualism and language planning measures targeting languages in a given social space. This will provide us with the necessary framework to discern the factors that affect the development and maintenance of sign bilingualism at the societal level.

1.2.1 Bilingualism as a societal phenomenon

1.2.1.1 Types of multilingualism

While there is "no generally accepted typology of bilingual communities" (Romaine 2004: 389) several criteria can be used in the differentiation of language contact situations, such as (a) the functional criterion (regarding domains

of language use) or (b) the territorial one (concerning the status of the languages used in a given geographic space). In a situation of diglossia as is the case in Switzerland, for example, the use of two languages (i.e. (Standard) High German *vs.* Swiss German) is determined by a functional differentiation (cf. Romaine 1996: 577). Territorial monolingualism, in contrast, characterises officially bilingual countries like Belgium in which two languages are spoken in geographically distinct areas (cf. Ann 2001, Grosjean 1982). This situation contrasts with the case of a scattered or dispersed bilingualism resulting from the urban segregation of linguistic minority groups. Another important variable concerns the status attributed to the languages in a situation of contact, as is explained next.

1.2.1.2 The status of languages in a situation of contact

> *Distinctive food, dress, song, etc. are often accepted and allowed to be part of the mainstream, but language seldom is. (Romaine 2004: 397)*

Less than 4 % of the languages currently in existence (about 5,000–6,000 languages) have an official status (Romaine 2004: 388; Baker 2001: 49 mentions a percentage of 1.5), which hints at the unequal status of languages in a situation of contact. It is interesting to note that an imbalance in the status attributed to the languages is commonly reflected in the linguistic profiles of individuals in a given social space. Where two languages are not at parity it is usually the members of the linguistic minority group who are bilingual (in the minority and the majority language) whilst the members of the majority group are commonly monolingual. This is the case in Canada, for example (cf. Ann 2001; Grosjean 1982: 16), where English and French are official languages. According to Grosjean (1982: 16) only 8 % of the English-speaking population uses both languages on a regular basis, compared to 33 % of the French-speaking population. The maintenance of bilingualism in linguistic minorities relates to different factors such as the number of speakers of the minority language, the renewal of the linguistic minority via immigration, the social and educational background of the members of the minority group as well as their spatial distribution (cf. Baker 2001; Grosjean 1982; Romaine 1996).

It is important to note in this context that the notions of *minority language communities* or *linguistic minorities* are commonly used to refer to non-elite or subordinated groups (Romaine 2004: 389). As pointed out by Romaine (ibid.) the notion of "minority" is ambiguous in that it has both numerical and social/political dimensions, the point of reference being often an administrative unit (the nation-state, for example). Regional languages (as, for example, Catalan in Spain) may be spoken by a minority within the nation-state, but by a majority in

the region. Another striking example is provided in García et al. (2006: 14) who describe the situation of the Zulu in South Africa. The group of over 10 million Zulu speakers regard their language as a minority language, that is, a language that cannot to be used for advanced formal functions. The attitudes toward the language clearly contrast with the circumstance that it could easily be ranked among the 100 largest languages worldwide.

Thus, rather than by the size of group, a language is the *majority* or *dominant* language if it is the language of "the group that holds the political, cultural, and economic power in the country", whereas the notion of *minority* language is used to refer to the language of the social group that has less power and prestige (Grosjean 1982: 120-1). We can see that the symbolic value of a language as well as the power of its speakers plays an important part regarding the status the language is assigned at the institutional level. As language policies might differ depending on the language they target, it is not uncommon to find different coexisting types of multilingualism within a given nation-state. Usually, a distinction is made between national vs. minority and indigenous vs. non-indigenous languages (Romaine 2004: 391). The politically promoted maintenance of minority languages, including the recognition of the language rights of their users, commonly rests on territorial criteria (identification of geographical boundaries and historical existence of the language within a defined territory), leaving non-indigenous languages with "almost no status" at all (Baker 2001: 47–48). Language politics in the European Union, for example, are almost exclusively oriented towards national, that is, *territorial* languages (Romaine 2004: 391). Notice, though, the intricacy of defining what is or what is not a territorial language if we consider demographic developments and the alleged *immigrant* groups that have been living in a country for various generations. Baker's (2001: 48) reflection hints at the contentious status of the territorial criterion when he asks: "Do languages belong to regions and territories and not to the speakers of those languages, or to groups of speakers of those languages wherever they may be found?" Notice, additionally, that Baker's question addresses two dimensions that have turned out to be crucial in the struggle for political recognition by non-indigenous language minorities, namely, that the speakers of a language form a group and that the language they use is a marker of their identity. These observations lead us to the notion of a community, explained in the next section.

1.2.1.3 The notion of community: language and group identity

The development of Nation States and their monolingual policies is intimately tied to the symbolic value attributed to language. As Romaine (2004: 388) puts it, "most nation-states are "imagined communities" which have come into being at least partly through the spread of national languages and print literacy."

Baquedano-López & Kattan (2007: 73) remark on the influence of the notion of an "imagined" community in expanding the boundaries of what is conceived of as a speech community, as community members sense a feeling of communion with other members they might never have met.

Ideology, *qua* "set of beliefs about language articulated by users as a rationalisation or justification of perceived language structure and use" (Baquedano-López & Kattan 2007: 83) cannot be disregarded when analysing linguistic landscapes and their evolution. We will learn below that schools are key sites for putting such ideologies into practice and perpetuating the status attributed to the language(s). In this respect, García et al. (2006: 37) argue that "schools are, in their work of teaching the standard national languages, responsible for one of the most prevalent linguistic ideologies – constructing a unidirectional link between language and ethnicity." Not surprisingly, this link is conceived of as exclusive to one language. However, the alleged homogeneity associated with the concept of a community (in particular, at the ideological level) contrasts with its heterogeneous characteristics (Baquedano-López & Kattan 2007: 71).

Indeed, although language is one of the key factors when defining a *community* it is not the only determiner. As pointed out by Romaine (2004: 386) "language becomes intertwined in complex ways with various other indicators of group membership." We need to take into consideration that bilinguals "interact in many kinds of networks within communities, not all of which may function bilingually" (Romaine 2004: 386). Hence, it seems, the more recently developed "fluid, multiple, and shifting notion of community" is better suited to capture the reality of many individuals who participate in various (at times conflicting) communities (Romaine 2004: 386), invoking "practices and beliefs of their numerous affiliations" (Baquedano-López & Kattan 2007: 73). Some authors use the notion of a *community of practice,* a notion originally used to refer to communities that are "situated within specific goal-oriented economic activity" (Baquedano-López & Kattan 2007: 77) to highlight the role of perceived solidarity where "the linguistic choices made by members play an important role in constructing meaning and social identity" (Romaine 2004: 387).[1]

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1 An additional dimension elaborated in the literature concerns the identity of bilingual individuals. To acknowledge participation in multiple communities, some authors have adopted a *multidimensional* view of the bilingual individual's identity and investigated how it is negotiated in different contexts (Garcia et al. 2006: 35). Following Baquedano-López and Kattan (2007: 87) identity is "fluid, dynamic and discursively created according to the cultural systems in which people are located both spatially and temporally". With respect to bilingual situations the authors (2007: 89) conclude that "identity formation in language contact situations is an ideologically informed process that changes over time while also reproducing social norms and expectations."

Language, as becomes apparent in these observations, is not only used as a means of communication, but is also a symbol of group identity, accompanied by attitudes and values held by its users and people who do not use the language (Grosjean 1982: 117). Language attitudes and patterns of language use in linguistic minorities are subject to pressures of various kinds (e.g. economic, administrative, cultural, political, religious, etc.) (cf. Baker 2001; Romaine 1996). Such pressures may ultimately lead to language shift or language loss, as is reflected in the decline of the original languages of linguistic minorities in several countries, such as the USA or Australia. In other cases, socio-political developments might lead to a revitalisation of formerly endangered languages. Language policy and language planning play a fundamental role in these processes (cf. Baker 2001, Reagan 2001, Romaine 1996). Studies on language attitudes have shown (Grosjean 1982: 119) that minority language groups often adopt the negative attitudes of the majority group toward them, at times, being more negative about themselves than the dominant group. Speakers of a stigmatised minority language often do not use it in public, even if interlocutors also know the language (Grosjean 1982: 125), which may ultimately lead to *language shift*, whereby the members of a minority language group give up their language henceforth using only the majority language. However, the stigmatisation of the minority language might also have the opposite effect in that it reinforces group solidarity and the symbolic value of the language (Grosjean 1982: 126), the self-empowerment of the deaf communities during the last two decades being a case in point (see section 1.2.2.4).

1.2.1.4 Language planning: models and measures

Among the factors that influence the status of languages and their vitality are political measures taken to organise the linguistic resources in a given community or society. Language planning activities, *qua* elements of a national development strategy might serve the purpose of resolving language problems and controversies in a given social space (Reagan 2001: 146). Edwards (2007: 462) uses the metaphor of "the social life of language", of which multilingualism would be a part, to point out that multilingualism "has both a de facto existence and an important place in the psychological, political and social debates that define nations and states." Not all measures targeting languages are purely linguistic as language may also serve as a means to achieve other objectives. Following a means-ends view individuals "are socialised both to the use of language and through the use of language" (Baquedano-López & Kattan 2007: 74). Hence, language can be used as a means of social control (Knapp 1988: 70). Whether in the emergence of modern Nation States or in colonisation, language planning has played a key role in socio-political and socio-economical developments. The rise

of the Spanish empire and the use of Spanish to expand and secure political and economical power is reflected in the publication of the first Spanish grammar in 1492 by Nebrija (Knapp 1988: 70). The publication marks a turn in that until then the only available grammars had been those of the elite languages Latin and Greek. Consequently, the emergence of national languages and suppression of regional languages needs to be understood in relation to political and economical developments (change from feudalism to capitalism, and the rise of the middle class, Knapp 1988: 71). "The rise and spread of national languages are historically functional", as Gogolin (2010: 535, our transl.) remarks. The spread of standardised communication means that were increasingly needed upon the changes that came along with the Industrial Revolution is tied to print literacy (Gogolin 2010: 535). These developments run parallel with the creation of the myths of nations based on historical and cultural commonalities that are meant to strengthen the sense of affiliation with the new form of social order (Gogolin 2010: 535).

The implementation of state school systems in the nation states contributed significantly to the implementation of a standard variety of the language with the status of a national language (Gogolin 2010: 535). It is interesting to note that the school systems established not only fulfilled the function of qualification given the changing demands of the labour market upon industrialisation. They also fulfilled an educational function as the command of the national language in its spoken and written form was a requisite for participation in the new civic public sphere (Gogolin 2010: 535).

Language planning models. Because of the influence of political and economic factors on language policies bilingualism needs to be regarded as "one part of interconnected politics" (Baker 2001: 58). As for the activities that target languages and their users in a given social space, Baker (2001: 57, pace Cooper 1989: 98) succinctly summarises the key elements of the activities in the interrogation "Which actors attempt to influence which behaviours of which people for what ends under what conditions by what means through what decision-making processes and means with what effect or outcome?" Two types of language planning models are commonly distinguished in the literature depending on the actors involved, namely (a) *bottom-up* language planning activities that typically occur without institutional support and whose impact remains local, vis-à-vis (b) *top-down* activities undertaken at the institutional level, typically without users advice, and seldom in the form of a coherent, encompassing approach that would promote a coordination of measures taken. We advance here (as we already proposed in an earlier work, cf. Plaza-Pust et al. 2004) that a third model can be conceived of, namely, a *holistic* one, in which top-down and bottom-up activities are combined, with all actors involved in the language planning process.

Language planning measures. Language planning measures commonly target the status of the languages, their provision and use. Based on a differentiation of the main goals, the following types of language planning are commonly distinguished (Baker 2001: 55; Reagan 2001: 147):

(a) *Status planning,* aiming at raising the status of a language in a society, involves decisions about what language should be used in what domain (choice of official languages, languages used in education, etc.).
(b) *Corpus planning* concerns terminology and standardisation of the language (creation/modernisation of vocabulary).
(c) *Acquisition planning* aims at increasing the number of the language users (if the language is not used in the family, education gains a prominent role).

In principle, these activities are oriented toward one language. However, with the exception of corpus planning activities targeting the language and its structure, the objectives and outcomes of language planning have to be studied in relation to the linguistic complexities of the broader social context in which the respective measures are undertaken, ultimately with a view to develop policies of *bilingualism* (as Baker [2001: 58] puts it, "minority language monolingualism is usually impracticable and unfavourable to individuals"). It is interesting to note that efforts at keeping boundaries between languages (their functional distribution) are commonly considered a requisite for the survival of the minority language. However, as Baker succinctly remarks "the boundaries that separate languages are never permanent" (Baker 2001: 47). This observation points to the dynamics of languages in a situation of contact, their changing political and power base over time (ibid.).

With these issues in mind, we turn our attention to bilingualism in the deaf communities, which is the type of bilingualism that is at the focus of our study. The key language planning area of education will be treated subsequently.

1.2.2 Sign language on the agenda

> *Somewhere in our present, among the details of our lives and our history, there must be a way to the future. (Padden & Humphries 2005: 10)*

Throughout the preceding sections we have discussed several criteria that are used to distinguish types of bilingualism at the society level. We also learned that languages used in a given social space may differ concerning their status, affecting also the status of their speakers and the political measures that are taken to

promote their bilingualism. Turning our attention to sign bilingualism, we are interested to identify its status at the society level. As outlined in the initial sections of this chapter, the identification of the external (social) factors that determine sign bilingualism is a requisite for an appropriate understanding of the development and maintenance of this type of bilingualism. Deaf individuals who use a sign language and an oral language do not live in regionally separate areas. Their bilingualism is not territorial in the sense outlined previously. Yet the languages they use and their attitudes toward their languages are indicators of their identities and social group memberships.

In the course of the last three decades, administrations in several countries have been confronted with questions concerning language planning measures targeting sign languages, such as their legal recognition, their inclusion in deaf students' education, or the provision of interpretation. For these issues to appear on the agendas of governments throughout the world, grass-roots pressure of deaf associations and related interest groups has been necessary, as is elaborated in the following sections.

1.2.2.1 The development of the deaf community

Much like in other linguistic minority groups, sign language is not only regarded as a means of communication by its users but also as a symbol of social identity (cf. Grosjean 1982; Lane *et al.* 1996; Morales-López et al. 2002). The symbolic value attributed to sign language lies at the centre of the concept of the *deaf community* as a linguistic minority group. Moreover, *solidarity*, based on the concept of attitudinal deafness ties a deaf community in a given country to the international or interregional deaf community (solidarity across national or regional boundaries, cf. Aarons & Akach 2002; Marschark et al. 2002; Morales-López et al. 2002; Morales-López 2005; Padden 1998a). This notion of perceived solidarity among the users of the language is not only central to the notion of the deaf community, on a par with other minority language communities; it also underlies the development toward the more global concept of *Deafhood* explained in section 1.2.2.7.[2]

From a historical perspective, the development of deaf communities and their sign languages is related to the gatherings of deaf people in larger numbers (Ladd 2003: 90, among others). Unfortunately, relatively little is known about deaf communities prior to the establishment of the first schools at the end of the 18th century (section 1.3.2, Plaza-Pust 2016). However, historical records suggest

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2 To mark the difference between the use of "deaf" to refer to hearing impairment, capitalised "Deaf" is used since the 1970s by those advocating the cultural identity of deaf individuals.

that deaf individuals did not always live in isolation as they gathered with other deaf individuals owing to genetic or demographic factors.[3] Ladd (2003: 90) distinguishes the following scenarios (or, in his terms, *ur*-Deaf communities) prior to the establishment of deaf schools:

- isolated Deaf person, mostly in rural environments
- small numbers of deaf people in those environments (or higher proportions due to genetic factors), at times (when the proportion is high enough) hearing members of the community use forms of sign language
- gatherings of deaf people in larger, more urban communities
- gatherings of deaf people within specialised urban groupings (e.g. monasteries, royal courts).

Educational institutions (deaf residential schools) and social meeting points (deaf clubs) have formed the cornerstones of deaf communities in Western societies (Woll & Ladd 2003: 154; Ladd 2003; Padden 1998a) and also, in other social contexts as, for example, in China (Yang 2008). Sign language, deaf culture and historical traditions were passed on from one generation to another in schools and later maintained through social interactions, in particular, in deaf clubs (Padden & Humphries 2001, 2005; Lane et al. 1996). While schooling and social gathering points are equally important for the maintenance of other minority languages (Fishman 2004: 427), deaf schools and deaf clubs have been vital for the historical maintenance of sign language and the deaf community because of the circumstance that the "parent-to-offspring model" of language transmission (Mufwene 2001: 12) does not apply to the majority of deaf signers for whom exposure to and socialisation in the language occurs generally outside the family, at a later age (section 1.2.2.2).

In the course of the last decades, however, seemingly contradictory processes have affected deaf communities (see, for example, Morales-López 2008 and Gras 2008 for Spain; Johnston 2006 for Australia; Krausneker 2008 for Austria; Padden & Humphries 2005 for the USA). The traditional cornerstones of the deaf community, deaf clubs and deaf schools, have become vulnerable to socio-political and economic developments (Woll & Ladd 2003: 154; Padden 1998a). The last years have witnessed an increased social and economic mobility of deaf individuals;

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3 As for the use of sign language, historical records also reflect a link between the use of the language and the gathering of groups of deaf individuals. Ladd (2003: 91–92) observes that references to manual communication in the writings of those authors who express a positive attitude toward it usually refer to deaf people as a group, whilst authors with a negative attitude would describe deaf individuals with a focus on their isolation.

also, the developments in the area information and communication technologies have influenced the life style and social behaviour of deaf individuals as of the late 20th century, providing new means and opportunities for communication and congregation. In a detailed account of these developments as they occurred in the USA, Padden and Humphries (2005: 87) conclude that "... Deaf clubs declined because of powerful shifts in Deaf people's work lives leading to the growth of a Deaf middle class. The kinds of work Deaf people did changed between 1940 and 1980, and the shift affected the kinds of spaces they used and the ways they interacted with one another." So, while traditional forms of gathering and social-isation disappear, new forms emerge, reflecting a new "ease of independent and self-motivated congregation" (Mitchell 2004: 213). As pointed out by Padden and Humphries (2005: 98) "the spaces have become fluid and symbolic". While they remark that "today (...) these clubs are only a shadow of their past vitality" (Padden & Humphries 2005: 78), they also argue that "... much of the nostalgia of Deaf clubs is misplaced" (Padden & Humphries 2005: 96). Changes pertain-ing to an increasing urban segregation and the general trend, at the educational level, toward the preference of integration over segregation are similar to those observed for other linguistic minority groups (Romaine 2004). However, given that only a minority of deaf children are born to native signers the question arises as to the factors that might affect sign language transmission patterns, an issue that we elaborate in the next section.

1.2.2.2 Sign language transmission

In a paper dedicated to the development of sign language and the deaf community in Australia, in which he also discusses the factors that might affect the future of sign languages in general, Johnston (2006: 138) distinguishes three groups of sign language users, namely, (a) deaf individuals who attain sign language outside the family (as mentioned previously, the larger number of deaf individuals who are born to hearing or deaf non-signing parents), (b) a small number of native sign language users who acquire the language in the family (possibly similar in number to that of hearing individuals acquiring the language as a mother tongue, and (c) a third group of sign language users that has been growing in number during the last decade, namely, the group of hearing learners of sign language as a second language (L2). This allows for the distinction of three types of sign language transmission (cf. Mitchell 2004: 9), namely, (a) inter-generational trans-mission, (b) intra-generational transmission, and (c) direct instruction. We will not delve on the latter but briefly sketch the two former types.

Inter-generational transmission. With the exception of those communities with a high incidence of deafness,[4] this type of transmission occurs only in the rather exceptional cases of deaf children with deaf parents. Thus, for the majority of deaf children socialisation in sign language occurs outside the family, a situation that marks an important difference to that of other linguistic minorities.

Intra-generational transmission. Sociopolitical and demographic developments are affecting a tradition that can be traced back to the end of the 19th century, with the establishment of deaf schools and the gathering of larger groups of deaf individuals. For sign language transmission, educational institutions gathering larger number of deaf students have played an important role despite the circumstance that in the majority of cases they have not used or even banned the use of sign language as a medium of instruction. Indeed, Padden (1998a: 82) claims that "the school, and not the family, becomes the major socialising agent for deaf children."

It is important to note in this context that the turn toward education of deaf students in regular schools in the second half of the 20th century (section 1.3.1.1, Plaza-Pust 2016) reduces the relevance of educational institutions for intra-generational transmission. In the deaf communities and related interest groups, this development has been observed with great concern because of the potential impact it has on the vitality of the language. As Johnston (2006: 151) remarks, the change involves a reduction of children learning sign language and relating to the deaf community in their surrounding, so that "from the linguistic point of view, mainstreaming has also negatively affected the integrity and perhaps the long-term viability of the already numerically reduced signing community."

In this context we may advance that there is another factor affecting the vitality of the community, apart from changes in the educational area, namely, the developments in the medical sciences and hearing aid technology (hearing aids, cochlear implants). As the practice of cochlear implantation is increasing in several countries worldwide, Johnston (2006: 161) wonders on the maintenance of the "critical mass" of sign language users that is necessary for the vitality of the language, whereby "critical mass" is understood as "the minimal viable size for a linguistic community in both numbers of users and functional range of use." Other authors acknowledge the impact of variables affecting the size of the pop-

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4 There have been at least three much cited cases of communities in which sign language was the common means of communication, namely, Martha's Vineyard (USA), a Mayan village in Yucatan (Mexico) and Desa Kolok in Bali (Indonesia). The use of sign language by both deaf and hearing is related to the high incidence of deafness in these communities (cf. Ann 2001: 38 f. for further details).

ulation of signers, but draw attention to the symbolic value attributed to the language by its users, a development that also reflects the increase of deaf activism in the course of the last years, as is explained later in this chapter (section 1.2.2.4) (Gras 2006: 196). As for the size of the population of sign language users, we will see in the next section that it is not so easy to determine.

1.2.2.3 Demography

Commonly, references to the number of sign language users in a given country are based on rough estimations. The intricacy of establishing reliable estimates is related to the circumstance that there is no one-to-one relationship between deafness and sign language use because not all individuals with a significant degree of hearing loss use sign language (Mitchell et al. 2006: 312; Johnston 2006).[5] In addition, definitions of deafness and hearing impairment used in the statistics differ (for example, with respect to the hearing loss thresholds established for the distinct categories, or the conflation of two or more categories into one, as it might occur with the categories of "mild" and "moderate", cf. Johnston 2006: 138) making it difficult to appropriately assess the development in a given country or to make comparisons of the estimates for different countries (Johnston 2006: 138). Hence, the commonly cited figure of 1 person per thousand (or 0,1 percen age) of severe to profound hearing impairment in developed countries remains a rough estimate. This holds equally of the much-cited figure of less than 10 % of deaf children being born to deaf parents (Mitchell & Karchmer 2006).

While deafness and sign language should not be conflated (Mitchell et al. 2006: 137), information on changes in the size of the deaf population can be used as an indicator for changes in the number of sign language users, which in turn, have an impact on the service provision targeting this population, such as education and interpretation.

In his detailed portrayal of the situation of the deaf community in Australia, Johnston identifies improved medical care, cochlear implants and genetic science among the factors that affect the decreasing incidence of deafness in that country. Analogous trends can be observed in other Western countries. Johnston (2006: 137) highlights the impact of these developments on sign bilingual education, training programmes for teachers of the deaf, and educational interpreting,

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5 As Mitchell et al. (2006: 312) succinctly remark, "... American Sign Language is a social and linguistic phenomenon, for which deafness is a necessary human condition motivating its sustained use (Johnston 2004), but an individual's deafness is neither a necessary nor a sufficient condition for becoming an ASL signer. Finding all those who use ASL at home requires a survey of people without regard to their hearing status."

apart from the consequences at the level of research, teaching and documentation of the language (Australian Sign Language in his case).

With respect to the impact of the developments in the medical area on the incidence of deafness, three issues are worthy of mention. Firstly, the decrease of the incidence of deafness in the 1980s is commonly related to the discovery of vaccines that allowed for the control of diseases causing hearing impairment, in particular, rubella. It should be noted that a higher incidence of deafness is commonly reported for the years 1964–1970, (Johnston 2006: 141), i.e. the years of the rubella epidemic. For Australia (2006: 141) Johnston acknowledges a tenfold decrease in the incidence of deafness from that period until today (i.e. 3.46 vs. 0.37 in the 1980s for all childhood deafness, although a higher rate is observed in the last years because of improved diagnostic testing). Secondly, the population of hearing impaired individuals has been affected by changes in the medical sciences leading to an increased survival rate of newborns with diseases or premature births, which is also reflected in an increase of deaf people with additional disabilities (Johnston 2006: 156). And thirdly, new estimates of the incidence of hearing impairment in early childhood have become available through another development in the medical area, namely, universal neonatal screening for hearing impairment. Johnston (2006: 144) summarises the main conclusions that can be drawn from the insights obtained through neonatal screening in Australia, the UK and the USA:[6]

> *In sum, the prevalence of hearing impairment appears to be both greater and lesser than the earlier, commonly cited figure of 1 in 1,000 in developed societies. The rate is higher insofar as improved diagnostic testing is revealing many more cases of mild-to-moderate hearing loss that would have gone completely undetected in the past or at least would have remained undetected until much later in life. The category "mild" (hearing loss of 25–40 dB) is capturing a population not described in the National Acoustic Laboratories study, and the Western Australian criteria include children with a hearing loss of 35 dB or greater. Significantly, the category of mild hearing impairment, according to Stredler-Brown (2003), accounts for 30 percent of the total number of cases. Universal neonatal screening is also revealing that hearing impairment continues to emerge in the later years of childhood.*

In addition, Johnston (2006: 146) highlights the low incidence of *profound* deafness, about 10 % of all childhood deafness, although he also remarks that (a) this proportion needs to be considered in relation to an expanded hearing impaired

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6 In a response article to Johnston, Mitchell (2006: 215) expresses her doubts about the impact of screening results on decisions taken by the parents, as they "often help prospective parents prepare for the birth of a child with special needs. I am not confident that genetic screening will eliminate childhood deafness, and it remains to be seen whether there will be a net reduction in the incidence rate."

population (including mild hearing impairment, due to improved diagnostics and documentation) and (b) that the incidence rate increases significantly with age (indicating that the neonatal screening does not capture the whole picture).

Taking up the issue of the number of sign language users, Johnston assumes that many *severely* deaf children, although educated in the mainstream, will learn sign language and relate to the deaf community later in their lives (Johnston 2006: 152). As for the majority of the 10 % of *profoundly* deaf children it is acknowledged that they will probably not profit from hearing aids and oral education, and become sign language users (Johnston 2006: 152).

Based on the information documenting the shrinking of the deaf community the question arises about the future of the community of sign language users. With respect to the situation in Australia Johnston (2006: 160) portrays a rather dim scenario. In the worst case scenario depicted by this author the deaf community is brought to a halt by a 75 rate of cochlear implantation and systematic implementation of genetic knowledge.[7] According to this author, the impact of cochlear implantation is so strong that the decline of the community would also occur even if more children were bilingually educated.

On another level, the question arises about how the developments depicted will affect the development of the deaf communities *qua* linguistic minorities, if deafness and sign language gain a different significance, perhaps as one in many but not the primary identifier of deaf individuals. In a response article to Johnston (2006), Mitchell (2006: 217) wonders about how changes at the level of hearing aids (cochlear implantation), language(s) learned, educational placements, and social groups might affect the identity of deaf individuals, and ultimately the vitality of sign language and the community of its users:

> *... do deaf children and young adults develop a sense of self that is different from that of their hearing peers? If so, does this difference function primarily as a source of frustration when corrective or compensatory measures fail to function or become unavailable? Or is this difference between deaf youths and their hearing peers a fundamental experience that defines the self and the basis for identifying sympathetic others with whom to share a sense of community?*

While the question has to remain unanswered for the time being, we turn our attention to the developments that have led to an increased public presence of

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7 According to Johnston (2006: 158) genetic screening and gene therapy have undergone an accelerated development in the last years. Genes relating to deafness have been identified, and, one of the objectives of research in this area would be the "correction" of these genes in fertilised eggs, embryos and newborns.

the deaf community at the national and international levels, affecting also the perception of sign bilingualism at the socio-political level.

1.2.2.4 Deaf activism

The activism of deaf associations and related interest groups in the last decades has led to an increased perception of the deaf community and sign language at the society level. Typically, the official recognition of sign languages as well as their inclusion in the education of deaf children are among the central demands of the deaf communities and related interest groups. In some countries, political concessions have been made regarding the official status of sign languages, and their inclusion in education and service areas, upon grass-roots pressure. This bottom-up model of change is characteristic also of the developments pertaining to the recognition of other linguistic minorities groups (Garcia et al. 2006: 38). While this process is similar in many Western countries, Yang's (2008) review of the history of the use of Chinese Sign language (CSL) in China reveals a different chronology of the official recognition of this language and its users and a greater involvement of deaf educators at different points in time in the language planning process.

Historically, the development toward a gradual self-assertion of deaf individuals as members of a linguistic minority as of the late 20th century is tied to the insights obtained in linguistic research on sign languages, on the one hand, and the sociopolitical developments toward the empowerment of linguistic minorities, on the other hand.

If the emergence of Nation States had gone along with a widespread suppression of regional languages and the establishment of a monolingual policy and rhetoric in many countries, it was the discourse about human and group rights, emerging in the 1950s (at the time of the Civil Rights movement in the USA) that provided the impetus for linguistic minorities' claims for recognition of their linguistic rights. The development toward a socio-cultural (or socio-anthropological) view of deafness and related demands for the legal recognition of sign languages and their users as members of linguistic minorities needs to be understood against the backdrop of the changing socio-political climate concerning minority language groups. Indeed, in a portrayal of the "awakening" of the deaf community in Flanders, De Clerck (2007: 9) describes how the Flemish Federation of the Deaf (Fevlado) organised deaf awareness courses, with a crucial component of the courses consisting in introducing the deaf participants into "(...) a rhetoric of equal opportunities, rights, participation, oppression, deaf culture, emancipation, integration, etc."

The second aspect worth mentioning concerns the internationalisation of the Deaf movement, which is reflected in notions such as *Deaf World*, *Deaf Way* and the more recent concept of *Global Deafhood*, explained in section 1.2.2.7. It is interesting to note that the concept of a supra-national *Deaf community* has been the result of a grass-roots movement. That is, it was never imposed top-down.

1.2.2.5 Deaf movement

The international dimension of the Deaf movement is reflected in the similarity of sociolinguistic changes that have affected deaf communities in several countries (Monaghan et al. 2003), with individual differences originating from local circumstances. It must be noted in this context, however, that the sociolinguistic circumstances in some countries are such that international developments may have little impact on the local situation. Particularly in the developing countries socio-cultural and economic circumstances (widespread poverty, lack of universal primary education, negative beliefs about deafness) work against the building of deaf communities (Kiyaga & Moores 2003).

Turning to the impact of the Deaf movement in the Western world, we will sketch some of the main developments in Sweden, the USA, Spain and South Africa for illustration of similarities and differences across countries.

Sweden. In Sweden, where the provision of home-language teaching to minority and immigrant students was stipulated by the 1977 "home language reform" (Bagga-Gupta & Domfors 2003), Swedish Sign Language (SSL) was recognised in 1981 as the first and natural language of deaf individuals. The work of Swedish Sign Language researchers inspired by Stokoe's research into ASL, deaf community members, and NGOs brought about the change at the level of language policy that would soon be reflected in the compulsory use of sign language as the language of instruction at schools with deaf students. Crucially, through these changes at the educational level, Sweden pioneered a turn in the history of deaf education that had been marked by the ban of sign language from educational institutions as of the late 19th century (cf. Plaza-Pust 2016).

USA. In the USA, the *Deaf President Now* movement organised by Gallaudet University students in March 1988, leading to the appointment of the first deaf president of that university not only raised the awareness of the deaf community in the hearing society of that country, it was also "(...) above all a reaffirmation of Deaf culture, and it brought about the first worldwide celebration of that culture, a congress called *The Deaf Way*, held in Washington, DC, the following year" (Lane et al. 1996: 130). Thousands of deaf individuals from all over the world participated in the event, the first of this size to celebrate deaf culture, sign language and history (Bagga-Gupta 2004: 277). These two events gave impetus to the *Deaf*

movement that has influenced political activism of deaf communities in many countries worldwide. As pointed out by Bagga-Gupta (2004: 276) the Deaf President Now movement put deaf education on the agenda of the deaf community in the USA in a way that was similar to the Civil Rights movement (Jankowski 1997: 130), leading to "a new sense of self-worth, internal participation and community building and the urgency for the right to participate in general society."

Spain. In Spain, political activism of deaf groups throughout the country began in the 1990s, influenced by the worldwide Deaf movement (Gras 2008; Morales-López et al. 2002) and the socio-political changes concerning the linguistic rights granted to regional language minorities after the restoration of democracy in the late 1970s (Morales-López 2008). The developments in Spain are interesting because they reflect the discrepancy in the language planning measures adopted towards territorial minority language groups vs. other linguistic minority language groups, including the deaf community, at the educational and other society levels. Finally, in 2007, after some intensive years of political activism on the side of the deaf federation and related interest groups, Spanish sign languages were officially recognised (BOE 2007).

South Africa. A similar relationship between political reforms and the activities of local deaf communities is reported by Aarons & Reynolds (2003) for South Africa, where the recognition of South African Sign Language (SAL) was put on the political agenda after the end of the apartheid regime, with the effect that the 1996 constitution protects the rights of deaf people, including the use of SAL.

Nicaragua. The developments in Nicaragua are an example of "foreign cultural influences" (Senghas 2003: 276) at the level of exchanges between deaf communities in two countries. The Swedish Deaf community provided assistance to the Nicaraguan deaf community in the process of its formation and organisation, for example, through exchanges between members of the Nicaraguan and the Swedish deaf communities in Nicaragua and Sweden (the Swedish Deaf community also funded the centre for deaf activities in Managua).

1.2.2.6 Empowerment

A central concept that is used in the literature to describe power and the processes through which people gain control over their lives, achieve their goals, and have more opportunities to make choices is that of *empowerment* (de Clerck 2007: 12 ff). The notion implies that group members themselves re-distribute power and knowledge (between themselves and the dominant group), which hints at the central role of access to information and the possibility to exert influence as a group. For deaf individuals with an oral education background, contact with the signing deaf community usually marks a turning point in their

life, raising deaf awareness, which is often expressed in metaphorical terms such as "deaf awakening" (de Clerck 2007: 6). Notice that the notion contrasts with the "sleeping" metaphor used by Flemish deaf people to refer to the time prior to their awakening, in which there was no deaf rhetoric (reference to deaf culture, identity, etc.), that is, the counter-rhetoric to the oralist one (de Clerck 2007: 9, 11).

In her discussion of the international empowerment of the deaf communities toward the end of the 20th century, De Clerck (2007: 16) emphasises the relevance of networking with empowered deaf peers and visits to "culturally strong deaf sites", such as Gallaudet University (USA), the Centre for Deaf Studies in Bristol (UK), and deaf federations in the Nordic countries. This author highlights also the relevance of "advocacy and information sharing ... [to] inform the majority society about deaf ways of life." De Clerck's discussion of the steps leading to the empowerment of deaf individuals in Flanders is instructive as to the role of knowledge sharing within the group and contacts at the international level. Based on the evidence obtained in a study on deaf individuals in Flanders, de Clerck (2007: 8) distinguishes the following phases and factors determining individual pathways:

1. *early 1990s*
   – participation in deaf awareness courses
   – contact with empowered deaf individuals
   – visits to ideal deaf places or "deaf worlds"
2. *mid 1990s*
   – information of sign language researchers (received by deaf leaders)
3. *second half 1990s until today*
   – community empowers its members through deaf activism and collaboration

The author discusses the impact of journeys abroad during the first phase, in which deaf individuals learned about bilingual education (in particular, in Denmark), the use of sign language on campus (at Gallaudet University), several types of interest groups organisations (e.g. associations of parents of deaf children) and participation in decision making processes. Interestingly, De Clerck remarks on the interviewees use of the notion of "dream worlds" to refer to the places they felt to be barrier-free or less oppressive than their reality in Belgium. Against the backdrop of the developments depicted we can conclude with Monaghan (2003: 21) that "nationalism, therefore, may lead to the founding of deaf communities, but internationalism plays a larger role in the empowering of communities."

1.2.2.7 Deafhood

The dynamics of identity-building in deaf individuals is captured by the concept of *Deafhood*. Ladd (2003: xviii) explains that he developed this concept in the 1990s to refer to "a process by which Deaf individuals come to actualise their Deaf identity, positing that those Deaf individuals construct that identity around several differently ordered sets of priorities and principles, which are affected by various factors such as nation, era and class." Unlike the concept of deafness, which indicates a static medical condition, the concept of Deafhood refers to a process through which deaf individuals explain each other their existence in the world. Hence, implicit in this notion is the notion of the community and that of enacting what is explained (Ladd 2003: 3) (notice that deafness refers to the larger category of hearing-impaired, without reference to the Deaf collective existence or experience). Ladd (2003: 81) emphasises that the concept of Deafhood is neither monolithic nor simply "oppositional" (2003: 81); it rather "examines and presents the nature and significance of Deaf people's relationships to each other." Kisch (2008: 285) highlights the benefit of using the notion in that "[a]s an analytical category of subjectivity rather than labelling identities, ... it [is] particularly useful for imagining a range of shapes such a sense of being may take." As this author explains, the concept of Deafhood is commonly absent in signers belonging to so-called *shared signing communities*, a notion introduced by Kisch (2008: 286) to refer to "communities where high rates of deafness occur, an indigenous sign language is shared by many hearing people, and a relative lack of disablement has been observed". Nevertheless, Kisch acknowledges an emergent sense of Deafhood in the Al-Sayyid deaf community, the signing community she investigated in Israel.

1.2.3 Sign language planning

As a result of grass-roots pressure of deaf associations and related interest groups, administrations in several countries have been confronted with issues concerning language planning activities targeting sign languages and their users. Crucially, the recognition of the deaf community as a linguistic minority group involves a change in the status attributed to a group of people hitherto categorised as a disability group. This development is based on a socio-anthropological and cultural deaf rhetoric departing radically from a pathological view that regards deafness as a deficit that needs to be remedied. To date, however, although sign languages have been recognised in the legislations of several countries (see section 0), both views of deafness continue to coexist at the political level. As we shall learn later on (section 1.3), these opposite views also translate

into two irreconcilable positions when it comes to the education of deaf students. However, only a comprehensive view of deafness will do justice to the complexity of the deaf communities, and by extension, sign bilingualism. As pointed out by Woll and Ladd (2003: 157)

> *[t]o define deaf people simply as disabled is to overlook the linguistic foundation of their collective life. To define them as a linguistic group is to overlook the very real sensory characteristics of their existence, both positive (a unique visual apprehension of the world out which sign languages have been constructed), and negative (communication barriers are not simply linguistic, but auditory, too).*

Turning to the language planning measures specifically targeting sign languages and their users, it is useful to categorise activities based on the distinction outlined in section 1.2.3. Table 1.1 provides a summary of the language planning activities of deaf leaders and related interest groups, on the one hand, and the administrations, on the other hand.

Table 1.1: Sign language planning: types and activities.

Type of planning	Goals	Activities
– Status planning	– To raise the status of the language	– Campaigning for official/legal recognition of sign language – Use of the language in the public sphere
– Corpus planning	– To expand the language and its social functions	– Development of teaching/learning materials and dictionaries – Use of the language in the media – Interpreter training / provision
– *Acquisition planning*	– To include the language in the education of deaf students	– Development of bilingual education conceptions, curricula and teacher training measures

The comparison of sign language planning activities across diverse social contexts reveals many commonalities. As explained previously, sign languages are minority languages with no written tradition; typically, they exhibit a high degree of regional variation. To date only few sign languages have been investigated regarding their grammatical properties. Sign language teaching grammars are available for only a few sign languages worldwide. Sign language dictionaries continue to be equally rare. Therefore, the codification of the language, the creation of material and the training of sign language teachers are among the tasks that are tackled in language planning targeting sign languages.

As for the impact of sign language planning measures, several scholars have been concerned with the question of whether the steps taken are really doing justice to the linguistic and educational needs of deaf individuals (Cokely 2005; Gras 2008; Morales-López 2008; Reagan 2001; Van Herreweghe 2004). Another controversial issue concerns the participants in the activities (administration, deaf leaders, deaf associations, related interest groups). Abstracting away from the more local problems, the studies conducted in various social contexts reveal similar shortcomings of language planning measures in four major areas, namely, (a) official recognition, (b) standardisation, (c) interpretation, and (d) education. In this section, we will briefly sketch some of the major shortcomings pertaining to status, standardisation and interpretation. A more in-depth discussion of the status of sign language in deaf education is elaborated in subsequent sections.

Status. Sign languages are recognised as minority languages only in a few countries. They are often banned from educational institutions and their maintenance is threatened by the creation of artificial manual codes for the purpose of the teaching of the oral/written language (see section 1.3.2).[8] The stigmatisation of sign language goes along with the predominance of the oral/written language as the language of political, cultural, and economic power (cf. Grosjean 1992). The overall situation described has been challenged by the gradual self-assertion of deaf individuals and a growing public awareness of sign language in the hearing community.

The recognition of sign languages in the legislation of many European countries represents a crucial step in the provision of the legal and political framework relevant to the inclusion of sign language in deaf education (cf. Plaza-Pust 2004; Skutnabb-Kangas 1994) and service provision (e.g. sign language interpretation).[9] It should be noted, however, that changes at the legal level concerning the recognition of sign language do not always have the expected effects. In

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8 Linguistic assimilation has been the fate of many minority languages around the globe. As pointed out by Romaine (1996: 593), "the traditional policy, either implicitly assumed or explicitly stated, that most nations have pursued with regard to various minority groups who speak a different language has been eradication of the native language and culture and assimilation into the majority one." However, as Hyltenstamm (1994: 305) remarks "the abandonment of a sign language and shift to a majority oral language is in this way an even greater evil than the oppression of oral linguistic minorities, if indeed this evil can at all be graded."

9 On a critical note, while the notion of legal (or official) recognition is commonly used in the literature, it should be noted that it is used as a generic term to refer to different forms of recognition in the legislation (ranging from its recognition as an official language in the country's constitution, to its recognition as a language of instruction in deaf education in more specific bills pertaining to special education).

France, for example, the 1991 Act granted parents of deaf children free choice of the language used in the education of their children, but did not stipulate that any concrete measures be taken, either concerning the provision of this option or with respect to the organisation of bilingual teaching where it was being offered (Mugnier 2006: 150). Aarons and Reynolds (2003: 201) describe a similar situation in South Africa where the 1996 South African Schools Act stipulates that South African Sign Language be used as the language of instruction.

Despite the little advances that have been made at this level, progress can be observed with regard to the presence of sign language and their users in the public sphere. Based on a survey of the status of sign language in deaf education in Europe, Plaza-Pust (2004, 2016) highlights some of major changes that can be observed in this respect, including (a) an increase of hearing L2 sign language learners (changes in attitude towards sign language by members of the hearing communities are reflected in a growing demand on and interest in sign language courses), (b) an extended research body dedicated to the study of sign languages and deaf culture (contributing to a better understanding of sign languages, their structure and their relevance for the cognitive and social development of the deaf child), (c) a growing amount of publications on sign languages, including dictionaries, grammar textbooks, and other teaching material, (d) an improvement of the situation in the service area (for example, concerning the provision of sign language interpreter services and the inclusion of sign language in the media).

Standardisation. Among the most controversial language planning measures are those that affect the development of the language (corpus planning).[10] Regarding sign languages, which have been typically used in informal contexts, with a high degree of regional variation, factors that have created a demand for the development of new terminology and registers include the professionalisation of the interpreting profession, the increase of interpreter service provision in schools and other public spheres, and the teaching of sign languages to deaf students and other hearing learners (Gras 2008; Van Herreweghe 2004).

Standardisation processes following from a functional expansion of the language often affect communication in sign language–oral language contact situations (cf. Gras 2008). Communication problems may arise in classroom settings (e.g. between sign language interpreters and students). Standardisation efforts might not be effective as materials developed might not really be used (cf. Johnston 2003; Yang 2008) or used at a local level only, and ethical dilemmas might

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10 One of the most controversial developments at the level of language planning concerns the creation of signed systems. This case of language intervention is discussed in section 1.2.3.

arise when interpreters are confronted with the choice among different varieties of the language (Gras 2008).

Interpretation. Sign language interpretation is perhaps one of the areas that reflects best the impact of language planning activities regarding the expansion of the language and its functions. Gras' (2008) analysis of sign language planning processes in Spain reveals the discrepancy between bottom-up activities (concerning the recognition of sign language and its inclusion in deaf education) and top-down activities (focused on the training and provision of sign language interpretation). According to this author, the standardisation process of sign language that has run parallel to the recognition of interpretation as a profession has largely ignored the community of sign language users, with the effect that (a) communication problems arise between professionals and service consumers and (b) consumers' demands for where this service is needed do not (always) match with the contexts in which it is actually provided. Similar contradictory processes have been documented for other countries, as for example, the Netherlands (de Wit & Crasborn 2004).

Models of sign language planning. In their critical appraisal of language planning activities targeting sign languages, scholars generally agree that the type of activities undertaken and their eventual impact depend on (a) the agents involved and (b) the extent to which the planning processes are coordinated. Based on the models of language planning identified in section 1.2.1.4 we can distinguish three main language planning scenarios according to the agents involved and the activities taken. The key characteristics of these scenarios are summarised in Table 1.2.

Table 1.2: Language planning scenarios.

Type	Agents	Activities / aims
Top-down	– administration	– policies and planning activities • to facilitate accessibility • to facilitate integration
Bottom-up	– language community – related interest groups	– political demands and planning activities • to obtain political attention • to raise the status of the language
Holistic	– all agents	– analysis of the needs of all parties – objectives and outcomes of measures studied in relation to broader social context – coordination of measures and activities to meet the needs of the users

A comparison of the developments across countries reveals how language planning targeting sign languages can be described along the categories identified. For example, in Flanders, language planning activities targeting Flemish Sign Language (VGT) occurred upon the initiative of the Flemish deaf association. One of the main aims of the bottom-up type of planning activities was the codification of VGT (Vermeerbergen & Herreweghe 2004). In the Netherlands, a top-down model of sign language planning was adopted upon the initiative of the Dutch government. The government established the standardisation of Sign Language of the Netherlands (NGT) as a requisite for its official recognition, which then affected the use of the language in schools and interpreter training (Schermer 2004). Finally, in China, individual sign language users were involved in the creation of a unified sign language dictionary (Yang 2008), a project that was conducted by the Deaf Sign Language Reform Committee. Hence, this is a case of top-down language planning. Although the vocabulary of the dictionary is used in official contexts (for example, by interpreters of television news, and officers in disability service agencies), the expectations about the use of the language by the signing population have not been met which calls for a precise analysis of the causes that rendered this process unsuccessful (in contrast to the relatively successful implementation of standard Chinese).

Despite the specific or more local variables tied to individual social contexts, studies on sign language planning in diverse countries coincide in their conclusion that both bottom-up and top-down activities are necessary for the maintenance of sign bilingualism and its recognition on a par with the bilingualism of other linguistic groups (Morales-López 2008; Gras 2008; Krausneker 2008; Yang 2008). According to Gras (2006: 200; 2008) sign language planning should work toward the community's stability –in danger because of mainstream education- and the deaf community's access to information and autonomy ("the users' literacy"). Following a holistic approach, sign language planning would be characterised by co-ordinated action and involvement of all actors (Gras 2008; Morales-López 2008). Where this is not the case, measures might be taken that represent political "concessions" to the pressure groups (deaf associations, educational professionals, parents of deaf children), often made with little understanding of the requisites and effects of the steps taken.

Furthermore, the broader social context needs to be taken into consideration. Plaza-Pust and Morales-López (2008: 341, cf. Morales-López 2008) envisage a model that takes into consideration the realistic understanding of linguistic rights elaborated in the domain of ethnographic sociolinguistics. An analysis of sign language planning measures along these lines has to take into account the characteristics of the sociopolitical context and what is considered to represent the true power of the oralist tradition, namely, the political forces opposed to the public inclusion of sign language. As they remark (Plaza-Pust & Morales-

López 2008: 341), "both the proposals and the expectations have to be progressive and in agreement with the socio-political reality."

1.3 Sign bilingualism and deaf education

Language policies and attitudes toward multilingualism, as we learned in the preceding sections, differ markedly. This variation, in turn, is ultimately reflected in the advantages or disadvantages attributed to the development and use of two languages at the individual and societal levels, depending on the status of the languages and their users.

Because the educational area is the domain of language policy *par excellence* the question of whether and how bilingualism is promoted in education is intimately tied to the values agreed upon in a given society. If one of the main aims of school curricula is to provide opportunities for all pupils to learn and to achieve, the question that arises with respect to the education of bilingual learners is whether and how educational institutions respond to their strengths and needs, including those that pertain to their linguistic skills.

Earlier in this work (section 1.2.1.2), however, we indicated that schools are "ideal" sites for the perpetuation of the monolingual state ideology that is traditionally regarded as a guarantor of social cohesion. We advance therefore the tension that arises between the values of equality of opportunity and equality of outcomes in a given society, on the one hand, and efforts aiming at enculturation of linguistic minorities into the majority language society, on the other hand.

As for bilingual signers, whose bilingualism has been largely ignored, if not suppressed, policies recognising deaf individuals' human and linguistic capital reflect a change not only in the perception of deafness but also of sign language. We have learned before that the legal recognition of sign language is one of the major topics on the agenda of deaf associations (and related interest groups) together with the demand for its inclusion in deaf education. In the next sections, we will discuss the main aims and variables of sign bilingual education (see Plaza-Pust 2016). For this purpose, we will provide a brief sketch of the main variables of bilingual education that shall serve as a framework for an assessment of the dimensions of variation of sign bilingual approaches to deaf education.

1.3.1 Aims and types of bilingual education

On a general level, research into bilingual education reveals that the notion of *bilingual* is used as a cover term for various types of education (Romaine 1995).

One fundamental issue that allows for a broad categorisation of bilingual education options is whether full bilingualism is pursued as a goal. Two types of bilingual education are commonly distinguished in this respect, namely *transitional* vs. *maintenance* bilingual education (for a detailed discussion see Baker 2001: 192). While transitional bilingual education aims at the social and cultural assimilation of the minority child into the language majority, maintenance bilingual education aims at fostering full bilingualism. Within each of these two broad categories there are numerous variants (Baker 2001: 195f.) that can be seen on a bilingual education continuum with *submersion education* allocated at its monolingual end and with maintenance bilingual education at the other extreme of the spetrum (cf. Figure 1.1) (cf. Plaza-Pust 2016 for an extended discussion).

monolingual education	<-->	bilingual education
	submersion education	transitional bilingual education	maintenance bilingual education
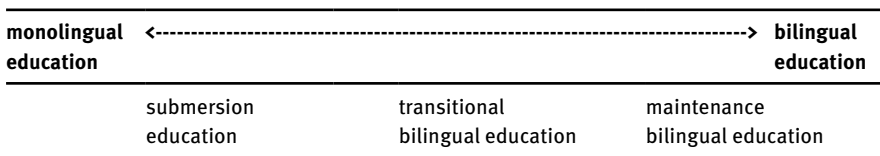
Figure 1.1: Bilingual education continuum.

Submersion education. Submersion education is not a type of bilingual education, although bilingual students are present in the classroom. Language minority students are not instructed in their language, but in the majority language, placed in a classroom with majority language speakers. Despite persistent criticism of submersion education related to the risk of low academic achievement levels resulting from learning through an undeveloped language, and the challenges faced by teachers confronted with a linguistically heterogeneous classroom, this type of mainstreaming continues to be the most common for immigrant children worldwide (Romaine 1995: 245).

  Transitional bilingual education. In transitional bilingual education programmes language minority students are taught through their home language until they attain sufficient proficiency in the majority language to cope in mainstream education (Baker 2001: 198). It has been remarked that this educational option represents a compensatory model that aims at remedying a language deficit which implies a *language-as-a-problem* orientation, reflected also in categorisations such as "limited English speaking" used in the USA (Hornberger 2006: 229).

  Maintenance bilingual education. Maintenance types of bilingual education envisage competence in the two languages as the intended outcome. The additional distinction of immersion heritage and dual language bilingual education relates to the status of the languages involved. Full competence in the native,

ethnic or heritage language (e.g. Navajo or Spanish in the USA, the Aboriginal languages in Australia) is promoted in the former. In dual language bilingual education (also *two way immersion*) minority and majority language students, ideally in an equal number, are taught in the same classroom with both languages being used as a medium of instruction, with the aim of fostering full bilingualism, as well as communication between the groups and cultural awareness. The positive results of bilingual education obtained in this type of acquisition context, is commonly related to the prestige of the languages involved, the qualifications and commitment of the teachers, the parents' involvement in this type of education, the appreciation of the children's home language at school, and the relative homogeneity of the students' experience in the languages (see Baker 2001: 204f. and 358f. for detailed discussions).

1.3.1.1 Bilingual education programmes: Variables

The preceding typology reveals that bilingual education varies along different components, namely, (a) status of the languages (minority vs. majority language), (b) language competence(s) envisaged (full bilingualism or proficiency in the majority language), (c) placement (segregation vs. mainstreaming), (d) students enrolled (with a minority or a majority language background or both), and (e) allocation of the languages in the curriculum (cf. Baker 2007; see Plaza-Pust 2016 for an extended discussion).

Status of the languages. The choice of the languages used in the teaching of the curriculum reflects the policies adopted toward the respective languages and their speakers. Maintenance types of bilingual education most commonly involve languages that are recognised as co-official languages or are attributed prestige value. In general, national ethnic minorities commonly have more rights than immigrant groups (Romaine 1995: 246).

Language competence(s) envisaged. We mentioned previously that bilingual education options vary with respect to whether they pursue full bilingualism as a goal. One crucial issue regarding the students' languages competences in bilingual education pertains to the distinction between the teaching of a language and the use of a language for the teaching of content matter. Another dimension of variation pertains to the promotion of the students' metalinguistic awareness about their own bilinguality, and the specific linguistic, pragmatic and sociolinguistic characteristics of their languages. In some cases, students are expected to learn content through a language they do not yet master, which bears a risk of underachievement. This holds equally of those students who grow up in a literacy-distant background, since a lack of alignment between the language competences attained at home and the *academic language skills* expected in school is likely to occur.

Placement. Choice of educational placement or institutional framework is a dimension of variation that has been widely debated. Separation of students in residential schools or in separate day schools has occurred for diverse objectives, so has been the mainstreaming of children with different linguistic backgrounds in regular schools. Between these two options, there are multiple variants of bilingual education. Although separation is often equalled with segregation in the negative sense of the term, it should be noted that strong forms of bilingual education are being fostered in separate schools (the case of the European schools established in several European cities, and the schools fostering the mother tongue of ethnic community members in many countries worldwide). Submersion or transitional bilingual programmes offered at mainstream schools may involve *pull-out classes* for the teaching of the majority language, which may go along with a stigmatisation of the children for their absence "as 'remedial', 'disabled' or 'limited in English'" (Baker 2001: 197). Bilingual or immersion facilities available in a particular educational placement, such as the qualification of the school personnel and commitment to bilingualism, empirically tested teaching material, and a supportive school philosophy have been found to play an important part in the success of bilingual immersion programmes (Gogolin 2007).

Students' profiles. Variation in bilingual education programmes also pertains to the language background of the children that are taught together in a classroom, and to the relation of the home languages and the languages of instruction used in school. Students may have a monolingual or bilingual home, and the home language(s) may or may not be used as languages of instruction in the schools. It is interesting to note that while there is an awareness of the increasing heterogeneity of the student population with an immigrant background (or language background other than the official national language), the question of how to cater for this heterogeneity within a bilingual model of education is seldom addressed in a way that would deliver a solution to this challenge.

Curriculum languages. Types of bilingual education are commonly distinguished in relation to (a) how much content matter is taught through the respective languages, and which subject areas are taught through which language, and (b) whether and how heritage or mother tongue development is promoted across the curriculum. Transitional bilingual education uses the children's home language only temporarily, with no content teaching in that language after that time. Programmes also vary with respect to whether or not they include a *first language programme* dedicated to the teaching of the language and the fostering of the language in the teaching of content matter. Another crucial matter pertains to the distribution of the languages in the teaching of the different subjects, which often reflects a differential status of the languages used (see Plaza-Pust 2016 for a discussion).

1.3.1.2 Bilingual education and academic achievements

The spectrum of bilingual options portrayed reveals that different, often conflicting, objectives are pursued in bilingual education, whereby the linguistic aim (promotion of bilingualism) is often superseded by educational objectives (academic achievements) and socio-political expectations (full competence in the majority language, linguistic homogeneity).

Because language is so intimately intertwined with knowledge attainment and general development, expectations on educational outcomes are often confounded in evaluations of bilingual education. As Baker (2001: 231) succinctly remarks "bilingual education, whatever type or model, is no guarantee of effective schooling." Put differently, there is more to education than the choice of language only. Today, there is a consensus that bilingualism *per se* is not a problem. Quite to the contrary, the available research indicates that early bilingual education " … does not impose excessive demands, neither on children with, nor on children without a migratory background. This holds true regardless of whether the two languages are being acquired simultaneously or successively" (Siebert-Ott 2001: 201, our transl.) This observation is in line with the findings obtained in the area of developmental linguistics about bilingual language acquisition (cf. chapter 2). At the same time, it must be noted that because of the role of language in the teaching/learning of content matter we need to look more closely at *how* it is used in the school context and whether or not students' metalinguistic awareness is promoted so that they become competent users of the language for academic purposes.

The importance of the development of academic language for academic success cannot be overemphasised in this context, for it is through this specific type of communication that students learn to plan and realise investigations, identify categories, express their assumptions and conclusions, etc. (Siebert-Ott 2001: 171). The relevance of *conceptual literacy* becomes apparent in the course of primary education. Language problems of students with a migration background have been found to become more pronounced in the transition from *conceptual oracy* to *conceptual literacy* (in Germany, for example, usually around the 3rd grade). This transition towards conceptual literacy is reflected in a change toward the use of the written language register by the teacher and in school materials. For all those students with or without a migration background who have not been raised in literacy oriented families the lack of alignment between their spoken everyday language skills and the academic language used at school might negatively affect their academic achievements (Gogolin 2007: 29). Bilingualism, it seems, makes such a lack of alignment more apparent. However, that measures need to be taken so that every student becomes a fully competent user of the lan-

guage is a requirement that holds irrespective of the number of languages used by the students in their everyday lives.

1.3.2 Sign bilingual education

The notion of sign bilingual education emerges in socio-political, educational and linguistic discourses as of the 1980s as a notion to refer to an educational philosophy that differed radically from the available approaches in that it included the use of sign language as the or one of the language(s) of instruction in a bilingual model of deaf education (cf. Johnson et al. 1989; Knight & Swanwick 2002; Singleton et al. 1998). Before we turn to the developments leading to the conception and implementation of bilingual programmes in the late 20th century, it is necessary to briefly sketch the changing status attributed to sign and sign language over time.

Early use of signs and sign language. It is important to note in this context that signs and sign language have been used in the education of deaf students well before the implementation of the first *bilingual* education programmes in the late 20th century. Early records of deaf education reveal that manual means of communication were used in the teaching of deaf students. However, sign language was not recognised as a *language* or its users as *bilinguals*. As we elaborate in Plaza-Pust (2016), the history of deaf education is "not only marked by developments specific to the teaching/learning situation of deaf children (…) but also by changes in the society at large." We may think of the increasing urbanisation in many Western countries, or the provision of universal primary education in the second half of the 19th century, reflecting important changes in societies' structures and values.

Changes in the history of deaf education. From the earliest records of deaf education in the 16th century to the late 19th century, views of deafness and education have changed dramatically. In a nutshell, major changes in the education of deaf students pertain to (a) the people or institutions in charge, (b) the number of children served, (c) the language(s) of instruction, (d) the educational setting, and (e) the methods used.

If deaf education was roughly limited to the teaching of individual deaf students from the aristocracy by individual private tutors around the 16th century, it reached larger groups of students taught in deaf schools in the late 19th century. The first known private tutors dedicated to the teaching of deaf students in the 16th century focused on the teaching/learning of the written language. Manual alphabets were used in the teaching of the spelling of words and in the communication between deaf and hearing individuals (possibly including also the use of signs). Progressively, the teaching of deaf students would be oriented towards the

attainment of the spoken language, with an increasing attention to speechreading and articulation. The focus on the external control of speech would be superseded later by professionals emphasising their students' inner sensation of the speech motor activity. A major change of orientation pertains to role attributed to listening skills. Their promotion in the teaching of students with hearing loss is marked by advances in the development of hearing aid technology in the late 19th century and early 20th century and a focus on children's residual hearing. What we can glean from the developments sketched is that the education of deaf students is marked by changes in the understanding of deafness, language and speech processing throughout the last five centuries: from the recognition of deaf students' ability to learn and use the written language for communicative purposes to the realisation that residual hearing could be used in the teaching/learning of the spoken language, the evolution of professionals' understanding of deafness has been reflected in the elaboration of a variety of methods aiming at remedying the effects of deafness.

The role attributed to signs or sign language also changes in the course of these five centuries from the use of signing as a supportive means of communication between deaf and hearing individuals, and the later recognition of sign language as the natural language of deaf individuals, to its rejection in the education of deaf students by advocates of oral education exclusively oriented toward the attainment of the spoken language.

Following de l'Epée's practice in the school of the deaf he had founded in the 18th century in Paris, several educational institutions adopted the method of using a signed system to teach deaf students the written language. In the late 19th century, however, the spread of this method was brought to a halt owing to the increasing influence of the advocates of a monolingual oralist approach to deaf education. The much cited major event that triggered the change of direction that has prevailed until today was the congress on deaf education held in Milan in 1880. The resolution adopted in this congress involved a rejection of sign language and a declaration of superiority of the oral method vis-à-vis the manual method. However, as signs and sign language continued to be used outside the classroom, schools for the deaf would continue to represent important sites of language contact and the development of sign bilingualism, even though the notion of this type of bilingualism was not conceived of at the time. By contrast, the developments occurring in classrooms with deaf students were marked by an increasing rejection of the use of *visual means* in the teaching/learning of the spoken language as audition and the promotion of listening skills became the focus of attention. Hence, oralism would predominate the field of deaf education until the late 20th century.

Sign bilingual education on the agenda. The inclusion of *sign language* in a bilingual approach to deaf education in the late 20th century is commonly regarded as the result of a convergence of developments in the socio-political, educational and academic areas. From a historical perspective, however, it is important to note that discourses in these areas have only progressively converged (cf. Plaza-Pust 2016 for an extended discussion).

In educational discourse, sign bilingual education emerged as an alternative to monolingual approaches to deaf education, including the Total Communication approach advocating the use of simultaneous spoken/signed communication, an approach that was deemed inappropriate as a basis for *natural* language development. Changes concerning communication and travel during the latter half of the 20th century increased opportunities to exchange and disseminate knowledge, contributing also to a rapid spread of the ideas associated with the Deaf movement and the demand of bilingual education (Bagga-Gupta 2004: 48) (cf. section 1.2.2.4). The developments depicted also run on a par with a change of perspective on disability that derived in a social model of disability, whereby disability is understood in relation to the social context and the environment developed by non-disabled people (Knight & Swanwick 2002: 29; cf. also Domínguez-Gutiérrez & Alonso-Baxeiras 2004: 16). Humanitarian principles leading to the development of this model began circulating in the 1960s, at the time of the Civil Rights movement, when many of society's stereotypes were questioned (Winzer 1993: 376). Finally, one crucial factor in the implementation of bilingual education programmes pertains to support and engagement of deaf children's parents. Indeed, parents' initiatives have played a key role at the socio-political level. Their dissatisfaction with the available educational options and informed decision to demand the implementation of the alternative sign bilingual option provided the impetus for the set up of the first experimental classes in Sweden and Denmark (Mahshie 1995: xxxiii).

As pointed out in Plaza-Pust (2016), the comparison of the developments leading to the implementation of sign bilingual education programmes in several countries toward the end of the 20th century makes apparent how local circumstances interact with global issues. In Germany, for example, the first bilingual classes were implemented in the school year 1993/4 at the Hamburg school for the deaf (Günther 1999: 11). Several factors contributed to this development, among them the results of the first early intervention experimentation including the use of signs (though not sign language) and related demand for the continuity of the experience (upon the parents' initiative) and progress in research on DGS. The potential influence of experiences in other countries, notably, Scandinavian countries, is qualified by Günther (1999: 11) as information on these experiences became available only in the course of the bilingual experience.

Sign bilingual education as an option. From a linguistic perspective the spectrum of intervention types targeting deaf students that is available today in various countries throughout the world can be seen on a continuum that ranges from a strictly monolingual (oralist) to a (sign) bilingual model of deaf education, with intermediate options characterised by the use of signs as a supportive means of communication or the teaching of sign language as a second language (Plaza-Pust 2004) (cf. Figure 1.2, in which the sign language input continuum is allocated on the bilingual education continuum discussed in section 1.3.1.)

monolingualism <--> bilingualism		
submersion education	transitional bilingual education	maintenance bilingual education
no sign language	signs, signed systems	sign language as a supportive means of communication	sign language as a language of instruction

Figure 1.2: Bilingual education and sign language input continua in deaf education.

Roughly, three main approaches can be distinguished in the spectrum of intervention types available (cf. Plaza-Pust 2016 for a detailed discussion):

(a) Oralist approach. At the monolingual end of the continuum, deaf children are immersed in the majority language (the oral language). Deaf students in this type of education are confronted with the task of learning a language that they also have to use for the learning of content matter. Crucially, this language is not fully accessible to them, and, with the exception of deaf children born to parents native in sign language, they are learning it without a another fully developed L1. The remedy of deafness and the exclusive promotion of the oral language continue to lie at the heart of the educational philosophy termed *oralism*. Beyond the traditional view of *rehabilitation* oralism is guided by what is commonly dubbed as the *philosophy of normalisation*. From this perspective, which implies a deficit model of deafness, rehabilitation and intervention measures are necessary to remedy the effects of hearing loss, particularly in the areas disturbed, namely, audition/speech, communication and socialisation (Große 2001: 71).

(b) Total communication approach. The core tenet of this approach, as the notion suggests, is that all means of communication should be used in the interaction with the deaf child; in other words, aural, oral and manual modes of communication are combined in the teaching of and in the communication with deaf children to promote their appropriate social, cultural and emotional development. Further, it is assumed that the simultaneous use of signs and speech will make it easier for the child to learn the oral language, and by extension to

attain better literacy skills. Manual codes developed for the representation of the oral language (*signed systems*) typically include elements of the surrounding sign language and additional signs, created for the representation of the grammatical elements of the spoken language, in particular, function words and bound morphology. It is important to note in this context that, although it represents a multisensory approach to deaf education, the total communication framework is still determined by the primacy of the oral language.

(c) Sign bilingual education. Sign bilingual/bicultural education is used as a notion to refer to a philosophy of education defined primarily by the use of sign language as the or one of the language(s) of instruction in the education of deaf students (Knight & Swanwick 2002). Because the language of the surrounding community is the spoken language and it is the language of literacy, access and provision of sign language to deaf children is bound to a bilingual concept of education. The bilingual model also acknowledges the bicultural dimension of a bilingual promotion through the inclusion of deaf teachers as role models and Deaf culture as a subject on the curriculum.

1.3.2.1 Variation in sign bilingual education: a critical appraisal

As outlined previously, the primary promotion of sign language is a characteristic of sign bilingual education conceptions at the programmatic level. Yet, how is this demand put into *practice*? What are the main components of this type of bilingual education? Are sign bilingual education programmes established in the last decades based on a common didactic conception? In this section, we will seek to clarify these issues based on the findings obtained in our study on sign bilingual education which we elaborate in detail in Plaza-Pust (2016). In doing so, we will adopt a cross-disciplinary view of bilingualism, in which educational, psycholinguistic and sociolinguistic aspects are taken into consideration. We will focus on the key variables of how bilingual education is put into practice, and critically appraise those factors that might affect the development of sign bilingualism in deaf students.

In a nutshell, what can be gleaned from the study undertaken is that sign bilingual education programmes vary along the components identified previously for bilingual education in general (section 1.3.1.1) pertaining to the status of the languages and their allocation on the curriculum as well as the language competences envisaged, the choice of the educational placement, and the students' language background.

Sign language: status and timing of exposure. Because the majority of deaf children are born to non-signing hearing parents, the early exposure to sign language is a critical issue when it comes to how bilingual education is being put

into practice, whereby information and involvement of the parents is an important factor. The promotion of sign language as the first language of deaf children is one of the main tenets of sign bilingual education at a *programmatic level*. That sign language be promoted as early as possible as the primary language is a requirement that is based on insights obtained in the area of developmental linguistics concerning the relevance of natural language input during the sensitive period for language acquisition (cf. Bavelier et al. 2003; Fischer 1998; Grosjean 2008; Leuninger 2000). Because deaf learners have limited or no access to the spoken language, sign language is regarded as the *natural* language of deaf children on accessibility grounds. Further, the social and communicative (interactive) aspect is also taken into account by some scholars highlighting the status of sign language as the social/peer language of deaf students.

These considerations contrast with the heterogeneity in age of exposure at the level of practice. Unfortunately, the requirement of an early exposure to sign language is often not met and deaf children reach the bilingual programme with little or no sign language competence at all. To date, little is known about how and when sign language is acquired by the majority of deaf children with non-signing hearing parents (see Bagga-Gupta 2004: 137; Singleton et al. 1998: 19). What can be gleaned from the studies available is that the acquisition scenario is affected by several factors outside the home, such as the predominantly oralist orientation of medical advice upon diagnosis and of early intervention programmes, and the unequal regional distribution of bilingual programmes. Not only are bilingual programmes often established as pilot programmes with a limited scope (in terms of the time available and the number of students catered for). What is more, the use of sign language continues to be regarded as a last resort option for those students who fail in oralist programmes. Clearly, the "repairing" myth of deaf education does not fit well with what we know about language acquisition and the relevance of natural language input during the sensitive period for language acquisition as a requisite for the successful unfolding of the language faculty. A specific situation arises in interpreted education, where students attend regular classes in a mainstream school, supported by sign language interpreting. In this type of education, many students are required to learn the language whilst using the language to learn, receiving language input from adult models who are mostly not native users of the language (Cokely 2005).

To attribute sign language the status of a primary or preferred language irrespective of the language used at home also raises the question about the domains of deaf children's sign language use. Although parents are encouraged to learn the language, and some programmes include the provision of sign language courses, the focus of research is generally limited to the institutional framework. Hence, the knowledge that can be gleaned from the available research offers only

a limited insight into the multilingual lives of deaf students, their language acquisition and communication practices at home and in their leisure time.

In more flexible conceptions of sign bilingualism, the status attributed to sign language is a matter of choice, whereby the definition of the "preferred language" is related to the individual needs and abilities of the children (Knight & Swanwick 2002: 30). This might involve a change of the bilingual policy adopted initially depending on the development of the child and also the demands of the curriculum (Knight & Swanwick 2002: 30). Crucially, however, because the choice of the preferred language cannot be determined *a priori* it is important to ensure deaf children's early access to diverse linguistic experiences irrespective of their degree of deafness (Knight & Swanwick 2002: 55).

Oral language: status and timing of spoken language and written language promotion. The oral language is commonly attributed the status of a *second language* (L2) in sign bilingual education programmes (Bagga-Gupta 2004; Günther 1999; Günther et al. 2004; Krausneker 2008; Vercaingne-Ménard et al. 2005; Yang 2008). Variation in oral language promotion pertaining to the time of exposure (simultaneous to sign language exposure or at a later age) or the emphasis on written language vs. the spoken language reflect (a) different conceptions of the relationship between the spoken and the written language, (b) different theories about the acquisition of literacy, and (c) different views about the promotion of the spoken language as an educational goal.

In many programmes, the status attributed to the oral language depends on the individual characteristics and needs of the students. Based on a holistic view of language development, the promotion of written *and* spoken language skills is assumed to constitute a requisite to fulfil the core education goal of preparing students for their adult life in the hearing and the deaf worlds (Günther 1999: 23, Krausmann 2004b: 17). Activities aimed at enhancing the children's awareness of the meaning of the written language are a fundamental component of some preschool programmes offered in special schools or in bilingual classes at regular educational settings (Ardito et al. 2008). The bilingual conception of the Berlin programme, for example, emphasises the primary promotion of the written language based on (a) the full accessibility of print and (b) the relative autonomy of the written language, which implies that the acoustic perception of the language is not regarded as a requirement for its acquisition (Krausmann 2004b: 14–15). In other words, the assumption is that written language can be acquired independently from the spoken language (see section 2.4.2 for a discussion of this hypothesis). The relevance of the written language is not only emphasised with respect to deaf children's literary and academic development, but also as a medium of communication with the hearing society, and hence, as an important requisite for integration and participation in society (Krausmann 2004b: 17).

Choice of the language(s) of instruction. One crucial variable in bilingual education pertains to the choice of the main language(s) of instruction. In some bilingual education programmes with deaf students all curriculum subjects are taught in sign language. This is the case of the bilingual education programmes established in Sweden or one of the bilingual programmes available in France (in Toulouse, IRIS, cf. Leroy 2005: 73). In some other programmes, the languages are not strictly allocated by subject but are used alternatively in classes taught by deaf and hearing teachers in collaboration (*team-teaching*). This was the case in the Québec programme, particularly in the language lessons (Québec Sign Language, LSQ and French) (Vercaingne-Ménard et al. 2005: 4, fn 1), and in the Hamburg and Berlin programmes (consider the notion of a *continuous bilinguality* in the classroom elaborated by Günther 1999). Particularly during the initial phases of the bilingual development it is assumed that the person-related use of the languages (one-person-one language principle) not only serves as an additional cue to differentiate the two codes (Vercaingne-Ménard et al. 2005), but also as a means to enhance the students' awareness about an appropriate language choice (cf. Krausmann 2004b: 13).

However, despite the benefits attributed to team-teaching, this method is seldom used in the teaching of the whole syllabus. In the Hamburg programme, for example, team-teaching covered 8 hours a week, which amounts to one third of the total teaching load (cf. Günther 1999a: 12, 22); in the Berlin programme it covered 15 hours a week (cf. Krausmann 2004b: 25). The distribution of the languages at the Berlin programme, as described in one of the school reports, is summarised in Table 1.3 (Krausmann 2004b: 25).

Table 1.3: Distribution of languages on the curriculum at the Berlin bilingual programme.

Hours	Subjects	Languages	Teachers
15	bilingual language and content teaching	DGS, German with LBG	team teaching hours (class teacher and deaf teacher)
3	sports, swimming	DGS	deaf teachers
9	mathematics, religion, rhythmic/music, arts	German with LBG	hearing teachers

Unfortunately, we know little about how the language(s) are used in the institutional setting and whether there is a differential use of the language depending on the different subjects and activities in the school context. Put bluntly, it is important to ensure that where sign language is used as a language of instruction it is used as an academic language, so that the students can use it for knowledge

attainment and to demonstrate the knowledge attained; clearly, the functions attributed to the language in the academic context need to be distinguished from the use of the language as a communication language outside the classroom.

The controversial status of signed systems. Today, the use of simultaneous communication in the field of deaf education continues to be widespread, although critiques pointing to the shortcomings of these hybrid communication means have been abundant. The main concerns expressed pertain to (a) the status of signed systems vis-à-vis natural languages, and (b) the impact of signed systems on deaf learners' language acquisition.

From the perspective of developmental linguistics the benefit of the use of signed systems is questioned on fundamental grounds given the relevance of natural language input for the acquisition of language. A widespread misconception, particularly at the level of practice (that is, in the education of deaf children) is that signed systems would represent the language they *duplicate* in another modality of expression. Linguistic analysis clearly shows that they do not. Furthermore, it must be noted that the creation of signed systems represents an intervention into the *architectural* principles of sign languages that underlie their efficacy as language systems, not only in language use, but also in the development of language. For example, the use of sequential morphemes in signed English systems (MCE) to represent inflected spoken language verbs violates the morphological and phonological constraints that hold of sign languages (to express "watching", for instance, the signs WATCH and the sign –ING need to be produced sequentially). Children confronted with these forms have been found to fail to correctly identify the signed "affixes" as part of the verb roots, interpreting them rather as unbound morphemes (Supalla & Cripps 2008: 184). As Supalla and Cripps (2008: 185) put it, "an adoption of the spoken language structure (for the signed medium) will only lead to the linguistic system losing its learnability variable." Observations like these make apparent that an appropriate understanding of bimodal productions requires not only knowledge of the signs used, but also knowledge of the grammar simultaneous productions are meant to reflect (Johnson et al. 1989: 19). Consequently, the use of signed systems leads to a paradoxical situation as it requires knowledge of the language whose acquisition it is supposed to enhance. Nevertheless, signed systems continue to be used in bilingual settings, a practice that reflects unresolved issues pertaining to communication between hearing adults and deaf children, and the means that should be used in the teaching of the oral language.

Educational placements and the concept of inclusion. One important variable in deaf education concerns the type of institutional framework in which bilingual education is offered. Several options are available within and without the bounds of special schools, ranging from special schools with a sign bilingual

education policy to the provision of interpreted education on an individual basis at a regular school, with intermediate options such as the provision of bilingual classes at schools for the deaf or units for deaf students in the mainstream.

Variation in educational placements catering for deaf students reflects the change in the conception of disability from a linear, medical, deficit-oriented understanding of disability toward a systemic approach that also considers the social aspects of disability (WHO 2001). In the same vein, integration is regarded as preferable to segregation. Hence the general trend toward mainstreaming, and the closing of many special schools in several countries worldwide. However, in the European context, Germany stands out, together with Belgium, the Netherlands and Switzerland by pursuing a two track approach in the form of two separate education systems, whereby segregated education for students with special education needs continues to be the rule (European Agency for Special Needs Education 2003). Today, although proportions of deaf students attending regular schools in Germany have raised, integration continues to be the exception for deaf children (Leonhardt 2009: 182).

Special schools. Special schools defining themselves as clearly bilingual aim at providing a comprehensive framework for the bilingual/bicultural education of deaf students. The bilingual policy of the school is reflected in the commitment of the staff (including deaf and hearing teachers) to the bilingual idea, the promotion of deaf children's deaf identity and socialisation. In many other cases, however, bilingual programmes at special schools for the deaf represent one educational option among others, offered at the premises of one and the same school (the case of the Hamburg school for the deaf). Other schools opt for tailoring their offer to the individual needs and abilities of the students based on an "open bilingual" concept (the case of the Berlin school for the deaf, cf. Möbius 2011: 166).

Mainstreaming. Turning to bilingual education in the mainstream, we are confronted with several options, including co-enrolment classes with deaf and hearing students, units of deaf students and interpreted education in regular classrooms. In the first and the third type, all children are taught in the same classroom. The unit model caters for deaf children in separate classes at regular schools, where they are taught by specialist staff (Knight & Swanwick 1999: 125). For some curricular areas deaf children might be integrated into mainstream classes.

Particularly in the USA a widespread alternative to bilingual education in special schools is the provision of sign language interpreters in regular classrooms, following the general trend toward educating deaf children in regular schools. Interpreted education is also provided in Spain, particularly in secondary education. As for the development of sign bilingualism in the mainstream,

several studies remark on remaining shortcomings regarding (a) the students' sign language skills, (b) the qualifications of teachers and interpreters involved, (c) the teaching-learning situation, and (d) the availability of role models. A particularly critical aspect of interpreted education concerns deaf student's acquisition of sign language. Mastery of the language needs to be ensured, not only identified as her L1, for "this language is the means by which she is going to access education" (Monikowski 2004: 50). Unfortunately, it is often taken for granted that students' attending this type of education either know the language or acquire it through interpretation.

Co-enrolment classes, such as the one established at a regular school in Vienna (Krausneker 2008), where hearing and deaf children were taught by a deaf and a hearing teacher, have been found to work well, but often remain temporary education experiences. The reasons for their temporal limitation are diverse, including the small number of deaf children native in sign language, or the limited time of the political mandate.

Students' profiles. Sign bilingual education programmes cater for a heterogeneous student population. The linguistic profiles of the students enrolled vary with respect to (a) hearing status, (b) linguistic background, (c) use of hearing aid technology, and (d) additional learning problems.

As was explained previously, deaf and hearing children are taught in the same classroom in some types of bilingual education (co-enrolment, interpreted education). Variation in students' profiles is often overlooked in these educational settings, even though adaptations to meet the linguistic abilities and learning needs of deaf children would also be necessary (Marschark et al. 2005). Demographic changes relating to migration are also reflected in the deaf student population (Andrews & Covell 2006). It is clear that the concept of bilingual education, if taken literally (that is, involving two languages only) is not doing justice to the diversity that characterises deaf student populations in many countries, including deaf students with a migration background some of whom reach deaf schools without any language knowledge because in their country of origin deaf education was not available.

The increasing number of deaf children with cochlear implants adds a new dimension to the heterogeneity of linguistic profiles in deaf individuals. While most of the children with a CI are educated in the mainstream, there are also many attending bilingual programmes, either as a consequence of their low academic achievements in the mainstream or because the provision of a CI occurred at a later age. The generalised rejection of sign language by medical and educational professionals involved in the education of these children contrasts with the view adopted by advocates of the bilingual option also for cochlear implanted children who argue in favour of the use of sign language

as a *safety net* (Bavelier et al. 2003). Such a safety net is regarded as necessary in view of the circumstance that a cochlear implant is not a remedy for deafness, and of remaining uncertainties about its long-term use (Svartholm 2007). Finally, many deaf students that are catered for in bilingual education programmes have additional learning problems that need to be tackled. Unfortunately, the impact of a sign bilingual promotion in this population remains largely unexplored.

1.3.2.2 Sign bilingualism: challenges and perspectives along the research-policy-practice axis

Sign bilingualism, as outlined at the beginning of this work, is determined by a complex interaction of internal and external variables. Education, as we learned in this chapter, plays a key role in the path toward sign bilingualism because of the specific sign language transmission patterns and the unequal accessibility of the two languages in the deaf child. Throughout the preceding sections we have sketched the developments leading to the current diversity of approaches in the education of deaf students. We have sought to trace the status of sign language in deaf education with a view to obtaining a clearer picture of whether and how deaf students' bilingualism is promoted in the educational domain.

Sign bilingual education, as we have learned throughout the preceding sections does not represent a monolithic phenomenon. Variation in didactic conceptions and educational placements make apparent that in sign bilingual education, much like in other types of bilingual education, different, and often conflicting, objectives need to be reconciled. Clearly, language choice in education is not only a decision about what language competences are envisaged. Language choice is also bound to more general objectives pertaining to the academic and social development of the students.

The goal oriented argumentation in favour of the inclusion of sign language in deaf education whereby sign language is attributed a promoting function for the cognitive, linguistic, and academic development of deaf children has proven to be fruitful to the extent that many bilingual programmes have been implemented in the last years in various countries around the world, including the bilingual programmes established in Hamburg and in Berlin (Günther & Hennies 2011). However, several decades after the implementation of the first bilingual education programmes, the bilingual promotion of deaf students continues to represent the exception rather than the norm in deaf education. What are the factors that have worked against a wider distribution of this type of education and its sustainable implementation as an alternative to monolingual oralist approaches? As we argue in Plaza-Pust (2016), several circumstances make sign bilingual edu-

cation vulnerable as an option vis-à-vis oralist approaches, including a lack of coordinated action in the conception and implementation of sign bilingual education, and a lack of agreement regarding expected outcomes (that is, "benefits") of sign bilingual education.

Lack of coordinated action. Many of the remaining shortcomings of sign bilingual education working against a *sustainable* promotion of sign bilingualism result from a bottom-up model of language planning that has been characteristic of the majority of bilingual programmes run in the last decades.[11] Typically, these programmes have been established mainly as a result of bottom-up activities of several interest groups or NGOs, including parents' associations and deaf associations, and also educational professionals. Where bottom-up processes are not followed by top-down measures taken at the institutional level, much effort is required on the side of the professionals involved to secure the continuity of the programme, and to organise the human and financial resources necessary for this purpose.

This situation contrasts with the top-down model of sign language planning that resulted in the institutionalisation of bilingual education of deaf students in Sweden (Ahlgren 1994; Bagga-Gupta 2004; Bergman 1994; Svartholm 1993; Mahshie 1997). However, this model is neither devoid of shortcomings as has been pointed out by those scholars who have remarked not only on the lack of research needed to support the shift to a new educational option but also on the lack of a continued evaluation upon its implementation (cf. Bagga-Gupta 2004 for an extended discussion). The situation is slightly different in the case of pilot bilingual education programmes, such as the ones established in Montréal and Berlin, that have been determined by both bottom-up and top-down processes, the former being decisive for the consideration of a bilingual concept as an option at the political level, the latter modelling the educational requirements these programmes would have to fulfil.

A sustainable promotion of sign bilingualism in deaf education needs to be addressed in the context of a coherent *holistic* type of planning as it was described in section 1.2.3 for sign language planning in general. This would involve all stakeholders (i.e. administration, teachers, parents, deaf associations) with the aim of (a) guaranteeing an alignment of the different measures that need to be taken, and (b) allowing for a more balanced information flow in the research-policy-practice axis that would work toward the eventual consolidation of the bilingual education option and its improvement.

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11 See Krausneker 2008 for Austria, Morales-López 2008 for Spain, Yang 2008 for China, Ardito et al. 2008 for Italy, and Plaza-Pust 2016 for a summary of the developments in Germany.

Challenges at the level of practice. Clearly, the lack of co-ordinated action misses the chance of using effectively the human and financial resources available. Many sign bilingual education programmes are confronted with an increasing complexity of individual and social demands that cannot be solved in the educational institutions alone. The continuity of many bilingual pilot projects is threatened to the extent that what is being done still needs to be defended, financed, and organised.

Because sign bilingual education is not institutionalised in the majority of countries, the bilingual programmes do not only often struggle for survival, as we mentioned previously. Professionals working in these settings also face the task of developing their own teaching conceptions, teaching materials and assessment tools (Komesaroff 2001; Morales-López 2008; Plaza-Pust 2004). There is a generalised lack of a bilingual methodology specifically devised for sign language–oral language bilingualism. In many cases, the teaching personnel involved in bilingual education have no adequate training in bilingualism in general, and sign bilingualism in particular. In sign bilingual education, written language is taught as an L2, but teachers are seldom informed about the theoretical underpinnings of this type of acquisition scenario (Bagga-Gupta & Domfors 2003; Morales-López 2008) and the alternative routes that deaf children may take in their development of writing and reading (see Supalla & Cripps 2008; Padden & Ramsey 1998). Further, contrastive teaching is assigned an important role, but there is a general lack of knowledge about the latest insights in sign language linguistics and the impact of a critical language awareness on the developmental process, an issue that is at the focus in education of other linguistic minority students (Siebert-Ott 2001).

Unfortunately, the circumstances described also work against one of the crucial aims of bilingual education, namely, the early promotion of sign language. Many deaf children only reach bilingual education programs at a later age, often with only rudimentary language skills, because medical advice and early intervention are still predominantly oralist (Günther 2008).

Indeed, the increasing diversification of approaches adopted in deaf education contrasts with the predominance of aural methods in the domain of early intervention (Günther 2014: 18), which bears the risk for bilingual programmes of winding up in a "repairing business", catering for those deaf children that have failed in other models. According to Günther (2014: 18), thus far, a truly *bilingual* promotion commonly begins only at school as early intervention tends to focus on the promotion of one language (either spoken language or sign language).

Another persistent problem concerns parents' lack of access to information about the chances and the shortcomings of the different educational options

available. One issue that is seldom addressed explicitly concerns the concept of otherness that underlies the decision making process when it comes to language choice for the deaf child. Between the two alternative views of deafness sketched previously, parents are trapped in the circularity of relying on specialists (technicians) that, in turn, seem to deprive them from their parental functions (Sabria 2006: 19). Against this backdrop, the relevance of early intervention measures that include the advice of deaf adults upon diagnosis needs to be emphasized. Yet more often than not contact with deaf adults is eluded precisely due to a lack of information.

The latter observation leads us to the more general issue of the little attention sociolinguistic and cultural dimensions of bilingualism in the deaf communities have received in the area of deaf education. Indeed, an aspect that continues to be controversial, and is also of relevance in the discussion about the most appropriate educational placements, concerns the notion of biculturalism in the education of deaf students (Massone 2008; de Klerk 1998; Mugnier 2006a; b). Whilst sign bilingual education is also bicultural for some educational professionals, the idea of deaf culture and related bicultural component of deaf education is rejected by others. In the end, what this discrepancy reveals is that there are diverging views about whether sign bilingualism is the intended outcome (following the type of maintenance bilingual education) or rather regarded as a transitional phenomenon in terms of an "educational tool", which patterns with the variation observed in other types of linguistic minority education (Baker 2001: 204). The latter view, widespread among teaching professionals (cf. Mugnier 2006 for a discussion of the situation in France, Massone 2008 for Argentina), commonly attributes sign language the status of a teaching tool, without acknowledging its cultural component. We are confronted then with a restricted view of bilingualism, reducing the language of choice to a tool to improve academic achievement.

Heterogeneity of linguistic profiles. Based on our discussion of the main variables in deaf education, we can conclude that between the two ideals of a monolingual and a bilingual deaf student, a diversity of linguistic profiles can be encountered in the deaf student population. This variation is reflected in a continuum of profiles illustrated in Table 1.4. Linguistic profiles range from mother tongue acquisition of one (= type E) or both languages (= type A), the acquisition of one of the two languages as a second language (= type B), a partial acquisition of one (= type C) or both languages (= type F) to only a rudimentary acquisition of one (= type D) or both languages (= type G).

Table 1.4. Linguistic profiles (based on Plaza-Pust 2005: 277).

Oral language \ Sign language L1	L1	L2	partial	rudimentary	no competence
L1	A	B	C	D	E
L2	B				
partial	C		F		
rudimentary	D			G	
no competence	E				

With respect to the bilingual development of deaf children in sign language and oral language it is important to always remember that the majority of deaf children are born to parents not native in sign language. This emphasises the relevance of supportive intervention measures for the acquisition of both sign language and oral language. Obvious as it may seem, it is important to note that sign language is not acquired through "some form of manual communication", nor is it attained "by chance". Unfortunately, the social (peer-group) transmission pattern of sign language is often confused with the assumption that deaf children would naturally acquire the language at any age, provided they encounter other deaf peers. Not only do we know today that late sign language learners do exhibit deficits particularly at the morphosyntactic level (Singleton et al. 2004; Mayberry 2007); what is more important is that many deaf children never had the chance to develop a true mother tongue in the first place, which has severe consequences for their acquisition of a second language (including sign language) at a later age because their language faculty did not develop appropriately during the sensitive period for language acquisition.

What we can glean from the preceding observations is that deaf students represent a heterogeneous population, with marked individual differences not only regarding the degree of hearing loss, but also with respect to their educational experiences, their linguistic profiles, and often additional learning needs. For multiple reasons, including the temporary character of some bilingual programmes, or the change in orientation from primary to secondary education, many deaf students are exposed to diverse methods and placed in different types of educational settings in the course of their development. Often they are unprepared for the changes affecting the communication and teaching situation in their new classroom (Gras 2008; Plaza-Pust 2004). Another variable that is generally acknowledged but remains largely unconsidered pertains to the diversity of the students' linguistic profiles related to their migration background. Unfortunately,

the impact of a lack of alignment of the oral languages (and, at times, also sign languages) used at home and in school remains largely unexplored.

Advances in hearing aid technology (especially CI) have opened new perspectives in the promotion of the spoken language and they have changed conceptions of the needs and abilities of deaf children. Unfortunately, technological advances have sharpened the discussion about the choice of the most suitable education option which is often coupled with a confusion of arguments and a derogatory attitude towards sign language, which translates into a lack of support of sign bilingual education. What is often overlooked is that CIs do not remedy deafness, and that many children do not benefit from CIs as would be expected.

As for the increasing number of deaf children with a CI in sign bilingual education, the challenge lies in the definition of sign bilingual conceptions that would take the spectrum of student profiles and their evolution seriously by adopting a flexible conception of what might be the dominant or more advanced language in the course of the deaf child's development. Against the backdrop of the variation observed in spoken language development in CI children, the flexibility of such an approach seems to be more suitable to meet the demands and needs of this population (Günther 2014: 29). It is important to note in this context that the type of flexibility envisaged is not to be confused with a total communication approach (using all means available) or a sequential conception of a choice of methods (in the sense of the repairing business mentioned previously) but rather the provision of a bilingual promotion of the two languages combined with a continuous evaluation to ensure that the needs and abilities in both languages are considered throughout the students' academic life.

Research perspectives. As can be gleaned from the preceding observations, the demands, measures and expectations of the different parties involved in language planning targeting sign languages and sign bilingualism vary substantially. This variation, reflected in the diversity of education options discussed previously, not only raises the question about the educational objectives pursued; it also raises the question about the role of research in the evaluation and assessment of sign bilingual education programmes, on the one hand, and its contribution to our understanding of the development and maintenance of sign bilingualism, on the other hand.

Unfortunately, little room has been given to a critical appraisal of sign bilingual education programmes. Because the discussion in the field of deaf education is still polarised, deficits – where they are acknowledged - are often minimised by those in favour of the bilingual method, while those who oppose bilingual education typically question the educational method as such (and not to the circumstances that might prevent it from being implemented in a better way). Studies conducted with a view to determine whether bilingual education benefits

deaf students have been primarily concerned with the nature of the relation of sign language and literacy skills in the spirit of Cummins' (1979) Interdependence hypothesis. Research concomitant to the bilingual programme in Hamburg marks an exception, as it was focused on the attainment of text production skills in written German.

The theoretical justification for a bilingual approach to the education of linguistic minority students and deaf students bears some similarities which is the reason why the Interdependence hypothesis has been widely used in the field of deaf education. Basically, it is assumed that the promotion of sign language as a base or primary language in the bilingual education of deaf students is instrumental for their literacy attainment and academic achievements. Apart from the attribution of the status of L1 to a language that is seldom the home language, there is another difference between the acquisition scenarios of deaf and hearing children, namely, that sign languages have no written form that would be used in literacy-related activities. Thus, in this acquisition situation, the notion of transfer or interaction of academic language skills needs to be conceived of independently of 'print' which has led to an ongoing controversy about whether or not sign language can facilitate the acquisition of L2 literacy (see Niederberger 2008, Plaza-Pust 2016 for a critical appraisal of the studies undertaken).

On a more general level, beyond the question of whether the Interdependence hypothesis is applicable to the bilingual acquisition scenario of deaf students there is the more fundamental question of whether the hypothesis contributes to the understanding of sign bilingualism in deaf children. Cummins' hypothesis needs to be understood in the context of a controversy about whether compensatory measures for linguistic minority students should involve the promotion of the L1 at all (Paradis, Genesee, & Crago 2011). In this respect, it has the merit of drawing attention to the circumstance that learning content matter while learning the language is to the disadvantage of the learners. Cummins' hypothesis, however, does not account for bilingual language *development,* nor does it account for how multilingual knowledge is organised. Neither does it really explain how academic language skills are actually developed and used in a multilingual teaching/learning context. The identification of the dimensions of language interaction in the organisation of multilingual knowledge requires a distinction of different levels of linguistic analysis that needs to be based on a sound theory of language. Language used for academic purposes does not constitute a monolithic skill but rather involves the choice of particular registers, syntactic structures, and discursive means, all of which are specific to a given language. These language-specific characteristics must all be learned (Gogolin 2009; Paradis et al. 2011; Schleppengrell & O'Hallaron 2011). Hence, it comes as

no surprise that the development of literacy skills represents a protracted development, even in L1 acquisition.

What the preceding observations make apparent is that educational models of bilingualism, such as the one implicit in Cummins' hypothesis, involve a global picture of the linguistic and educational needs of bilingual learners. Positive correlations of sign language and oral language skills have been used to argue that "deaf children benefit from early exposure to a natural sign language for their literacy development" (Niederberger 2008: 45). However, as we have pointed out elsewhere the correlations documented do not provide any direct information about a *causal* relationship between skills attained in the two languages (Plaza-Pust 2014; 2016). In other words, assumptions about a facilitating effect of the knowledge of one language (that is, sign language) on the attainment of another (that is, oral language) remain tentative so long as the nature of the interaction (elements linked, direction of the relation) remains unaccounted for.

The interest in clarifying the question about the impact of bilingualism on bilingual deaf learners' literacy skills is understandable against the backdrop of the ongoing debate in the field about whether or not bilingualism, and by extension bilingual education, is for the benefit of deaf learners. It is important to note, however, that a cross-disciplinary perspective is required to understand the complex interplay of internal and external variables that determines the development of sign bilingualism at the individual and societal levels. Issues that need to be addressed from a developmental linguistics perspective concern deaf children's bilingual *development* of a sign language and an oral language. What are the main milestones in the development of either language? Do bilingual deaf learners use the linguistic resources available in a creative manner, as it has been found to be the case of their hearing peers? What types of language contact phenomena occur in this type of bilingual language acquisition and what do they reveal about the development in both languages? Questions like these concern the dynamics implicit to the organisation of multilingual knowledge. Their clarification, as we shall see in the following chapters, requires theoretically based analyses that will also allow us to discern commonalities and differences between different types of bilingual language acquisition.

Having sketched the environmental conditions that determine the path toward bilingualism in deaf individuals, we turn next to the bilingual acquisition of a sign language and an oral language in deaf learners, the competences they attain, and the mechanisms that underlie their bilingual development.

2 Sign bilingualism: a developmental linguistics perspective

Throughout the last decades, bilingual learners have had numerous opportunities to demonstrate the sophisticated and creative nature of their (learner) knowledge in research dedicated to their bilingual development. Utterances like the ones provided in (1) and (2) produced by the German/English bilingual child Hannah constitute vivid examples of how bilingual deaf children express the awareness about their own bilingualism and their knowledge about the two languages quite early in their development (Tracy & Gawlitzek-Maiwald 2000: 514):

(1) Mutter: *In   the   Kita   they   call   it 'Frühstück', don't   they?*
    (mother) ...   crèche   ...   'breakfast' ...
    H. (2;9): *Und   du   heißt   das   'breakfast'.*
              and   you   call   that   ...

(2) Mutter: *You are reading the newspaper, are you?*
     H. (2;8): *Don't   stör   mich,   nicht   mich   stören,*
               ...   bother   me   not   me   bother
     in English or German.
     ...

Studies have not only shown that bilingual children like Hannah are aware about the differences between the languages they are acquiring. They have also shown that bilingual learners' language development is similar to that of monolingual children. Monolingual and simultaneous bilingual language learners' development has also been compared with other types of multilingual development characterised by the acquisition of an additional language after the first has already been attained (in childhood or in adulthood). What is common to this research is that it focuses on the identification of the main milestones in the attainment of the target grammar, and on the comparison of developmental sequences across acquisition situations. In addition, scholars have been concerned with language contact phenomena and what they reveal about the organisation of multilingual knowledge. Unlike monolingual learners, bilingual learners can resort to another language in case they have problems in retrieving a word in one language, or in order to compensate structural gaps in one language. Lexical and structural borrowings, manifested in mixed utterances, provide evidence for a sophisticated *pooling of linguistic resources* in the course of the development of a multilingual competence.

While the progressive convergence of the different lines of research into language development in different acquisition situations has provided important

insights into differences and commonalities across acquisition types, little is known about the bilingual development of deaf learners acquiring a sign language and an oral language. Owing to the sociolinguistic situation of deaf learners described previously (cf. chapter 1), studies into the type of family bilingualism that abound in research on hearing children (Lanza 1997: 10) are virtually non-existent in the case of deaf children (the longitudinal investigation of NGT-Dutch bilingual deaf children represents a remarkable exception, cf. Baker & Van den Bogaerde 2008). Commonly, studies on the acquisition of sign language in native deaf learners of the language have not taken their oral development into consideration despite the circumstance that these learners acquire sign language in a bilingual context. Cross-modal language contact phenomena have been studied in relation to the input bilingual deaf children obtain in the home (van den Bogaerde 2000; Baker & van den Bogaerde 2008), but they have not been investigated in relation to the grammatical development in either language.

The implementation of sign bilingual education programmes in the late 20th century in several countries opened a new perspective in research on language acquisition of deaf learners, hitherto determined by a pathological view of deafness that regarded language development in this population as an idiosyncratic phenomenon. Bilingually educated deaf learners, unlike their monolingual peers, are exposed to a variety of languages and codes, including sign language, spoken language, written language, signed systems, and fingerspelling. What does their linguistic behaviour reveal about their bilingual language *development*? Questions that arise with respect to the development of sign bilingualism in deaf learners concern the nature of the developmental trajectories in either language and the role of the potential interaction of the learner systems in the course of the bilingual development. The assessment of deaf learners' bilingual language acquisition along these lines requires the elaboration of a theoretical framework that seeks to account for *what* is acquired and *how* this might be achieved.

We will expand on this framework in the following sections. We begin with a presentation of the main assumptions about the nature of language knowledge proposed within the generative paradigm. We will then turn to current hypotheses about language acquisition elaborated within this framework, and present our dynamic approach to the complex interplay of innate (internal) and environmental (external) factors that determine the development of learner grammars. Subsequently, we will summarise current assumptions about language separation and interaction in bilingual first and second language acquisition, before narrowing the focus on the main research questions that arise in relation to the bilingual acquisition of sign language and oral language in deaf learners.

2.1 What is acquired: Universal and language-specific properties of grammar

Researchers working within the paradigm of Universal grammar (henceforth UG) seek to provide an adequate description of possible human grammars that fulfils a dual requirement: on the one hand, it has to be as far-reaching as to include all possible human languages, and, on the other hand, it has to be as constrained as required by the learnability criterion (Chomsky 1986: 55). This dual requirement is met by the assumption that there are universal properties or linguistic primitives that hold of all human languages (for example, the X-bar Schema, Structure Preservation or the Projection Principle), and a limited of parameterised principles or *parameters* that account for the range of variation across languages (Chomsky 1981; Rizzi 1982; cf. Hohenberger 2007 for a detailed discussion concerning sign languages). Universal principles and parameters are not learned, they are part of an innate *universal grammar* (UG), as opposed to other, idiosyncratic properties of languages.

One of the core principles of grammar concerns the syntactic representation of lexical information. The Projection principle guarantees that thematic information of lexical items is maintained at all representational levels ("representations observe the subcategorisation properties of lexical items", Chomsky 1981: 9).[1] The stipulation that every sentence has a subject, added to this principle, derives the Extended Projection Principle.

Notice that the relation between the lexicon and the syntax captured in these principles involves the assumption of a *modularly* organised grammar. Basically, the assumption is that syntactic structures, computed at the levels of phonetic form (PF) and logical form (LF), have to fulfil wellformedness conditions on representations. These conditions are determined in different sub-components of grammar (e.g. theta-theory, case theory, binding theory). For example, a condition for the assignment of theta-roles encoding the thematic relation between the lexical head of a syntactic construction and its subcategorised positions (that is, its arguments) is that the elements in question are assigned case (*Visibility condition*) (Chomsky 1986). Over the last decades, research in the domain of sign language linguistics has shown that the architecture of all natural human languages is the same, irrespective of the modality of expression they use.

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1 Within the framework of GB theory, subcategorised positions are in a thematic relationship with the lexical head of the syntactic construction. Expressions that are assigned a theta-role are arguments, while expressions that are not assigned a theta-role are in no thematic relationship to the verb (e.g. expletive 'it' only has the function of filling the subject position lexically).

2.1.1 Sentence structure: a basic design

One of the core assumptions about sentence structure is that all grammars share a common basic structural design. The so-called X-bar template is made up of the head [= X] of a phrasal expansion or *projection* combined with its complement to form an X' projection; the specifier, in turn, combines with the (topmost) X' projection to form a maximal projection [= XP] (Chomsky 1995; Haegeman 1994). Complex structures are built up by combining (*merging*) pairs of categories. The order of the head and its complement is not fixed which accounts for cross-linguistic variation at the level of word order. Two options are associated with the *head-complement parameter*: the head may take a complement to the left (head-final value) or to the right (head-initial value) (cf. (3a-b) for a head-initial and head-final version of the X-bar schema). X-bar theory accounts for the common format of phrasal projections of lexical and functional categories.

(3)   a.   XP   b.   XP

            specifier   X'   specifier   X'

                        X   complement   complement   X
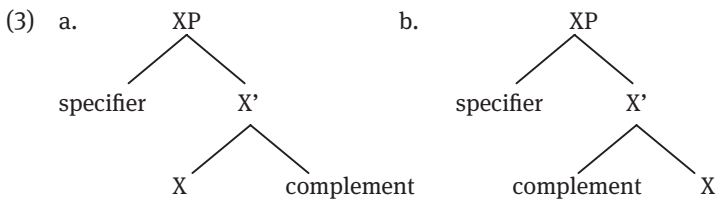
2.1.2 Functional categories: sentence structure and grammatical processes

Following current assumptions, functional categories play a central role in the structural representation of syntactic constructions. This is in line with the traditional idea that semantic aspects of an utterance are primarily related to the elements of the open class (N, A, V, P) while elements of the closed class would determine formal aspects (Guilfoyle & Noonan 1988; Radford 1990). Roughly, to form a clause, the verb phrase (VP) is combined with the projection of the functional category INFL (for inflection), that is, the IP. Embedded and interrogative clauses are projections of the functional category C or COMP (for complementiser), that is, the CP, which takes IP as its complement.

Grammatical processes and relations. The lexical and functional structural levels that build up clauses differ with respect to the information that is relevant at each (cf. also Table 2.1). The verb phrase (VP) is the domain of the expression of *thematic* relations. The functional level above the VP, the inflection phrase (IP), is

the level at which *grammatical* relations between constituents are expressed. For example, the relation between the verb and the subject is marked through verb inflection (agreement) and nominative case marking in many languages. The grammatical feature of tense is also checked at this level. Auxiliary and modal verbs are base generated in INFL. Movement processes involved in the formation of subordinated or interrogative clauses involve the CP.

Table 2.1: Structural levels and associated grammatical processes.*

Structural level	Information	Grammatical processes
CP (Complementiser phrase)	– discourse-syntax interface – sentence type	– question formation – subordination
IP (Inflection phrase)	– grammatical relations	– agreement – case marking
VP (Verb phrase)	– thematic relations	– no grammatical processes

*The table illustrates the main relations relevant for the present work.

Grammatical features of FCs need to be checked in the course of the derivation of a given structure to give rise to a well-formed representation at the level of logical form (LF, that is, the level that concerns the linguistic aspects of the meanings of a sentence) (Radford 1997: 70). Feature checking involves verb movement (*raising*) to the respective functional head, in keeping with the Head Movement constraint according to which a head category can only move to a position immediately preceding it. Table 2.2 provides an overview of the main features associated with the functional categories AGR, TNS and C. In this table, AGR and TNS appear in the place of INFL, in line with the Split-INFL hypothesis according to which features traditionally subsumed under the category INFL project their own separate phrases (cf. Radford 1997: 225). Basically, case and agreement features are checked in AGR categories, and tense in TNS. Hence, to have their features checked, verbs are moved from the VP to the head positions of these functional projections. The feature composition of C includes the feature +/- wh. This feature distinguishes interrogative from non-interrogative clauses. In interrogative sentences, wh-phrases are moved into the specifier position of the CP, and the finite verb to C so that the interrogative features can be checked. Further, C also includes c-selectional features. This accounts for the clause type selected by complementisers. In English, for example, *that* and *if* select a finite clause, whereas *for* selects an infinitival clause.

Table 2.2: Functional categories and their main features

Category		Features
AGR	(Agreement)	− agreement features (e.g., person, number, gender) − case features (e.g., nominative, accusative)
TNS	(Tense)	− tense features (e.g., past, future)
C	(Complementiser)	− +/- wh-features − c-selectional features

Cross-linguistic variation. According to the Functional Parametrisation Hypothesis languages differ with respect to selectional properties and features of FCs (Pollock 1989; Chomsky 1989; Ouhalla 1991). This variation is reflected in typological differences across languages, including variation at the level of word order (for a detailed discussion see Plaza-Pust 2000). Over the last decades, linguistic research has been dedicated to the study of properties of numerous oral languages and sign languages within the framework outlined. Similarities and differences between languages become apparent not only between oral languages but also across languages that differ in their modality of expression.

The knowledge that has been gleaned from these studies about the nature of language is not only valuable from a descriptive point of view. The definition of universal and specific properties of language systems is also relevant from a developmental linguistics perspective seeking to account for the learning task language learners are confronted with. Following this line of reasoning, we will elaborate on the properties of DGS and German within the framework sketched previously in chapters 3 and 4 respectively.

2.2 How grammar is acquired: a UG based dynamic model

Within the generative paradigm, several hypotheses have been developed to account for the acquisition of grammar in language learners. Beyond the principled question of how the acquisition of a language is possible at all given the complexity of the knowledge attained vis-à-vis the impoverished nature of the input provided (*Logical Problem of Language Acquisition*, Chomsky 1986), issues that need to be addressed in a model of language *development* concern the nature of learners grammars and the changes they undergo.

2.2.1 The Principles and Parameters model

Following the model of language acquisition implicit in the Principles and Parameters theory (Chomsky 1981) changes in learner grammars concerning parameterised grammatical properties are commonly conceived of as punctual or instantaneous events: language-specific properties of FCs are assumed to be *triggered* by positive data in the linguistic environment (input).[2] Against the backdrop of the logical problem of language acquisition, this idealisation is necessary in order for linguistic theory to provide a principled account of how language acquisition is possible at all given the underdetermination by input data (Chomsky 1986: xxv). The developmental *process* and the question of how to account for the transition of one developmental stage to the next (*developmental problem*) are irrelevant to this model. A theory of language development, however, is faced with the task of providing an explanation of why there is something time-consuming in the development of grammars, why the succession of developmental stages takes the form it does, and how *transitions* between one stage and the next should be conceived of.

Several hypotheses have been proposed to account for these issues in the area of developmental linguistics, such as the *Maturation hypothesis* (according to which the developmental sequence is maturationally constrained), the *Continuity hypothesis* (which maintains that the full structure is available to the learner from the onset of the learning process), and the *Structure-building hypothesis* (which claims that structure is built progressively in accordance with the input) (cf. Plaza-Pust 2000 for a detailed discussion). In an earlier work (Plaza-Pust 2000) we discussed the main claims and shortcomings of these hypotheses and concluded that the structure-building hypothesis accounts best for the development grammars because it does not relegate the developmental problem to a non-linguistic area (perception or maturation, as is the case of the continuity and maturation hypothesis respectively). This hypothesis is briefly sketched in the following.

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2 Notice that the distinction between the notions of *triggered* and *learned* is crucial to the model at hand: structural knowledge is assumed to be triggered, that is, guided by universally determined *language-specific* learning mechanisms. Idiosyncratic properties of the target language, in contrast, have to be learned.

2.2.2 Accounting for development: Structure-building hypothesis

Following the assumption of a *gradual* development of syntax (*Structure-building* or *Weak Continuity hypothesis*), we assume that the acquisition of the target word order of a given language is determined by the interaction of innate principles (e.g. X-bar theory) and input data (see, for example, Plaza-Pust 2000, Vainikka & Young-Scholten 1996 for adult second language acquisition, Siebert-Ott 2001 for child second language acquisition, and Fritzenschaft et al. 1991, Gawlitzek-Maiwald et al. 1992 for child first language acquisition).

The minimal structural domains learners start out with are projections of lexical categories (Radford 1990: 43f.). These minimal structures already instantiate the basic X-bar template, as illustrated in example (4) (Radford 1990: 95). They are categorial-thematic in that all constituents belong to the inventory of lexical categories and all sister constituents are in a thematic relationship to the head.

(4)

```
                VP
              /    \
           NP        V'
         AGENT      /  \
           |       V    NP
           |       |   PATIENT
           |       |     |
        pussies chasing birdies
```
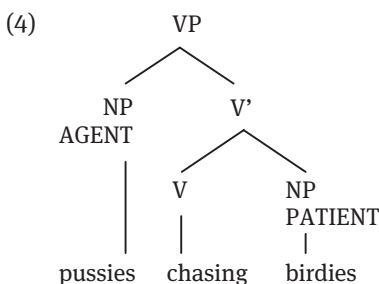
Notice that grammatical principles are not violated in the early prefunctional grammar. Rather, processes like case-checking simply operate vacuously because the necessary grammatical categories and their associated features are not yet in place. Following Hohenberger (2002: 98f.) FCs *emerge* after the lexicon and the learner's phrase marker have reached a critical size. Learners are then faced with the task of specifying the target-language features of these categories.

2.2.3 Accounting for variation: a dynamic approach to language development

The idea of uniformity in language acquisition, central to the language acquisition model implicit in the Principles and Parameters theory, is challenged by evidence of variation in language learners' productions. Variation manifested in the form of the expression of alternate structural options, including target-like and target-deviant structures, is incompatible with a concept of development

that involves instantaneous changes (that is, once parameters are set to their target-like value no variation should be observed).

Until recently, this type of variability was assumed to be an exclusive property of specific types of language acquisition, in particular, adult second language acquisition; today, variation is a well-documented phenomenon in child language acquisition (Fritzenschaft et al. 1991; Gawlitzek-Maiwald et al. 1992; D'Avis & Gretsch 1994; Hohenberger 2002) and diachronic language change (Lightfoot 1991; Roberts 1993; the papers in Battey & Roberts 1995). The self-repair in (5), produced by the monolingual child J., is illustrative of the type of variation found to occur after the establishment of an elementary structural domain: *old* unanalysed formulae (that is, [da:zə]) and *new* analysed verb forms (that is, the copula) alternate in the left periphery of the sentence, before the former are eventually given up (Tracy 2002: 656).

(5) *[da:zə]*   *BAUernhof \ ... da ...*   *da*   *IS*   *das*   *bauernhof *
    [there-s-the] farm   there   there is   the   farm   (J., 2;4)

Following Tracy (1991: 418) the cracking of unanalysed formulae like [da:zə] plays a crucial role in the children's analysis of the left periphery of German sentence structure. In particular, the differentiation of the copula is followed by a series of (possibly) crucial structural consequences. As learners already master consistent lexical representations of verbs (as to their phonological, categorial, subcategorisation and inherent features), it can be assumed that they have a rudimentary Projection Principle which would tell them which arguments of a lexical item should be present in principle and thus guide them in the cracking of unanalysed formulae by seeking the arguments of an already known thematic head (*Theta Seeking Strategy*, Tracy 1991: 418).

2.2.3.1 A dynamic view of changes in learner grammars

Assumptions about the role of variation in learners' structural development indicate that the acquisition of grammar rests largely on the interaction of information from different linguistic sub-domains. Notice that this implies not only a modular view of grammar in the sense outlined previously; it also involves learning processes regulating the information flow.

Crucially, modularity as implicit in UG theory involves not only the idea that a grammar is composed of autonomous sub-components but also that there are multiple interfaces. Because the information of the different linguistic levels cannot be reduced to each other, correlations across levels need to be established. The complex organisation of language systems bears a potential of change that has not received much attention. Instead, much attention has been paid to the

identification of external elements, that is, the triggers that might serve as agents of change. For example, it has been argued that the acquisition of inflectional morphology, notably the inflectional ending −*st* (2SG), serves as the trigger for the implementation of the target German Verb-Second (V2) property (in German, finite verbs obligatorily appear in the second position in declarative main clauses, see section 4.1) (cf. Clahsen 1988). The acquisition of lexical complementisers, in turn, would involve the projection of a new structural layer needed to accommodate embedded clauses. This notion of external triggers is confronted with the question of why the target-like parameter-setting is not immediately triggered if the relevant external information is part of the child's input (*Triggering Problem*, cf. Borer & Wexler 1987; Lightfoot 1991). What is interesting about the notion of a trigger is that it implies not only that specific external data may affect the linguistic system, but also that there is a reaction of the system to such impetus. Therefore, in earlier work (Plaza-Pust 2000; 2008a) we proposed to revise the notion of triggering in line with current assumptions in the area of dynamic systems theory (DST), so as to embrace " . . . the reaction of a given system to the introduction of new units *able to multiply and take part in the system's processes*" (Prigogine & Stengers 1984: 189, our emphasis).

In order to conceive of how new units might affect a given system such as a learner language system, we suggested to consider the complex information flow that characterises the organisation of complex systems as conceived of in DST. From a dynamic systems perspective, the information flow is modelled by internal and external *feedback processes* (Briggs & Peat 1990; Ebeling 1991; Cramer 1993). Notice that feedback processes are elementary mechanisms in such different domains as ecology, society, and mathematics, and that they are at the heart of the relation between order and chaos. Minimal disturbances, as exemplified in the much cited *butterfly effect* (Lorenz 1972), may have major effects if they get amplified via feedback. From the theory of self-organising systems, we know that the conditions under which local changes may turn into global rearrangements are met when the system is far from the equilibrium (Prigogine & Stengers 1984; 1993). In fact, what appears on the surface as disorder, contains a high degree of implicit correlation. It is in such a state that the system becomes sensitive to the new information from "outside".

The question of whether and how *minimal disturbances* may turn into more global changes in the development of grammars leads us to reconsider their modular organisation in terms of a complex information flow. From a dynamic systems perspective, we conceive of the information flow at the interfaces in terms of a complex interplay of internal and external feedback processes (Plaza-Pust 2008a). If we consider, additionally, the linguistic environment, the following

three dimensions of interaction strike us in their similarity to the organisation of other *open* complex functional systems (see Figure 2.1):

–   the interaction of the system's sub-components (i.e. a well-formed structure is the product of the interaction of the principles of the different grammatical sub-theories),
–   the interaction of a part with the whole (i.e. linguistic elements fulfil a function in relation to the overall structural context), and,
–   the interaction with the environment (i.e., the linguistic input).
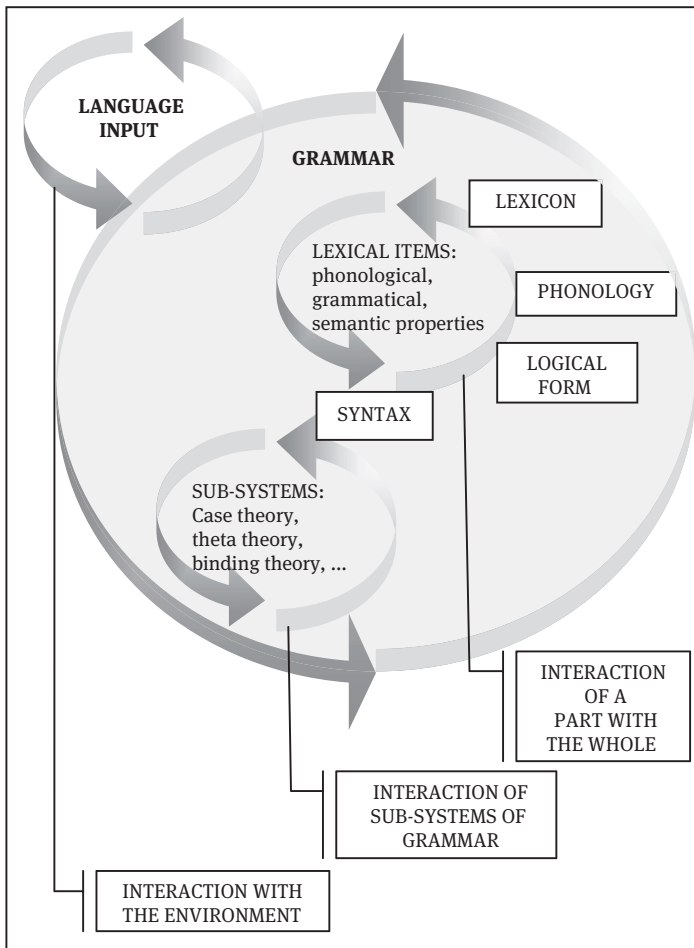
Figure 2.1: Language input, feedback processes, and the modularity of grammar (Plaza-Pust 2008a: 255).

The dynamic view not only departs from linear cause-effect conceptions of change implicit in traditional learning theories. As the new information may not affect all the sub-parts of the system at the same time, coexistence and competition occur on the different levels of linguistic analysis (Karpf 1993; Tracy 1991). This means that variation in learner grammars is expected. Feedback processes in grammars may fulfil a *regulating* function so that *new* information might only have a local impact and retain a marked or residual status. Yet they also bear a *potential for change*, which is given by their ability to amplify new information (Plaza-Pust 2000; 2008a). Grammars, like other complex dynamic systems, may remain stable over long stretches of time. At the individual level, the apparent stability of mother tongue grammars in adults is commonly conceived of as a *steady state* of knowledge. But it is also true that they change over time. What is important for present purposes is that such changes do not derive completely different systems (cf. also Larsen-Freeman 1997).

In the development of grammars, a mirror-world of stability and instability can be observed in relation to parameter setting. The empirical evidence gathered in the course of the last years shows that the implementation of FCs and fixation of parametric properties takes time, as manifested in the form of precursor structures or the apparent coexistence of alternative grammatical options. Example (6), produced by an L2 learner of German (cf. Plaza-Pust 2000: 258), illustrates the alternation of target-deviant and target-like verb placement in embedded clauses, which reflects the availability of both a head-initial and a head-final IP.

(6) *is   auch   wichtig   weile   wenn   die   luft   bleibt*
    is   also   important   because   if   the   air   remains
    zu –   *wenn   die   luft   zu   bleibt*
    closed   if   the   air   closed   remains
     'It is also important because if the air remains closed...'

From a dynamic perspective, the variation encountered would seem to result from multiple parametric options exerting their influence on the system at the same time. Grammars in such states appear to be "undecided" between different states of order or, to use a common dynamic term, attractors. Such *unstable* states have also been described as bifurcation regions in DST as a system's transition through them may lead to the convergence toward a new order or attractor. An intriguing aspect about a dynamic system's transition through bifurcation regions that has been described in DST is that these transitions may throw it into chaos or they might render it into a stable state (Prigogine & Stengers 1984: 206). Self-organising processes in the evolution of dynamic systems thus correspond to a "delicate interplay between chance and necessity" (Prigogine & Stengers 1984: 1976). The system's bifurcations represent the milestones in the history of its development:

it is here that the variety of possibilities of change is displayed, and it is here where a minimal influence will have its major effect (Briggs & Peat 1990: 213).

The evidence gathered in different developmental situations reveals that grammars go through unstable states at which crucial bifurcations take place (cf. Hohenberger 2002 for child L1 acquisition; Tracy 1994/5 for child bilingual L1 acquisition; Plaza-Pust 2000, 2008a for adult L2 acquisition and diachronic language change). In learner grammars, oscillations between elementary and more advanced structures (that is, old and new grammars), or between alternative grammatical options, are tied to structure-building processes, on the one hand, and, on the other hand, to the necessary specification of the associated properties of FCs. System-internal *conflicts* resulting from competing linguistic representations have been found to arise in different situations, as, for example, in the mapping across representation levels, in the merging or linking of syntactic trees or in the reconstruction of a derivational relationship such as a path of movement (cf. Tracy 1994/5: 147). To the extent that the eventual convergence toward the target grammar is preceded by such developmental crises it seems plausible to assume that the potential for change unfolds in these very conflict situations and that it is in unstable states that something new may emerge (i.e. FCs), where the (self-)organising principles of the system come into play.

2.3 Language separation and interaction in bilingual language acquisition

Research dedicated to bilingual language acquisition in young infants has been concerned with the development of the two learner systems and the potential relationship between the two in the course of their development. Against the backdrop of the insights obtained about the main developmental milestones in monolingual language acquisition, studies on bilingual learners have sought to determine whether the developmental sequences identified also hold of language development in a bilingual acquisition situation. Because the developmental sequence identified for monolingual learners is assumed to be determined by underlying language-specific learning processes, research on language development in other situations is expected to contribute further to our understanding of the mechanisms of change in the evolution of grammars.

Another focus of the research pertains to the organisation of multilingual knowledge and the relationship of language systems in the course of the bilingual development. A crucial question pertains to the role of language mixing and whether the combination of elements of two languages is indicative of confusion or a creative use of linguistic resources available.

2.3.1 Language separation

Today, there is a consensus that bilingual learners develop two separate language systems early on. This assumption is supported by the evidence gathered in longitudinal studies (De Houwer 1995; Genesee 2002; Lanza 1997; Meisel 1989; Tracy 1994/5) in which it was shown that "[c]ontrary to the unitary language system hypothesis, current evidence indicates consistently and clearly that bilingual children can use their developing languages differentially and appropriately with different interlocutors from the earliest stages of productive language use" (Genesee 2001: 3). Crucially, the acquisition of more than one language does not affect the quality of the development in terms of the developmental sequence identified for monolingual learners (Meisel 2004). This finding has also been corroborated in studies on the acquisition of sign language and oral language in *hearing* children (Petitto et al. 2001; Petitto & Holowka 2002).

2.3.2 Bilinguals' pooling of resources

While the issue of a separate development has been settled, some scholars have turned their attention to the evidence of language mixing in young bilinguals and concluded that both languages may temporarily interact in the course of the bilingual development (Gawlitzek-Maiwald & Tracy 1996; Hulk & Müller 2000; Genesee 2002; Müller et al. 2002). Example (7), an utterance of an English-German bilingual child reported in Tracy and Gawlitzek-Maiwald (2000), provides further illustration of the type of interaction encountered when both languages do not develop at parity. At the time of its production, the structure available to the child in English was a bare verb phrase, while more sophisticated grammatical structures, including constructions with periphrastic verb forms, were available in German. By merging both structures in this utterance the child skilfully pools her resources (Gawlitzek-Maiwald & Tracy 1996). From a developmental perspective, the possibility of a pooling of resources might also have an accelerating effect on the language that lags behind as the properties that have already been acquired in one language might trigger the corresponding ones in the other language (hence the term of *bilingual bootstrapping* as proposed by Gawlitzek-Maiwald & Tracy 1996). The assumption is confirmed by the observation that the frequency of the type of mixing exemplified in (7) decreases after the child's acquisition of English modal and auxiliary verbs.

(7) *ich hab   ge-climbed up*   (Tracy & Gawlitzek-Maiwald 2000: 524)
    I   have   PAST-PART.-...

Structural borrowing as in (7) is easy to detect given that the child uses lexical material of both languages. What needs to be kept in mind, however, is that the interaction of two languages in language mixing may not involve all levels of linguistic analysis (that is, the lexical, phonological, syntactic, and semantic). The range of potential combinations of elements of two languages (*contact continuum*) in bilingual speech suggests that different degrees of co-activation and co-production of information from different levels of linguistic analysis need to be conceived of (cf. Grosjean 1997; Tracy 2000).

The abstract combination of morphosyntactic features of two languages, commonly referred to as *interference* (Muysken 2004) or *cross-linguistic influence* (Winford 2003: 12; Kellerman & Sharwood-Smith 1986), involves lexical material from one language only which is the reason why this type of mixing often goes unnoticed (Muysken 2004: 149). In the domain of adult second language acquisition, particular attention has been paid to structural borrowing from the L1. Consider, for example, the utterance of an Italian adult learner of L2 German in (8). The target-deviant arrangement of constituents in this utterance seems to follow word order characteristics of the learner's L1 Italian (an SVO language). Notice that in target German, the object would appear inside the verb bracket in the main clause, and the infinitive verb would appear sentence-finally in the embedded clause (Plaza-Pust 2000: 177).

(8) *aber*   *ich*   *brauch*   *vergessen*   *meine*   *sprache*   *für*
      but   I   need   to.forget   my   language   for
      lernen   *die*   *deutsch*
      learn   the   German
      'But I need to forget my language in order to learn German.'

Two further observations concerning language mixing in this acquisition situation are important for present purposes, namely, (a) structural borrowing in L2 acquisition is a temporary phenomenon to the extent that learners succeed in restructuring the target-deviant properties borrowed toward the target language, and (b) reorganisation in L2 grammars is commonly tied to variation, i.e. there is an apparent coexistence of target-like and target-deviant properties (which is in line with dynamic view of change sketched previously, section 2.2.3.1). For example, in the development of L2 German by the Italian learner mentioned previously, we observe the alternate production of target-deviant and target-like constructions with periphrastic verbs (cf. (9) and (10) produced during the same recording session, Plaza-Pust 2000: 183) prior to the eventual implementation of the target German word order.

(9) *oweh   wir   haben   schon   gehabt   viele   fragen*
    oh-dear we   have   already   had   many   questions
    'Oh dear, we had many questions already.'

(10) *in   akzehn   jahren   hast   du   nicht   gute   freunde   gehabt*
     in   eighteen   years   have   you   not   good   friends   had
     'For eighteen years you did not have good friends.'

In conclusion, the progressive convergence of the different lines of research in the domain of bilingualism has provided further insights into the role of language mixing in the organisation of multilingual knowledge in child and adult learners. The sophisticated combination of two distinct grammars in mixed utterances indicates that bilinguals (tacitly) know, by virtue of their innate language endowment (i.e. UG), that grammars are alike in fundamental ways. Thus, "language mixing, either temporarily as a help and bootstrapping mechanism in acquisition or as the permanent potential of the proficient bilingual is only a natural consequence of that (tacit) assumption" (Tracy 1994/5: 484).

2.4 Narrowing the focus: bimodal bilingual language acquisition in deaf learners

Narrowing the focus on the bilingual acquisition of a sign language and an oral language in deaf learners, we are interested to determine whether bilingualism in this population is also characterised by the dynamics of language development observed in other acquisition situations.

As we learned in previous sections, deaf learners' oral language and literacy attainment has been primarily investigated as an idiosyncratic phenomenon owing to the lack of or limited access to the spoken language. Unlike their monolingual peers, bilingual deaf learners are exposed to a language that is fully accessible to them, that is, sign language; hence, the attainment of the oral language in these learners is bound to a different, that is, a bilingual acquisition situation. At the same time, it must be acknowledged that bilingual deaf learners are seldom exposed to sign language from birth and that for those who acquire it in the framework of bilingual education programmes it is seldom the language used at home.

Owing to the specific circumstances that determine this particular type of bilingualism, issues that need to be addressed concern developmental trajectories in two languages that differ in the modality of expression they use and, hence, in terms of their accessibility by deaf learners. A crucial issue in the investigation of sign bilingual development in deaf learners concerns the question of whether

the written language can be acquired without or with only limited access to the spoken language. This points to the need of clarifying the relationship between the spoken language and the written language. Questions that arise about the bilingual development of a sign language and an oral language in deaf learners concern (a) the status of the two languages, and the scope of the developmental asynchrony between them, and (b) the role of language contact phenomena in the course of the bilingual development. We will elaborate on these issues in the following.

2.4.1 Acquisition scenarios and status of the languages

The acquisition scenario of bilingual deaf learners does not easily fit into traditional typologies of language acquisition situations. In bilingualism research on hearing learners, age of exposure is commonly used as a criterion to distinguish three different types of acquisition situations: bilingual first language acquisition (exposure to two languages from birth), child second language acquisition (exposure to a second language [L2] after age 3), and adult second language acquisition (exposure to an L2 in adolescence/adulthood) (Paradis et al. 2011). Research on language development in these different scenarios has provided further insights into the impact of age and previously available language knowledge on the evolution of learner systems. Implicit to the differentiation of acquisition scenarios is the attribution of the status of first language (L1) to the language(s) acquired from birth, whereby full access to the language(s) is assumed.

L1 and L2 labels in sign bilingualism. In research on bilingual deaf learners accessibility is commonly considered the defining criterion of the language assigned the L1 label, that is, sign language (Grosjean 2008; Leuninger 2000; Plaza-Pust 2008b; among others). For the majority of deaf children born to hearing non-signing parents, however, age of exposure to sign language seldom occurs from birth. Whether and when they are exposed to the language, as we learned in previous sections (cf. chapter 1), depends on multiple factors, including parents' choices about language, medical advice, early intervention, and the availability of sign bilingual education programmes. Thus, sign language is attributed a primary status even though the oral language in its spoken form might be the first language they are exposed to (particularly in the case of children of non-signing parents). Because deaf learners have no or only limited access to the spoken language used in their environment, it is generally assumed that they learn it effectively in its written form only at a later age (in school). Consequently, we are left with a somewhat atypical acquisition situation that eludes clear-cut classification: the acquisition scenario is bilingual to the extent that deaf children

are exposed to spoken language and sign language early on (within the critical period). However, the effective acquisition of the oral language in the form of the written language at a later age, bound to a formal context, better fits the traditional concept of child L2 acquisition.

Critical period effects. Variation in age of exposure to a fully accessible L1 in bilingual deaf learners marks a crucial difference to hearing bilingual learners for whom exposure to the L2 majority language might vary, but for whom exposure to a fully accessible L1 from birth can be taken for granted. Consequently, questions concerning the impact of bilingualism on deaf children's language development are intimately tied to the more fundamental issue of "[h]ow early linguistic experience affect[s] the trajectory of language acquisition over the life span" (Mayberry 2007: 538).

Crucially, a lack of fully accessible language during the sensitive period for language acquisition affects deaf learners' L1 and L2 competences. The results obtained in several studies undertaken by Mayberry and her colleagues (see Mayberry 2007, for a summary) point to the relevance of the age factor (age of exposure) in sign bilingualism. In these studies, L2 learners of English who differed in their age of exposure to L1 were found to perform equally well on measures of their syntactic L2 knowledge when their age of exposure to the L2 was the same and their exposure to L1 had occurred early on, irrespective of the modality of expression of the L1. However, the performance of those learners who had no exposure to an accessible first language early on was found to be poorer, and at near-chance level for complex syntactic structures, which can be taken as an indication of the relevance of accessible input during the sensitive period for language acquisition (Mayberry & Lock 2003). In addition, the available research indicates that late learners of L1 sign language (at age 5–10 years) may not ever become fully fluent in the language. Based on the evidence obtained, Mayberry (2007: 537) concluded that "the effects of L1 acquisition on both L1 and L2 outcome are apparent across levels of linguistic structure, namely, syntax, phonology, and the lexicon." Hence, there is a fundamental sense in which "L1 and L2 acquisition are clearly interdependent" (Mayberry 2007: 543).

2.4.2 Hypotheses about the acquisition of the written language

Over the last years, the potential impact of sign language on the acquisition of the written language in bilingual deaf learners has been debated at length. Statistical studies measuring correlations of sign language and written language skills of bilingual deaf learners, as we learned previously (section 1.3.2.2), do not provide a qualitative account of how deaf learners *develop* the oral language. The ongoing

debate about the use of the Interdependence hypothesis also makes apparent that there is no consensus on the status of the written language. Advocates of bilingual approaches to deaf education commonly assume that the written language is acquired as a second language. However, there is little agreement on the impact of the lack of access to the spoken language on the development of the written language (Goldin-Meadow & Mayberry 2001; Günther 2003; Leuninger 2000; Leuninger, Vorköper & Happ 2003; Schäfke 2005; Vercaingne-Ménard et al. 2005; Vorköper 2005).[3] At the theoretical level it becomes apparent that there is no consensus about the status of reading and writing and whether what is defined as written language can be conceived of independently from speech. The controversy needs to be understood against the backdrop of a debate that has a long tradition. The main issues are summarised in the following section.

2.4.2.1 Hypotheses about the spoken language-written language relation

Compared to spoken language, written language has been traditionally neglected as an object of scientific enquiry. Spanning the time from Aristotle to de Saussure evolutionary, philosophical and linguistic arguments have been put forward to underpin the alleged primacy of the spoken language. These ideas have affected deaf education throughout the centuries (cf. Plaza-Pust 2016). More recently, however, alternative proposals to the traditional derivational view of the speech-print relation have been put forward, so that, today, three positions can be distinguished in the literature concerning the relation between the written language and the spoken language (Dürscheid 2006: 35), namely (a) the Dependence hypothesis, (b) the Autonomy hypothesis, and (c) the Interdependence hypothesis. We will briefly summarise the main arguments of each.

Dependence Hypothesis. The primacy of the spoken language over reading and writing lies at the core of the so-called Dependence hypothesis, which corresponds with the traditional derivational view of print. The generalised attribution of a primary status to speech is also associated with the idea that the spoken modality of expression reflects thought directly whereas print would do so only indirectly (Dürscheid 2006: 14 mentions Rousseaus's view and also Hermann Paul's that writing would not be adequate to language). In support of the Dependence hypothesis, linguistic, evolutionary, logical, philosophical and functional arguments have been put forward (Dürscheid 2006: 36).

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3 Cf. Berent (1996) for a discussion of the status of the written language as "L1.5" in non-signing deaf children which aims at capturing the circumstance that the incomplete development of the spoken or written language at home (L1) is taken up in the formal school setting as an L2.

Advocates of the Dependence hypothesis tend to emphasise that print serves only a limited range of functions (Lyons 1987 *pace* Dürscheid 2006: 37). While scripts are regarded as a means to visualise speech, their limitations are acknowledged as not all characteristics of the spoken language are represented in script (suprasegmental elements, for example, cannot be fully expressed). Hence the view that the object of linguistic study is not the written but the spoken form, advocated by De Saussure (1972), and the assumption about their unequal status, whereby speech is attributed a primary and writing a secondary status (for example, in Daniels 1996: 1; cf. Primus & Neef 2004: 133 for a discussion).

As for sound-letter correspondences determining the relation of alphabetic writing systems and spoken languages, proponents of the Dependence hypothesis maintain that the units of the writing system (graphemes) are defined in relation to the units identified for speech (phonemes). Because the sound-letter relation is conceived of in a unidirectional manner, constraints at the graphematic level remain unaccounted for as are letter-to-sound correspondences and their relevance in the reading process (Primus & Neef 2004: 132).

Turning to the evolutionary argument, advocates of the Dependence hypothesis emphasise that writing qua socio-genetic phenomenon is not a natural phenomenon, but must be developed as a cultural product. It is argued further that learning to read and write are not spontaneous processes but are bound to formal instruction, which typically takes place after the acquisition of the spoken language. The secondary status attributed to writing systems is also commonly underpinned by the logical argument that spoken languages exist without written languages, whereas the latter would not exist without the former. Following this line of argumentation the very possibility of attaining the written language without having learned the related spoken language before is not conceived of.

Autonomy hypothesis. For advocates of the Autonomy hypothesis the written language is an object of scientific enquiry in its own right. Implicit to this claim is the assumption that the written language and the spoken language have equal status. In contrast to the derivational view, proponents of the Autonomy hypothesis highlight the natural character of the processes that shape the development of writing systems. Primus and Neef (2004: 134), for example, maintain that these processes are "comparable to those which shape language itself ... As a consequence, mature writing systems and alphabets, which have been used for a long time by large communities for encoding a specific language, are as natural as any spoken language." Further, autonomy is also advocated regarding the acquisition of the written language without prior access to the spoken language. It is interesting to note that deaf children's acquisition of the written language is often mentioned as evidence that would provide support for this assumption. With respect to production and comprehension, advocates of the Autonomy hypothesis argue that (skilled) reading

and writing processes are not mediated by spoken language. In its strictest version, the Autonomy hypothesis maintains that there is no relation between the spoken and the written form (Neef & Primus 2001: 353). However, as is explained next, less radical approaches tend to emphasise the equal status of the two languages rather than a lack of a connection between the two systems. This position is referred in the literature as the Interdependence hypothesis (not to be confounded with Cummins' Interdependence hypothesis discussed in section 1.3.2.2).

Interdependence hypothesis. Between the two opposed views of autonomy vs. dependence a third approach, the Interdependence hypothesis, is advocated by those who argue that although the written language is an object of scientific enquiry in its own right, correspondences between the two systems must be acknowledged. Günther (2003: 39), for example uses the notion of "relative autonomy" to emphasise, on the one hand, the equal status of spoken, signed and written languages that can be acquired independently from each other. On the other hand, the author also remarks on the structural relationship between the written language and the spoken language.

Proponents of the Interdependence hypothesis not only attribute an equal status to spoken language and written language, they also assume that the nature of the relation is reciprocal rather than uni-directional or non-existent. This view implies that correspondence rules regulating the relation between the spoken and written system comprise regularities of the writing system that might be phonologically or graphematically based or biunique (that is, one-to-one in both directions) (Neef & Primus 2001: 365). Implicit to this view is the assumption that some constraints of writing systems have no correspondence in the spoken language system. Indeed, graphematic features are assumed to be part of lexical entries. In other words, it is assumed that the lexicon contains a graphematic component.

In recognising the mutual influence between the spoken language and the written language as well as their respective specific characteristics the Interdependence hypothesis not only fits well with their historical development as the two developed independently, although in connection with each other. It also fits well with the *dual* model of reading and writing processing (Jiménez-González & Muñetón-Ayala 2002: 42f.; Sprenger-Charolles & Béchennec 2004: 14). According to this model, two main processes or routes are involved in word writing (and word reading), namely, (a) the *phonological* route (a word is written based on its phonological form through the conversion of phonemes to graphemes), and (b) an *orthographic* or *graphematic* route (a word is written based on the orthographic form selected from the orthographic or graphematic lexicon). Both routes have been found to be used also in the production of Spanish or Italian, among the most orthographically transparent languages, with only few irregularities in phoneme-grapheme correspondences (Sprenger-Charolles & Béchennec 2004: 14).

Turning to acquisition, the inter-dependence model also opens a new perspective in the controversy about the status of the written language in deaf individuals' language acquisition. In this framework, learners are expected to profit from knowledge about the correspondence rules that constrain the relation of the written language to the spoken language. What is more, the equal status attributed to the two languages and their autonomy *qua* systems in their own right also allows for the conception of alternative routes in their acquisition: not only with respect to which system is acquired first (for example, learners might start out by learning a specific writing system, attaining the related spoken language only later) but also concerning preferred processing routes (phonemic, graphemic or both). It is this potential of using alternative routes that is particularly interesting in the case of deaf children whose acquisition of the spoken language is bound to be delayed if not truncated owing to their hearing loss.

2.4.2.2 Autonomy and interaction in the acquisition of the written language

Written language competence is not a monolithic phenomenon but is rather characterised by a complex interaction of skills related to different components, such as

- the script (knowledge of the features of the units of a language-specific script)
- the writing system (including knowledge of correspondence rules that regulate the relation between the spoken language and the written language and the specific constraints that hold of the language-specific orthographic system)
- the underlying language system (language-specific properties of the components of language knowledge, that is, lexicon, morphosyntax, and discourse)
- pragmatic skills (constraints determining choice of linguistic devices in relation to different registers, genres, text types)
- metalinguistic skills (about the properties of the spoken language and the written language, and their inter-relation).

Based on the Interdependence hypothesis sketched previously, we assume that in their acquisition of the skills and competences related to these components learners also exploit their spoken language resources. To better assess this inter-relation, it is useful to distinguish competences according to their autonomy, interaction or common underlying basis, as it is proposed in Table 2.3. Following this distinction, we assume (a) that some components are acquired autonomously (e.g. graphemic rules), or in an autonomous but related manner (pragmatics), (b) that a reciprocal influence between spoken language and written language underlies the attainment of skills that involve bidirectional correspondences (e.g. sound-letter correspondences, metalinguistic awareness), and (c) that grammat-

ical competence can be acquired via both or either modality alone, where one of both is not available or not accessible. Note that the latter assumption implies the attribution of an equal status to the auditory-oral and the visuo-graphemic modality of expression in that neither is assumed to more directly related to the underlying language knowledge (cf. Günther 2003 for a discussion from a different but related theoretical standpoint).

Table 2.3: Skills and competences involved in the acquisition of the written language.

Knowledge areas and units		Relation to spoken language
writing system (script, orthography)	**letters / words** – script units – graphemic rules	autonomy
	– sound-letter correspondence rules	interaction
grammar	**words / sentences** – phonology – morphology – syntax	common basis
pragmatics	**texts** – discourse rules – registers – text types	autonomy and interaction
metalinguistic skills	**all units / combination rules** – all levels of linguistic analysis	interaction

Neef and Primus (2001: 374, our transl., our emphasis) succinctly remark that "... spoken and written language have the same status and that neither can claim primacy. At a deeper level we are dealing with a *much more abstract* system."

2.4.3 Attaining the writing system

The acquisition of the written language involves the attainment of the basic principles of the organisation of writing systems. Learners have been found to use different strategies in this endeavour. Further, knowledge about the language, that is, metalinguistic awareness has been found to play a crucial role in this process. The main assumptions are summarised next.

2.4.3.1 Main tasks

Written language acquisition involves the attainment of the basic principles of organisation of writing systems (cf. Bialystok 2001; Teberosky 2001; Tolchinsky 2006 for overviews). Learners face the task of discovering (a) the distinction of written and graphic forms, (b) the symbolic function of print, (c) the form-meaning connection, (d) segmentation principles, and (d) the print-speech relation.

Distinction of written and graphic forms. Current models of learning to read and write distinguish a preliminary step involving the distinction between written and graphic forms (Teberosky 2002: 73) ("written is all what is not drawing"). Some authors remark on the spontaneous onset of graphic production at about the age of 18 months or earlier, when young infants begin to produce graphic marks (Tolchinsky 2006: 84). Studies into young infants' drawing and writing productions have found a difference in the motor plans for either activity. Although the final products might be difficult to distinguish for an external observer, differentiation in the children's action plans around age 3 points to an implicit distinction between writing and drawing (Tolchinsky 2006: 85). By the age of 4, children have been found to have grasped that the output of writing differs from drawing in that it is linear and discrete (Tolchinsky 2006: 88).

Symbolic function. Beyond the distinction between graphics and print, a fundamental step in the acquisition of literacy is marked by the realisation that "the notational forms are invariant representations of meaning" (Bialystok 2007: 61). This step involves the distinction between form and meaning. As pointed out by Bialystok (2001: 161) "this is analogous, in some measure, to the insight children achieve in understanding the separation between spoken language and the meanings represented by those forms."

Segmentation. Learners are faced with the task of learning how the writing system works. Prior to the establishment of specific links between print and speech, learners discover that written units are displayed linearly, and that they are grouped. With respect to the grouping of units, they recognise that there is a minimum number of units grouped, that the groupings differ internally and that there must be restrictions on potential combinations. In the course of their writing and reading development children discover the different types of regularities that constrain the units of the writing system and their combination.

Print-speech relation. Learners identify correspondences between printed and spoken forms. Initially, they establish a rather global relation. Progressively, the links are based on more and more fine-grained units (words, syllables, phonemes) in relation to the available speech segmentation units. Sensitivity to the sound structure of language has been found to be developed first for larger units (words, syllables) and later for smaller units (onsets, rhymes, and phonemes) (cf. Penney et al. 2006: 130; Fricke et al. 2008).

What this summary makes apparent is that several skills and competences are involved in the attainment of the writing system, including general cognitive, linguistic and meta-linguistic skills. The fundamental step that needs to be accomplished concerns the distinction between the *notational system* and the *language* that might be used through it, as is succinctly pointed out by Bialystok (2007: 60) when she states that "[u]nderstanding the concept of print transforms knowledge of a formal system based on visual features into a symbolic system that can be used computationally."

2.4.3.2 Strategies in early word reading and writing

Current models of how learners develop alphabetic writing systems distinguish several learner strategies in relation to the information processed in reading and writing, including information about grapheme-structure patterns, grapheme-phoneme correspondences, orthographic patterns and morphological rules (Günther 2011: 18). It is important to note that the distinction of the strategies adopted by learners does not correspond with a natural acquisition sequence, and that changes regarding the information processed are commonly influenced by specific didactic measures (Dürscheid 2006: 241; Wilbur 2000: 89). For example, learners might be asked to consciously analyse words into phonemes in various tasks, such as counting phonemes in a word, adding, deleting or rearranging phonemes (Penney et al. 2006: 116).

Typically, the use of a specific strategy is reflected in learners errors, whereby occasional errors reflecting previous stages reveal that learners do not give up "old" strategies completely. Indeed, some scholars remark on individual variation, particularly during transition phases, during which children's productions might comprise unanalysed words, words that have been partly analysed and fully analysed words (Tolchinsky 2006: 91). These observations are well in line with what we know about language development in other domains (lexicon, syntax), where variation has been found to be related to reorganisation processes.[4]

The main strategies identified in the literature are the following (cf. Dürscheid 2006: 241f.; cf. Günther 2003: 42f.; Jiménez-González & Muñetón-Ayala 2002: 67f.).

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4 The debate over whether learner strategies succeed each other (which would amount to a strictly sequential model) or are rather available simultaneously (Jiménez-González & Muñetón-Ayala 2002: 64; Dürscheid 2006: 241) is reminiscent of the controversy over the developmental problem in the acquisition of syntax (section 2.2.2). Basically, the controversy boils down to accounting for transitional phases within sequential models that commonly regard the change from one stage to the other as an instantaneous event.

Preliteral symbolic strategy. Prior to reading/writing, children develop general cognitive skills that constitute a requisite for their understanding of print, including its (general) symbolic function (they learn to draw and role-play, recognise pictures).

Logo-graphemic (also: logo-graphic) strategy. Children recognise that print is related to language. They recognise familiar words through a purely visual strategy, which hinges on marked (noticeable) graphic features of words, such as word length, capitalised initial letters or letter combinations (children have been found to recognise written words with their letters displayed in different positions). Written forms are associated with meanings, but not yet with sound sequences (Dürscheid 2006: 242). The relevance of this strategy in terms of a learner's first visual approach to the written language is traditionally underestimated, based on the argument that memory capacity is limited. However, findings about the capacity to store about 1000 and more words through this strategy prove this assumption wrong (Günther 2003: 43). As pointed out by Günther (2003: 43), the logo-graphemic strategy, *qua* visual strategy, is more useful in reading than in writing, where it can lead to problems. Typical errors related to the use of this strategy are letter reversals, or confusions of letter order. Example (11) from an advanced bilingual deaf learner illustrates the type of occasional error that might occur based on this strategy.

(11) **d**ellen > **b**ellen   (Luise, bilingual, 7;7)
       'to bark'   (Günther 2003: 43)

Alphabetic strategy. The alphabetic strategy is based on the isolation of sounds and their association with corresponding graphemes (grapho-phonemic links are assumed to be established through the recoding of grapheme sequences into phoneme sequences). Children develop the ability to read unknown words and pseudo-words. Traditionally, the use of the alphabetic strategy has been emphasised vis-à-vis other processes involved in the acquisition of reading and writing, although this strategy, too, is a temporary one. In addition, some authors remark that it is a time-consuming, cumbersome strategy, which might affect reading comprehension, pointing out also that young writers themselves find it hard to read their own written products (Kiedrowski 2004: 24).

Typical errors that reflect the use of the alphabetic strategy occur in the writing of words whose spelling does not adhere to the phonemic principle (e.g. **file* instead of *viele*, 'many'). Also, misspellings have been found to occur in the writing of some words that appeared in their correct form at a time when learners used the logo-graphemic strategy, such as **Babi* instead of *Papi* 'Daddy' (cf. Günther 2003: 48).

The errors highlighted in the text fragment in (12) (from Schäfke 2005: 52, our transl.) illustrate the use of this strategy in advanced deaf learners.

(12)
Der	*Wolf*	*schlich*	*sich*		*an*	*die*	*herde*	*und*
the	wolf	creep	himself		to	the	flock	and
***b*akt [> *p*ackt]**		*die*	*Mutter*	*des*	*Lowens*	*an*	*den*	
grab		the	mother	of.the	lion	at	the	
Schwanz	*und*	*verschle***b**te [> *verschle**pp**te]*		*sie*	*auf*	*einen*		
tail	and	carry.off		she	on	a		
hugel	*mit*	*einen*	*sehr*	*tiefen*	*abhang*			
hill	with	a	very	steep	slope.			

'The wolf crept up on the flock, grabbed the lion's mother's tail, and took her off on a hill with a very steep slope.'

In the educational area, special attention is paid to the learners' ability to identify grapheme-phoneme correspondences, regarded as a fundamental skill for written language acquisition (note that the focus is put on the alphabetic strategy during the initial two years of primary education, Dürscheid 2006: 243). The emphasis on the alphabetic strategy is criticised by Günther (2003: 45, our transl., our emphasis), who remarks on the negative effects of this pedagogical practice:

> *The focus on the isolation of sounds and the assignment to graphemes, common to this day, is **poison for children with spoken language development disorders** – as it is the case in children with severe hearing and language development disorders, or with dyslexia – because it involves a demand of abstract metalinguistic performances in the phonemic domain that imply severe problems because of the disability.*

Because the alphabetic phase can represent a grinding phase for the learner he argues in favour of an early (didactic) orientation toward orthographic patterns and morphemic rules (Günther 2003: 48). According to Günther (2003: 48) the alphabetical strategy is helpful, but may not be a necessary strategy. Furthermore, a phonemic strategy that would be oriented toward a segmentation of words into syllables is favoured.[5]

Orthographic strategy. The orthographic strategy involves the analysis of words into larger units (morphemic units, orthographic patterns). Learners now

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5 Indeed, some didactic approaches developed in the 1990s concentrate on the syllable as a unit, which, as pointed out by Günther, was already customary in the Roman reading learning concept. However, as some critics have remarked that the syllabic strategy does not hold of the learning processes of all languages, some authors have proposed that its use might be related to the phonological structure of the respective language (syllable-timed in Spanish or Chinese, but not so in English) (Tolchinsky 2006: 91).

master the spelling of words they could not capture through the alphabetic strategy. This strategy is particularly reliable in the case of writing systems that adhere to the morphematic principle (in addition to the alphabetic principle), whereby morpheme spelling remains constant despite changes in pronunciation, as it is the case of the German orthography (Günther 2003: 49).[6]

The adoption of the orthographic strategy marks the end of the developmental process for learning to read and write words. At this stage, reading and writing commonly involve both the auditory-phonemic and the visuo-graphemic processing routes. Crucially, however, reading and writing processes are assumed to be successfully accomplished based on visuo-graphemic processing alone, in case of no or only limited access to auditory information (Günther 2003: 50). The good literacy achievements obtained by those learners that adopt the orthographic strategy early on in their development provide support for the assumption that this strategy "... comprises the previous approaches in an integrating manner, without being dependent on their full development to the extent that it most consequently comprehends, structurally, the writing of the words" (Günther 2003: 53, our transl.).

2.4.3.3 The role of metalinguistic awareness

There is agreement that the "ability to identify, analyze, and manipulate language forms" (Koda 2007: 2), commonly defined as metalinguistic awareness plays a fundamental part in the attainment of the written language. However, there is less of a consensus on the nature of the relation between the two, and whether it is to be conceived of unidirectionally or reciprocally. While some scholars emphasise the role of metalinguistic awareness as a *requisite* for literacy development, in particular for the identification of sound-letter correspondences, others acknowledge the *reciprocal* nature of the relationship (Penney et al. 2006; Fricke et al. 2008; Ravid & Tolchinsky 2002). Ravid and Tolchinsky (2002), for example, remark on the impact of written texts on the development metalinguistic skills when they state that "[w]ritten text conventions promote metalinguistic thinking in various linguistic domains such as sound-letter correspondence, word and sentence boundaries, and appropriate grammatical constructions (e.g. past perfect in English, passé simple in French, or optional bound morphology in

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6 According to Neef and Primus (2001: 368) this view is corroborated further by measures of error frequency in children's and adults' productions. They also remark that "in language acquisition phoneme based derivation rules are more error-prone than constraints intrinsic to the writing system."

Hebrew)." Koda (2007: 15), in turn, highlights the inter-dependent relationship when he argues that

> [a]lthough the early phases of literacy acquisition depend on children's rudimentary understanding of structural regularities, the initial sensitivity is refined progressively through print encoding and decoding experience … In this respect, literacy and metalinguistic awareness —particularly those facets directly related to the extraction of linguistic information— are developmentally interdependent, mutually enhancing their refinements.

What is more, the inter-related development affects the representation of the knowledge that is attained as is remarked by Ravid and Tolchinsky (2002) when they state that

> … specific aspects of language awareness, especially phonological and morphological awareness, both promote and are promoted by learning to read and write. They do so by establishing links between the internal representation of phonemes, syllables and morphemes and their written representations … Concomitantly, written representations modify these very same internal linguistic representations.

Metalinguistic awareness and hearing loss. Thus far, the view of an inter-related development of metalinguistic skills and written language has received little attention in the literature about deaf learners' written language acquisition. The predominant view in this field maintains that written language is a secondary code of spoken language, and that cascading effects result from the lack of access to auditory input. Clearly, this view is based on the assumption that "successful PA [phonological awareness, CPP] development requires an intact speech processing system. This includes speech perception (input), representations (including knowledge of a word's phonological form, i.e. phonological representations), and speech production (output, i.e. the ability to retrieve, rehearse, and utter spoken words)" (Fricke et al. 2008: 106).

It goes without saying that where the successful attainment of phonological awareness is defined this way, hearing impairment is regarded as a major impediment to its development. Moreover, because advocates of the Dependence hypothesis assume that phonological awareness is a requisite for the mastery of written language, hearing loss turns into a major obstacle for a successful literacy acquisition. And, what is more, for some authors, phonological processing is assumed to be "involved at all levels" (Musselman 2000: 11). Hence, it comes as no surprise that a vast amount of literature has been dedicated to question of how deaf learners might develop phonological awareness, and whether and how they might compensate deficits related to their hearing loss (Musselman 2000: 25). While a detailed discussion of these studies is beyond the scope this work, it must be noted that a uni-directional view of the development of metalinguistic skills must be contrasted with the more differentiated accounts of literacy develop-

ment and the mastery of the alphabetic code presented previously. Such accounts acknowledge that phonological awareness, a *metalinguistic* skill, might not only be a requisite for but also an outcome of written language development.

2.4.4 Hypotheses about cross-modal language mixing

Bilingual acquisition of sign language and written language in deaf learners not only raises issues regarding developmental trajectories in two languages that differ in their modality of expression and accessibility to deaf learners. It also raises the question about the relation of the two languages in the course of the bilingual development. As we explained previously, the sophisticated combination of two distinct grammars in mixed utterances indicates that bilinguals (tacitly) know, by virtue of their innate language endowment (i.e. UG), that grammars are alike in fundamental ways. This knowledge is the basis for the pooling of resources in the course of the bilingual development. Does this assumption hold equally of bilingual deaf learners acquiring two languages that differ in their modality of expression?

Strict separation. One possible assumption would be that the modality difference leads sign bilingual learners to the assumption that they are dealing with two completely different systems. If the modality difference serves as unambiguous cue for a strict separation of both languages from the beginning learners are not expected to pool their resources. Hence, no contact phenomena are expected to occur in the learner data. Recall that considerations along these lines have been put forward in studies conducted in the tradition of Cummins' Interdependence hypothesis (cf. section 1.3.2).

Separation and interaction. Alternatively, we may assume that learners of a sign language and a written language have a tacit knowledge about the universal (equivalent) properties of natural human languages at an abstract level. Hence, much like learners in other acquisition situations, they too are expected to develop two separate linguistic systems *and* to use their linguistic resources creatively in the course of their bilingual development.

(a) Evidence for cross-modal language mixing. Cross-modal (signed/spoken) language mixing in interactions among adult bilingual signers and between deaf parents and their deaf children (Baker & Van den Bogaerde 2008) provides support for the assumption that deaf bimodal bilinguals, too, know about the equivalences of the two languages at a deeper level. Additional support for this hypothesis can be gleaned from the studies undertaken in the context of the research concomitant to the Hamburg bilingual education programme (see Plaza-Pust 2016 for a discussion). Günther et al. (2004) found evidence for cross-modal (signed/written) language mixing in written productions of bilingual deaf

students (the issue of whether language mixing also occurred in sign language productions of the students was not addressed). Following Günther et al. (2004), the bilingual deaf learners investigated compensated temporary gaps in their written language by borrowing sign language structures. Crucially, DGS influence along these lines was found to represent a temporary phenomenon in the written data collected. As the learners' knowledge of written German increased, the incidence of DGS borrowings decreased (cf. Günther et al. 2004; Schäfke 2005). Further, the longitudinal study revealed that learners differed with respect to whether or not they made use of DGS borrowings.

With respect to the DGS properties mixed, the authors mention borrowings involving word order (cf. example (13) which exhibits the verb-final order characteristic of DGS), subject drop (cf. (14)), and the use of the preposition *auf* ('on') (dubbed by the authors as *directional preposition* to describe its use to mark the direction of the activity, as it would be the case in DGS directional verbs[7]) (cf. (15)). Other written productions exhibit a more subtle type of influence from DGS. Consider, for example, (16) and (17). For readers unaware of the bilingual background of the children and unfamiliar with the properties of DGS the deviances in these sequences of elements remain unaccounted for. However, from a bilingual perspective, target-deviant constructions such as (13)-(17) (from Günther & Schäfke 2004: 239–242, our transl.) make apparent that learners make use of the linguistic resources available to them in both languages.

(13) *Löwe   Kopf   treffen.*   (Lars)
 lion   head   hit
 'The lion hits the head (of the wolf).'

(14) *Der Vogel   Fliegen landen Unfal   zwischen Baum*   (Vanessa)
 the   bird   fly   land   accident   between   tree
 'The bird flies, lands, crashes to the ground between the trees.'

(15) *Schafe   läuken   lieben   auf   Löwe   groß.*   (Vanessa)
 sheep   (name)   love   on   lion   big
 'The sheep Läuken loves the big lion.'

(16) *Mutter   und   Löwe   auf   Vogel   Grrr.*   (Thomas)
 mother   and   lion   on   bird   (grrr)
 'The mother and the lion growl at the bird.'

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7 Later in this work (section 3.1.3.2) we will explain the use of the DGS sign glossed AUF with some verbs to mark agreement (note that the notion of *directional verb* is used in some publications on DGS to refer to agreement verbs).

(17) *Dann   er   pfoten   auf   maul.*   (Thomas)
   then   he   paws   on   jaws
   'Then he puts his paws on (his) jaws.'

Unfortunately, the Hamburg studies only provide a global picture of language mixing given the focus on narrative development and text levels attained by the participants. However, the hypothesis that DGS borrowings serve the function of a relief strategy is in line with current assumptions in the field of bilingualism research we explained in section 2.3.2.

Evidence for language mixing was also obtained in Leuninger et al.'s (2003) case study of M., a deaf child born to deaf parents and raised in DGS. According to the authors, M.'s DGS knowledge exerts an influence on her written language acquisition. At the level of word order, verb-final structures (cf. examples (18)-(19)) were found to predominate in her written productions. Further, temporal information typically appeared in sentence-initial position (cf. (19)) as it would be the case in DGS. The authors remark that some German words are categorised according to their equivalent in DGS. For example in (20) *heiß Sonne* ('hot sun') is used as a verb (in the sense of burn), and *grund* ('reason') in (19) is attributed the status of a conjunction.

(18) *Wir mit T*üte *spielen.*   (08.03.00)
   WIR   TÜTE SPIELEN.
   'We played with a bag.'

(19) *Entschuldigung sp*ät *heute Fax schreiben grund gestern sp*ät
   schlafen grund gestern Zeitung lesen (26.06.01)
   ENTSCHULDIGUNG, HEUTE SPÄT FAX SCHREIBE, WEIL GESTERN SPÄT
   SCHLAFENGEHE, WEIL GESTERN ZEITUNG LESE.
   'Sorry, I fax so late today, because I fell asleep so late yesterday because
   I read the newspaper yesterday.'

(20) *Ich fliegte nach Asien aber heiß Sonne*   (25.09.02)
   VERGANGENHEIT ICH ASIEN FLIEGE, ABER SONNE BRENNT-HEISS.
   'I flew to Asia, but there the sun was too hot for me.'
   (Leuninger et al. 2003: 28, 29, 30 their translation into DGS, our free transla-
   tion into English)

Leuninger et al.'s assumptions (2003: 32f.) about the role of language mixing in deaf learners written productions draw on current hypotheses about (bilingual) language acquisition, including the dynamic approach to second language acquisition we elaborated in earlier work (cf. section 2.2.3 for a summary). Suffice it to mention here that language borrowing (or, in their terms, language transfer)

is regarded as a developmentally constrained phenomenon that is bound to the organisation of multilingual knowledge (for further details on the theoretical underpinnings of their analysis see Leuninger et al. 2003: 29f.).

(b) Modality as an ambiguous cue. Evidence of language mixing does not exclude the possibility that the modality difference serves as an additional cue for the differentiation of the languages involved, as does person differentiation in case the parents choose the so-called partner principle (also one person-one language principle) as the language policy adopted in the family or a domain specific use of the languages. However, the diversity of languages and communication systems used in the bilingual classroom (cf. section 1.3.2.1), including manual systems that are used to represent the oral language in the visual mode, qualifies the use of the modality difference as an *unambiguous* cue. Rather, learners exposed to a sign language and a signed system are confronted with the task of using more subtle linguistic properties as an indicator for language separation.

(c) The role of mixing changing over time. Turning to the developmental dimension of language mixing in relation to the organisation of multilingual knowledge, the question arises whether cross-modal language contact phenomena, too, represent developmentally constrained phenomena, affecting specific properties of the developing learner systems. First insights were obtained in the studies conducted on the bilingual deaf learners in Hamburg. As we mentioned previously, in these studies, the role of language mixing was found to decrease as learners advanced in their acquisition of the target L2 written language. However, as the focus of that research was on narrative development, no further details were provided on whether language mixing affected specific language properties at specific points in the development. Neither was the issue addressed of whether the interaction was bidirectional. Recall that language mixing need not occur in one direction only, as different linguistic properties might be acquired first in one language or the other. Another issue that needs to be addressed from a developmental perspective concerns the functions served by language contact phenomena. The assumption that language mixing is a developmentally constrained phenomenon implies that once the target structural properties are established, language mixing may serve other, i.e. pragmatic functions (code-switching).

2.5 Introducing the study: Deaf learners' acquisition of DGS and German

Throughout the preceding sections we have elaborated on the theoretical framework required for an investigation of bilingual language acquisition in deaf learners with a focus on the nature of the development of learner systems. We have

expanded on the question of what is acquired to determine the nature of the language knowledge attained and on the question of how this knowledge is attained to determine how learners tackle the challenge they are confronted with. We also presented current hypotheses in the domain of bilingual language acquisition research about the commonalities and the differences of language development in different acquisition situations. We then narrowed the focus on the bilingual language acquisition situation of deaf learners. We discussed the challenges these learners face and the issues that arise in the investigation of their bilingual language acquisition. Against this backdrop, we turn now to the empirical chapters of this work, dedicated to the bilingual acquisition of DGS and German in bilingually educated deaf learners. In the next section, we briefly recapitulate the main issues raised and present the main questions that guided the research undertaken.

2.5.1 Research questions

The longitudinal study of the bilingual acquisition of DGS and written German presented in the following sections aims to contribute to our understanding of the development of a multilingual competence in deaf learners. By focusing on the structural competences attained in either language and on the range of language contact phenomena produced, the study seeks to provide further insights into bilingual deaf learners' acquisition of a sign language and an oral language.

Acquisition scenario. Language acquisition in bilingual deaf learners, as we learned in previous sections, is determined by a complex interplay of internal and external factors that determine access to and accessibility of the two languages. Variation in age exposure to a fully accessible language marks a fundamental difference between language acquisition in this population vis-à-vis language acquisition in other situations. Further, we have seen that questions concerning the status of the written language need to be addressed in order to ascertain the status of this language in the bilingual development of deaf children. Following current assumptions we hypothesise that written language can be acquired without or with only limited access to the spoken language it relates to. As for metalinguistic awareness, often regarded as a requisite in this endeavour, we assume that it also develops and is further refined as a result of written language development. On a more general level we understand that the assignment of L1 or L2 labels to the languages acquired by deaf learners needs to be conceived of in a flexible manner. This is also reflected in a flexible conception of the language acquisition situation of bilingual deaf learners as it shares characteristics of bilingual first and child second language acquisition. Owing to the specific

circumstances that determine this type of bilingualism we consider neither label as adequate to fully capture the characteristics of this acquisition situation.

Organisation of multilingual knowledge in deaf learners. Against this backdrop, the question arises as to whether current assumptions about the organisation of multilingual knowledge and language contact hold equally of the bilingual development of sign bilingualism in deaf learners.

(a) Developmental trajectories. Firstly, with respect to developmental trajectories in either language, are they also characterised by structure-building processes as it has been found to hold for language acquisition in different acquisition situations? To date, only little is known about the bilingual development of a sign language and an oral language in deaf learners. Studies on sign language acquisition in native deaf learners have provided insights into some of the main milestones in the development of a sign language, but the picture continues to be fragmentary. As for bilingual deaf learners' acquisition of the oral language, developmental studies are virtually non-existent. With respect to the developmental asynchrony between the two languages, the more advanced knowledge of sign language is often taken for granted, whereby assessments are seldom based on empirical data. Another fundamental question pertains to the development of the written language with no or only limited access to the spoken language. Is it also characterised by structure-building processes?

(b) Role of language contact phenomena. Secondly, the sophisticated combination of elements of two distinct grammars in mixed utterances has been found to indicate that bilingual learners know, by virtue of their innate language endowment (i.e. UG), that grammars are alike in fundamental ways. This (tacit) knowledge is assumed to constitute the basis for the pooling of resources in the course of the bilingual development. In the acquisition of a sign language and an oral language, deaf learners acquire two languages that differ in their modality of expression. Does this difference affect the organisation of a multilingual competence? Research on bilingual deaf learners has provided some evidence that sign bilingual learners pool their linguistic resources, and that this can be taken as an indication of their (tacit) knowledge that languages are alike in fundamental ways. From a developmental perspective, the question arises whether cross-modal language contact phenomena are also developmentally constrained. In other words, are these phenomena related to the structural development in both languages?

Taken on the whole the issues that arise in relation to the bilingual development of deaf learners boil down to the question of whether they also pool their linguistic resources in a creative manner as it has been found to be the case of bilingual learners in other acquisition situations.

2.5.2 Introducing the case studies

The empirical study of the bilingual acquisition of DGS and German presented in this work is based on a longitudinal data collection of deaf students attending a bilingual education programme in Germany. In the following we will briefly sketch the profiles of the participants and the key features of the sign bilingual programme they attended. Subsequently, we turn to methodological issues.

2.5.2.1 Participants

The study presented in the following sections is part of a broader longitudinal investigation of bilingually educated deaf students attending the bilingual education programme established in Berlin (cf. section 2.5.2.2). The present study covers the data of six students of the bilingual class.[8]

Table 2.4 provides an overview of (a) the children's age at kindergarten, preschool and bilingual programme enrolment respectively, (b) the vehicular languages or communication systems used in these institutions, and (c) the participants' home language(s). As we can see, the children's age of exposure to DGS ranges from 1;2 years (Christa) to 5;5 years (Fuad). All attended the preschool located at the premises of the school in which the bilingual programme was run. The students' age at the beginning of the bilingual programme (1st year primary school) ranged from about six to seven and a half years. Fuad, Simon, and Hamida's experience of a systematic exposure to DGS at enrolment in the bilingual programme ranges between 1;9 and 2;7 years; whereas Maria, Muhammed, and Christa's experience ranges between 3;6 and 4;7 years. Further, we can see that some of the children have a non-German background (parental language(s) include Arabic, Farsi, and Turkish) and that some parents learned DGS or LBG which they use in the communication with their children. Two children, Hamida and Simon, have deaf siblings.

Table 2.5 provides an overview of the participants' audiometric and audiological profiles. We can see that all participants use hearing aids; two of them (Muhammed and Fuad) have a cochlear implant. Further, their degree of hearing loss (average) ranges from 71 dB to 114 dB, with substantial variation in the measures for their aided hearing thresholds. Participants also differ with respect to their audiological classification (for further details see Günther et al. 2011: 10–14).

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8 At the time of the implementation of the bilingual programme, the number of students participating was 9, 5 boys and 4 girls, all of them children of hearing parents. In the present study, the two boys with additional learning problems were not included. Also, we decided not to include the data of one girl, Lilli, because she changed school about one year after we started recordings.

Table 2.4: Participants' profiles with respect to their home languages, ages at enrolment and language(s) used (based on Günther et al. 2011: 10–14).

	Kindergarten / nursery (vehicular language)*		Preschool (vehicular language: DGS**)	Primary school / bilingual programme	Home language(s)
Muhammed	2;2	(LBG, DGS)	3;2	6;1	Turkish, LBG, DGS
Simon	n.a.		4;9	7;2	LUG/LBG with mother, DGS with deaf sister
Maria	3	(DGS, LGB)	6;6***	7;6	DGS and LBG
Fuad	2;8	(German) integrated Kindergarten	5;5	7;2	Farsi, German, LBG
Hamida	1	(German) regular nursery,	4;4	6;11	Arabic, German (parents use German in interactions with Hamida)
	3;1	integrated nursery			(Hamida has two deaf siblings)
Christa	1;2	(LBG, DGS)	2;11	5;11	DGS, LBG, German

*   age at enrolment
**   LBG used in specific activities
***   Maria initially attended a preschool group with LUG and LBG

Table 2.5: Participants' audiometric and audiological profiles (based on Günther et al. 2011: 10).*

	Hearing aid	Hearing loss (average)	Aided hearing thresholds (*Aufblähkurve*)	Classification (*Hörgrad [audiologisch]*)
Muhammed	CI (at 9;9 yrs)	88 dB	30 dB – 35 dB	residual hearing (*Resthörigkeit*)
Simon	Hearing aid	90 dB	65 dB – 70 dB	residual hearing (*Resthörigkeit*)
Maria	Hearing aid	99 dB	40 dB – 80 dB	severe to profound hearing loss (*an Taubheit grenzende Schwerhörigkeit*)
Fuad	CI (at 3;7 yrs)	88 dB	30 dB – 35 dB	residual hearing (*Resthörigkeit*)
Hamida	Hearing aid	71 dB	40 dB – 60 dB	severe hearing impairment (*hochgradige Schwerhörigkeit*)
Christa	Hearing aid	114 dB	70 dB – 90 dB	severe to profound hearing loss (*an Taubheit grenzend*)

* The original terminology in German is provided in brackets.

2.5.2.2 Key features of the Berlin bilingual education programme

The bilingual education programme attended by the participants in this study is characterised by the following key features.

Status of the programme. The bilingual programme established at the Ernst-Adolf-Eschke Schule in Berlin in September 2001 was approved of by the Berlin Senate with the status of a *Schulversuch* ('pilot programme') for the years 2001–2008. It was to cover the period of 6 school years regular primary education comprises in Berlin, plus the extension of the first school year by an additional year. The programme was set up in close collaboration between the school, the parents' association, and the concomitant research team.[9]

Placement. Following our distinction of bilingual education options elaborated in chapter 1, the programme established in Berlin belongs to the type of educational measures offered within the bounds of special schools for deaf children.

Bilingual conception and status of the languages on the curriculum. By attributing an equal status to DGS and German, the Berlin bilingual education programme is clearly footed on the basic tenets of sign bilingual education discussed in section 1.3.1. Two key features of the programme[10] adopted from the Hamburg programme were the use of the team- teaching method and the inclusion of a separate subject DGS/Deaf Studies on the curriculum. The bilingual team- teaching method applied in this programme implied that 15 hours per week classes were taught in collaboration by the deaf and the hearing teachers (cf. Table 1.3 above). The students were instructed in DGS by the deaf teacher and in spoken German and LBG (Lautsprachbegleitendes Gebärden, i.e. *Signed German*) or LUG (Lautsprachunterstützendes Gebärden, i.e. *sign supported German*) by the hearing teacher. In line with the advantages attributed to the use of a language policy characterised by the one person-one language principle, Günther and Hennies (2011: 1, our transl.) highlight the role attributed to the two teachers

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9 According to Günther and Hennies (2011: 1), the Hamburg experience served as a model (commonly referred to as *Hamburger Modell*, 'Hamburg model') for educational conceptions including sign language in Germany. What made this experience attractive was that it was complemented by sound research, undertaken in close collaboration with the teaching personnel involved, and that it was based on a scientific-pedagogical concept developed at a time when such a concept was unavailable in the country (see also Plaza-Pust 2016). The Swedish model was not used as a basis for the bilingual conception because the bilingual development was conceived of sequentially in that model.

10 The main tenets of the Berlin bilingual education model are summarised in a document published by the *Arbeitskreis Bilinguale Erziehung* (cf. Arbeitsgruppe "Bilinguale Erziehung und Bildung in Berlin" 2011/2001). Three reports were presented to the Berlin Senate, documenting the main characteristics and outcomes of the bilingual experience.

when they state that "… the teachers represented linguo-cultural integration and identification figures for the languages they represented respectively."

Owing to the status attributed to DGS *qua* base language a continuous bilinguality and moving between the languages in the students' communicative interactions, also beyond the team- teaching classes, was another characteristic of the bilingual approach adopted. The students' awareness about the contrasting properties of the languages was enhanced through contrastive teaching (Günther & Hennies 2011: 147).

Another feature of this programme was the explicit promotion of written language skills, with a focus on text level processes, an approach also adopted from the first German bilingual education programme implemented in Hamburg (Günther et al. 2004: 231f.; Günther & Hennies 2011: 147). This means that while children were taught the target grammar of German, it was not formal correctness but the ability to produce and comprehend narrative structures that lay at the centre of the teaching. Crucially, special attention was paid to the work with age adequate texts. As for the promotion of spoken language skills, more attention was paid to the development of these skills in Berlin than it had been the case in Hamburg.

2.5.2.3 Method

As mentioned previously, the present study is based on empirical data collected in the context of a broad longitudinal investigation concomitant to the Berlin bilingual education programme. It covers signed and written narratives elicited on the basis of the picture story book "Frog, where are you?" (cf. Mayer 1969).

Picture based narrative elicitation. The picture book elicitation procedure was chosen despite the widespread practice of collecting spontaneous data in longitudinal investigations of (spoken) language acquisition. It was deemed of advantage to have a certain control on the events referred to by the narrator, not only for the comparison of participants' productions across time, but also for the assessment of their competence in the two languages they were acquiring. As for the choice of a picture book vis-à-vis film viewing, we considered the former more appropriate, in particular for the first years of the investigation, covered in the present study, because of the additional memory burden the latter might have involved (cf. Berman & Slobin 1994: 40–41).[11]

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[11] In the final 2 years of the longitudinal study not covered in this work we decided to change the elicitation technique and use short clips, following the observation that students of an elder age tend to be bored by picture stories.

At the same time, we acknowledge that what sets this type of elicitation procedure apart is that the narrative genre produced is characterised by "verbalization of graphic representation of non-veridical, fictive sequences of events" (Berman 2004: 262). It is interesting to note that in literate Western cultures, even young children aged 3–4 have been found to be able to "translate static, graphic material into dynamic verbal event descriptions", and children aged 5–6 to produce sequentially organised narratives (Berman 2004: 263). However, only older school-age children and adults manage to produce a globally organised narrative text. These findings indicate that while children are familiarised with the task they have to accomplish their eventual narrative products depend on their command of the language and constraints on its use.

On a more general level, because elicitation procedure and situational context might affect the choice of linguistic forms used, we acknowledge that these two factors need to be considered in the interpretation of the data. We note also that caution is required in the extrapolation from a limited set of data collected under specific circumstances.

Selection of the "frog story". The so-called frog story is a picture story that differs from short picture sets commonly used in the literature not only in length but also in its episodic complexity. Indeed, unlike short picture series confined to one main episode, the main theme of the frog story (the search of a runaway frog) is made up by many sub-episodes (Berman 2004: 268).

For the purpose of our investigation, we favoured the choice of this picture book over a small set of pictures, because, as Berman and Slobin (1994: 41) point out, a picture story with a more complex structure, as is the case of the frog story, requires to recall the progression and outcome of the story while describing the individual pictures.[12] At the same time, because participants were not instructed to choose a particular genre, we acknowledged that participants could vary in the text type they would produce (between picture-description and story-telling or a mixture of both) (cf. Berman & Slobin 1994: 42).

Another factor that tilted the choice toward this particular story was the available literature on a broad cross-linguistic investigation into narrative development based on this picture book (cf. the contributions in Berman & Slobin 1994; and Strömqvist & Verhoeven 2004; among others). Though different in orientation (our research focuses on development and knowledge of grammar), our

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12 Berman and Slobin (1994: 3) remark that this story was used first by Bamberg in his dissertation because of the diversity of temporal relations that might be expressed in the retelling (they mention: sequence, simultaneity, prospection, retrospection, ongoing and competed events) (for further discussion see Berman & Slobin 1994: 20f.)

study has profited from the insights obtained in "frog studies" in that they helped us discern those phenomena in learner productions that needed to be regarded from the more global perspective of narrative development.

2.5.2.4 Procedure

Scope and procedure of the investigation were developed by the author in close collaboration with the research team concomitant to the Berlin bilingual education programme.

Timing and researchers involved. Initially, sessions were scheduled every 5–6 months for the period of 3 years. Later it was decided to collect additional data once a year in years 4 and 5 after the beginning of the study. Signed and written narratives were elicited on separate dates to avoid potential cross-linguistic effects. DGS narratives were recorded first, with a time span of about 2 weeks before the written data were collected.

Because linguistic skills of investigators might affect the data elicited,[13] to the extent that participants assess their language skills, which might influence their language choice (and language mixing), we decided to split the collection of the data by person: a deaf signer, member of the research team, would record the narratives elicited in DGS, using this language also in interactions with the participants; the written productions, in turn, were recorded and collected by the conductor of the concomitant research team and the author (both hearing, second language learners of DGS).

Procedure. Participants received a paper copy of the frog story book pictures. During the sign language elicitation sessions these copies were put on a board situated at the left or right side of the participant. During the written German sessions participants had their picture copies on their table. Participants were also given word lists that had been prepared by the research team conductor. Furthermore they were allowed to ask for words during their writing (upon request, information about their spelling was provided on the paper or via fingerspelling).

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13 The phenomenon is well known in the area of language acquisition research where it is referred to as "researcher paradoxon". Basically, the problem refers to the circumstance that the participants' behaviour without the presence of the researcher is impossible to determine. The issue is particularly critical in studies on language choice and language contact in bilinguals. In case studies with investigators involved as participant-observers (as it often occurs in child L1 case studies) the researcher turns into an independent variable (Tracy 1994/5: 194). As for the present study, the investigators did not engage in conversational interactions with the participants. The procedure was explained to them in either language prior to the recording. Exchanges with the participants occurred on an occasional basis during written language productions for the purpose of vocabulary requests only.

Only for the first recording we decided to shorten the rather long frog story (the pages not provided are indicated in Table 2.7 below).

DGS productions were recorded on an individual basis, whereas participants were grouped for the writing sessions. The participants were videotaped during their narration of the frog story in DGS and in written German. In the DGS recordings, the video camera was placed next to the addressee. Video-recordings of the written German sessions were made for the purpose of capturing the participants' writing process, their reviewing of the written productions, and potential interactions between the participants and the researcher. The video camera during these sessions was placed in front of the group. The analysis of these clips, however, is not part of this study.

Data coding: DGS. All DGS data were transcribed and coded in ELAN,[14] using annotation conventions established specifically for the purpose of this analysis.[15] In a first step, the signed narratives were translated into German glosses by deaf individuals native in DGS. In a second step, the transcriptions were counter-checked by the deaf colleague in charge of the collection of the DGS data and the author (independent inter-coder reliability).

The ELAN files created for each recording contain several annotation tiers (cf. Table 2.6), apart from the two tiers created for glosses of the signs produced with the dominant and the non-dominant hand respectively. Separate tiers were created for specific measures of (a) syntax (syntactic categories, word order patterns, clause types), (b) morphosyntax (verb inflection, with information on verb type, arguments encoded, locus selection), (c) referential establishment and maintenance (loci selection, coindexation), (d) reference forms and referential functions served, (e) referential shifts (signalling and marking of referential frameworks), and (f) error types. Separate tiers, except for the line created for annotators' remarks, were aligned to allow for the identification of simultaneously occurring phenomena. Subsequently, the data were entered into a data base that permits analyses of frequency and distribution of specific phenomena.

In this context, a note is due on the caution imposed on word order analysis in the interpretation of data for which it is difficult, at times, to establish clause boundaries. This issue is not exclusive to the present study but has also been raised in research on the grammatical properties of sign languages (cf. Johnston et al. 2007: 189), where it has been pointed out that "[t]he identification of clause

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14 ELAN is a professional tool for the creation of complex annotations on video and audio resources. It is available from http://tla.mpi.nl/tools/tla-tools/elan/.

15 In the choice of our own specific conventions we have been inspired by those used in common transcription systems such as BTS, CHILDES or ECHO.

boundaries is difficult, and differences in the analysis can lead to differences in putative constituent orders attributed to an utterance." We might add to this that the intricacy of an appropriate interpretation is increased where the analysis pertains to productions of bilinguals (or bilingual learners) because, in this case, errors are often readily interpreted as candidates for language borrowing.

Data coding: written German. The handwritten narratives were transcribed and entered into a data base using annotation conventions established specifically for the purpose of this analysis. Several coding lines were created (cf. Table 2.6) for specific measures of (a) syntax (syntactic categories, word order patterns, clause types), and (b) morphosyntax (verb inflection). The data base was created to also allow for analyses of error frequency and distribution (including deviances at the lexical, morphological and syntactic levels).

Table 2.6: DGS and written German data bases: information coded.

DGS		Written German	
Line	Description	Line	Description
transcription	transcription of signed narratives	transcription	transcription of handwritten texts
proposition	grouping of elements with a propositional meaning	proposition	grouping of elements with a propositional meaning
syntactic category	categorial status	syntactic category	categorial status
morphosyntax	grammatical information encoded	morphosyntax	grammatical information encoded
word order	clause types and syntactic patterns	word order	clause types and syntactic patterns
referential framework	type of referential framework		
referential function	referential function served by reference forms		

2.5.2.5 Analysis of the data

The data collected were subjected to various qualitative and quantitative analyses that were based on (a) a descriptive framework of the major developmental milestones established for the acquisition of either language, and (b) a descriptive framework of the grammatical properties of DGS and German. For each lan-

guage we elaborated diagnostic criteria that would allow for the assessment of the competences available. The systematic analysis of the data has been guided by the following questions:

- What is the structure available to the participants at the onset of the study?
- If they are not fully competent at the onset of the study, how far do they progress in the time span covered by this study?
- If their productions contain evidence of language mixing, what are the linguistic properties affected and does language mixing change over time?

Data samples analysed. In our selection of the files subjected to analysis we were guided by the following hypotheses. Given the rather advanced average age of the participants at the onset of the study, we expected that they would demonstrate full competence of the sentential structure of DGS in the first recording (file 1). To track down potential further development we decided to additionally include a sample collected a year after the onset of the study (file 3) in our analysis. Because mastery of discourse constraints on the use of linguistic devices is known to represent a protracted development in sign language acquisition we advanced that changes in the participants' command of DGS would become apparent at this level.

As for written German, we expected participants to vary substantially regarding their competence level at the onset of the study and the progress they would make subsequently. To better track down potential changes in the participants' learner grammars we decided to subject the five samples elicited on the basis of the frog story to systematic scrutiny. The selection of a larger number of samples for German than for DGS would also allow us to look at a larger time span for German, which we deemed necessary in order to assess a development we expected to proceed at a much slower pace in German than in DGS.

Table 2.7: Longitudinal investigation at the Berlin programme: files covered in this study.

Elicitation material		Timing		Analyses		
Story	Medium	Recordings		(file no.)	DGS	German
Frog, where are you?	Picture book	Year 1	April	(file 1)	✓	✓
			October	(file 2)		✓
		Year 2	April	(file 3)	✓	✓
			October	(file 4)		✓
		Year 3	March	(file 5)		✓
The mole and the snow man	Clip	Year 4	February	(file 6)		
Lambert, the small lion	Clip	Year 5	April	(file 7)		

* Pages not included: 5–7, 10–11, 16, 21–22.

A note on productivity vis-à-vis patterns of emergence. Following the dynamic approach elaborated in section 2.2.3.1 we were not only interested in the systematic characteristics of the respective learner grammar, but also considered exceptions or marginal phenomena that might give a cue about potential upcoming changes and reorganisations. From this perspective, as remarked upon by Tracy (1994/5: 198) "what matters therefore is not absence vs. presence as such but an overall *pattern of emergence*, something equivalent to the biologists' *fossil record*." As outlined in section 2.2.3.1, the role of marginal phenomena can only be interpreted *a posteriori*, against the backdrop of the overall development.

2.5.3 Outline of the empirical chapters

The acquisition of DGS and German by the participants in this study is discussed in chapters 3 and 4. For each language, we provide a sketch of the descriptive framework elaborated and present the diagnostic criteria used to assess the participants' competence. We then turn to the developmental profiles established for each participant based on the analyses of the data collected. The discussion focuses on the participants' command of the language at the onset of the study and further progress during the time span covered in this study.

In the description of the main characteristics of the two languages we have been guided by the purpose of elaborating a framework that would allow us to provide an account of the major developmental milestones in the two languages. In this endeavour, we have been confronted with the circumstance that the description of DGS is ongoing. In the last years, several publications containing descriptive accounts of the main morphological and syntactic characteristics of this language have been published. However, there is, to date, no comprehensive account of the grammatical properties of DGS. The situation is markedly different for German, a language that has been studied within the generative framework for many years. As a consequence, and with a view to keeping the description of the two languages at a similar level, the descriptive framework is elaborated in more detail for DGS than for German. The discrepancy in the scope of the research on either language is reflected also in acquisition studies, as several studies have been dedicated to the development of German in different acquisition situations, while there is only one study dedicated to the acquisition of one grammatical sub-area of DGS. Because of this circumstance, we elaborated a working proposal on the main developmental milestones by drawing also on the available studies into the acquisition of other sign languages.

The presentation of the individual case studies is followed by a discussion of the major insights obtained into the acquisition of DGS and German.

3 DGS: grammatical sketch and summary of acquisition studies

Sign language is commonly attributed the status of first or primary language in the bilingual language development of deaf learners because, unlike spoken language, it is the language that is fully accessible to these learners. However, as we explained previously, exposure to the language seldom occurs from birth in this population, and it is infrequently used in the family context. These circumstances raise the question about the competences attained by bilingually educated deaf learners who are exposed to the language outside the home, at a later age, as it is the case of the participants in this study. As the learners are attaining the language in a bilingual context, in which they also are exposed to and use a manual form of the oral language, two further issues that deserve special attention pertain to the differentiation of the languages and codes, and the role of language contact phenomena in the course of the bilingual development.

In the following sections, we will first provide a sketch of the main characteristics of DGS. Subsequently, we will present our working proposal about the main milestones in the acquisition of the language. The remainder of the chapter is dedicated to a discussion of the developmental profiles established for the participants in our study based on the diagnostic criteria elaborated for the assessment of the attainment of the target grammar.

3.1 DGS: a grammatical sketch

In our investigation of the acquisition of DGS we have focused on the leaners' attainment of the target properties at the levels of word order and morphosyntax. Constraints that involve the level of discourse have also been taken into consideration because in DGS many properties are bound to the syntax-discourse interface. Before we turn to a summary of the specific characteristics of DGS at these levels, a note is due about typological characteristics of the language related to its use of the visual-gestural modality of expression.

DGS, like other sign languages, is a natural human language. Sign languages and spoken languages involve different perceptual and productive systems. While spoken languages involve auditory processing and vocal production mechanisms, sign languages are perceived visually and their articulation involves the systematic use of body parts and space.

Despite the difference in processing modality, sign languages and spoken languages share some important properties of their underlying grammatical

structure which provides support for the assumption of a universal basis to all natural human languages. The use of a common theoretical framework in the investigation of signed and spoken languages offers the possibility of identifying commonalities and differences in the organisation of human languages. Knowledge of a particular sign language, like that of particular spoken language, includes knowledge of the vocabulary (the lexicon), the sublexical formational structure (phonology), the rules of word formation (morphology), and the rules of sentence formation (syntax) (cf. Sandler & Lillo-Martin 2006 for an introduction into sign language linguistics, Hohenberger 2007 for a discussion of variation across sign languages). In this work, we are particularly interested in the syntactic and morphosyntactic properties of DGS, and in those phenomena that involve the syntax-discourse interface. These are elaborated in the following sections.

3.1.1 Word order

Word order in sign languages, including DGS, has been found to be determined by several grammatical and discourse requirements. There is a consensus that the basic word order of DGS is SOV. Further, while the verb obligatorily, appears sentence-finally, the order of other constituents might vary, following diverse requirements (Glück & Pfau 1999; Happ & Vorköper 2006; Rathmann 2001; Steinbach 2007). Word order in (21) (cf. Leuninger 2000: 238, our transl.)[1], for example, follows the figure-ground principle known from gestalt psychology: it requires that the ground be expressed before the figure (Happ & Vorköper 2006: 111). In DGS, unlike in German, there is no asymmetry between main and embedded clauses regarding verb placement, as DGS is a strict SOV language, that is, verbs always appear sentence-finally. The sentence-final position of verbs in complex clauses is illustrated in example (22) (from Herrmann & Steinbach 2007: 158, our transl.), an example of a clause with an embedded indirect quotation. Sentence types are distinguished through the use of non-manual components. Example (23) (from Happ & Vorköper 2006: 451, our transl.) shows that the conditional clause is marked through raised eye-brows, the main clause with a head-nod on the verb (note that conditional clauses always precede the modified main clauses).

(21) WALL$_1$ JACKET   I   HANG_ON$_1$
     'I hang up the jacket on the wall.'

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1 The notation devices adopted for DGS examples are summarised in the list of "transcription conventions for sign language examples"

(22) LENA₃   SAY :   IX₃   WITH-PLEASURE   BOOK++ READ.
'Lena says she likes to read books.'

(23)

	cond:ant		cond:cons
OBELIX ROMAN CAMP	DESTROY	CAESAR	THROW-A-FIT

'If Obelix destroys the Roman camp, Caesar will throw a fit.'

Another characteristic that is of relevance, in particular, from a comparative perspective, is that no auxiliary (copula) verb is used in predicative constructions in DGS. The linking of the subject and the predicative adjective or other complements requires the use of a determiner, i.e. DET$_{LOC}$ (also transcribed as DORT, 'there') to express location (24), or DET$_{ART}$ in combination with predicative adjectives (25). Further, the determiner DET$_{EXIST}$ (usually notated as DA) is used to express existence, presence or possession (26) (examples [24–26] from Happ & Vorköper 2006: 111, 106, 114, our transl.). We will come back to the use of determiners and referential loci in section 3.1.4.2.

(24) TREE$_A$ [DET$_{LOC}$]$_{ON-A}$ BIRD
'The bird is on the tree.'

(25) DOG$_1$ [DET$_{ART}$]$_1$ SMALL
'The dog is small.'

(26) PROFESSOR$_1$ [DET$_{EXIST}$]$_1$ DICTIONARY
'The professor has a dictionary.'

3.1.1.1 Word order and morphological case

In DGS, subjects and objects are not overtly case marked but are assigned abstract case in their respective structural positions (Happ & Vorköper 2006: 101). In some constructions with plain transitive verbs (see (27)), case is assigned *via* PAM (for *personal agreement marker*, also often notated as AUF ('on'). We will explain the role of PAM as an agreement marker in section 3.1.3.2. The other personal agreement marker BEM (*benefactive agreement marker*) marks benefactive case (also notated as FÜR, 'for') (28) (examples [27–28] from Happ & Vorköper 2006: 101, our transl.).

(27) MAN$_1$ [DET$_{ART}$]$_1$ [MAN   OTHER]$_2$ KNOW   PAM$_2$
'The man knows the other man.'

(28) [PRON$_{PERS}$]I   BOOK   BUY   BEM$_{YOU}$.
'I buy a book for you.'

3.1.2 Referential and spatial loci

A characteristic of sign languages studied to date, including DGS, is that in discourse referents are associated with specific locations in the sign space. This process is referred to as "establishing a referent" or "nominal establishment" in the literature (Lillo-Martin 2002: 246; cf. also Bellugi et al. 1990). The locations selected are called *loci* (also: *referential* or *R-loci*, cf. Bellugi et al. 1990: 16; Lillo-Martin 2002: 245). Various linguistic means can be used to establish referential and spatial loci (cf. section 3.1.4.2 and Table 3.6 below for an overview). Once referential loci have been established, the loci can be used to mark verbal agreement (see section 3.1.3.5). Further, picking out the same loci in a particular discourse indicates referential identity (*co-reference*) (cf. section 3.1.4.2).

3.1.3 Morphosyntax

The grammatical information encoded in verbal morphology of sign languages like DGS (Happ & Vorköper 2006) or ASL (Lillo-Martin 1999: 536) includes agreement with the object, or the subject and the object, aspect, and location. For example in (29) (cf. Glück & Pfau 1998: 8) the DGS verb GIVE agrees with the subject and the indirect object (via beginning/final points of the path movement), with the direct object (via handshape), and is modified for aspect (via multiple reduplication). In DGS, verbs are not overtly marked for tense. Temporal adverbials like FUTURE, YESTERDAY, and NOW are used to express the time of an event or activity (Happ & Vorköper 2006: 117f.). As illustrated in (29) these adverbials always appear sentence-initially and are not repeated in the course of the narrative or dialogue so long as the information remains the same.

(29) SUNDAY   MAN-IND$_1$ GIRLFRIEND-IND$_2$ ROSE$_A$ $_1$[GIVE-CL$_A$]$_2$-ITE
    'On Sunday the man is giving a rose to his girlfriend over and over again.'

One issue that has been subject to debate in sign language research concerns the distinction of verb classes in relation to the grammatical information encoded. One basic criterion that is used to distinguish verb types concerns lexical specification of the beginning and end points of the movement component in the phonological structure of verb forms (compare Table 3.1). While the lexical entries for some verbs (so-called *plain verbs*) contain the information about their modulation in space, the forms of other verbs are determined by referential or spatial features of the arguments they encode (so-called *agreement* and *spatial verbs* respectively). The main characteristics of these verb types are described in the following sections.

Table 3.1: Verb types in DGS.

Verb type	Characteristics
Plain verbs	– lexically specified for initial/final locations
Agreement verbs	– initial/final locations change in relation to 　– the object or 　– the subject and the object
Spatial verbs	– initial/final locations change in relation to spatial locations – handshape changes in relation to subject features

3.1.3.1 Plain verbs

Plain verbs such as the DGS verbs listed in (30) (cf. Happ & Vorköper 2006: 136, our transl.) are lexically specified for their beginning/ending positions (Herrmann & Steinbach 2007: 155; Sandler & Lillo-Martin 2006: 24). These verbs do not exhibit overt realisation of agreement. However, they can be inflected for aspect (cf. (31)).

(30) BUY, WORK, BELIEVE, LIE, PAY, PLAY

(31)　　　　　　 <u>asp:iterative</u>
　　　G-E-R-D-A　　PAY　　　　　　　　　　　(Leuninger 2000: 236, our transl.)
　　　'Gerda pays again and again.'

Furthermore, when they occur in constructions that require a reference to a location a spatial locus must be established via a spatial index (in example (32)). This marks a difference to spatial verbs that establish loci unambiguously (cf. section 3.1.3.3 below), compare example (33)) (Happ & Vorköper 2006: 138, our transl.):

(32) STREET$_A$　　[DET$_{LOC}$]$_A$　　CHILD++　　PLAY.
　　　'The children are playing on the street.'

(33) STREET$_A$　　CHILD++GO$_{OVER-A}$
　　　'The children cross the street.'

However, Happ & Vorköper (2006: 210) remark that some plain verbs in DGS can establish loci for person or location, although not in an unambiguous way. Examples (34) and (35) (Happ & Vorköper 2006: 206, our transl.) illustrate that agreement marking in this sub-group of plain verbs is optional: whereas in (34) the two instances of the verb BUY agree with the spatial loci associated previously with two different locations (in this case, shops), BUY remains uninflected in (35).

(34) YESTERDAY   BOOK   SHOP$_{A,B}$ [DET$_{LOC}$]$_A$ [DET$_{LOC}$]$_B$
     MAN   BOOK   BUY$_A$ BUY$_B$.
(35) YESTERDAY   BOOK   SHOP$_{A,B}$ [DET$_{LOC}$]$_A$ [DET$_{LOC}$]$_B$
     MAN   BOOK   BUY.
     'Yesterday the man bought a book in this bookshop and in that bookshop.'

According to Happ and Vorköper (2006: 208) agreement in these *weak* agreement verbs is weak because it cannot be determined unambiguously whether the agreement involves a person or a location. Hence, reference maintenance is not possible at the discourse level because of the ambiguity mentioned.

3.1.3.2 PAM (personal agreement marker)

In DGS, case and agreement relations in constructions with plain verbs can be overtly marked through the use of a free morpheme, that is, through a personal agreement marker (henceforth PAM) (see example (36) from Happ & Vorköper 2006: 320, our transl.). PAM has been attributed the status of an auxiliary verb that marks subject/object agreement in DGS (cf. Pfau & Steinbach 2006; Rathmann 2001 for detailed discussions), whereby the object PAM agrees with must be animate. Notice that PAM can also be used in constructions with predicative adjectives (cf. (37) from Happ & Vorköper 2006: 136, our transl.).

(36) YESTERDAY   [DET$_{POSS}$]$_I$ FRIEND   LIE   PAM$_I$.
     'Yesterday my friend lied to me.'
(37) [PRON$_{PERS}$]$_{YOU}$ CROSS   PAM$_I$.
     'You are cross with me.'

3.1.3.3 Spatial verbs

The second type of verbs, so-called spatial verbs, encodes information about locations. Spatial verbs agree with locative (oblique) arguments (Hänel 2005: 55, Happ & Vorköper 2006: 138, Lillo-Martin 2002: 246). These verbs establish spatial loci (cf. example (38)). They can be sub-divided further into verbs of location (cf. examples in (39)) and verbs of motion (or directional verbs) (cf. examples in (40), all examples from Happ & Vorköper 2006: 138, our transl.). A characteristic component of spatial verbs is the classifier morpheme, as is explained in the next section dedicated to classifier agreement.

(38) OBELIX   BANK$_A$ SIT$_{ON-A}$
     'Obelix sits on the bank.'
(39) SIT, STAND, LIE

(40) GO(BY CAR)$_{TO}$, GO$_{TO}$

3.1.3.4 Classifier agreement

In sign language linguistics, handshape units in verb forms that express a meaning related to the subject or the object of a given sentence have received much attention because of the complex information that is expressed simultaneously through constructions that contain these units. The varying terminology used to refer to these units and the constructions they appear in reflect the ongoing debate about their linguistic status (cf. Schembri 2003: 4). As a detailed discussion of the appropriateness of the use of the notion of classifier in sign languages vis-à-vis spoken languages (cf., for example, Slobin et al. 2003: 272) is beyond the scope of this work, we will continue to refer to these handshape components as *classifiers* and assume that the set of classifier morphemes in a given sign language represents a set of bound morphemes that cannot constitute a word on their own (cf. Sandler 2006: 193; cf. also Benedicto & Brentari 2004). Although some scholars treat classifiers as a separate system because they are reminiscent of gestures, classifier constructions "are not pantomimic analogues" (Sandler 2006: 193). Rather, classifier constructions are rule-governed and they involve a finite set of handshapes and movements (Sandler 2006: 193). Further, as pointed out by Sandler (2006: 194), "[t]he individual morphemes in the classifier subsystem, each a minimal pairing of form and meaning that recombines productively with other morphemes in the system, must be assumed to be independently listed in the lexicon, like other morphemes." Slobin et al. (2003: 272) highlight the referential function of these sign components which would consist in identifying or designating discourse elements. These authors emphasise the central role of the classifier system as "a flexible discourse tool" that serves to maintain reference and construct coherent and cohesive discourse (Slobin et al. 2003: 272), an aspect we will take up below when we discuss complex classifier constructions (section 3.1.3.4).

Verbal classifiers can be distinguished into two types depending on the argument they agree with, namely *subject* classifiers and *object* classifiers (cf. Glück & Pfau 1997: 42). For ease of reference we provide a summary of the classifiers referred to in this work in Table 3.2 (reference to the corresponding semantic type of classifier is provided in brackets).[2]

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2 The terminology used in the literature to distinguish between different types of classifiers varies. Although we will also use notions based on semantic distinctions, we believe that a distinction based on grammatical roles is particularly useful for a study focused on grammar development.

Table 3.2: Verbal classifiers (based on Happ and Vorköper 2006: 175).

Classifier type		Function	Grammatical characteristics
Subject classifier	(*class*, also: *entity*)	Expression of physical properties of referents	– agrees with the subject (= THEME) – bound morpheme (verbs of motion and location)
	(*body part classifier*, sub-group of *class*)	Expression of motion of body parts of living creatures	– agrees with the subject (= AGENT) – bound morpheme (verbs of motion) – involves referential shift
Object classifier	(*handle*)	Expression of handling of referents	– agrees with the direct object (= THEME) – bound morpheme (verbs of object transfer, also: *causal verbs of motion*)

Subject (also: class or entity) classifiers and spatial verbs. Spatial verbs (verbs of motion and location) take class classifiers (also referred to in the literature as *entity* classifiers, cf. Glück 2005: 185; Perniss 2007). These verbs agree with specific subject features, reflected in the choice of the handshape (note that the phonological feature of handshape is not determined lexically, which is similar to the lack of specification of beginning and end locations in agreement verbs, see section 3.1.3.5). There is a limited set of handshapes used to express this type of agreement. In DGS, for example, the B-hand form is used to refer to the class of vehicles with four wheels (hence, this would be the handshape used in example (41), from Happ & Vorköper 2006: 156, our transl.). Constructions with body part classifiers, a sub-group of class classifiers, involve a shift of perspective or referential shift (cf. (42)) (we will discuss referential shift in section 3.1.4.3).

(41) WOODS$_A$ CAR$_\lambda$ [DRIVE$_{CL:\lambda}$]$_{THROUGH-A}$
    'A car is going through the woods.'

(42)   <u>   manner: silently   </u>
     GARDEN$_A$ CAT$_\lambda$ [[GO$_{CL:\lambda}$]$_{THROUGH-A}$]$_{ASPECT:CREEPING}$.
     'A cat went creeping through the garden.'
     (Happ & Vorköper 2006: 172, our transl. N.b.: the notation of the referential shift above GO omitted here is also missing in the original)

Object (also: handle) classifiers. In some verbs, the choice of the handshape relates to the physical properties of the object or the way the object is manipulated (cf. (43)–(44), from Happ & Vorköper 2006: 160) (cf. Schembri 2003: 22

for a detailed discussion of the properties involved).[3] Verbs that belong to this group (cf. the DGS verbs in (45)) are so-called verbs of object transfer (in Happ & Vorköper's terms *kausale Bewegungsverben*, 'causal verbs of motion', plus the verb GIVE). Notice that the verbs agree with all their arguments (with the direct object via classifiers, and with subject and indirect object via movement).

(43) MAN$_1$ [DET$_{POSS}$]$_1$ WIFE$_2$ FLOWER$_\lambda$ $_1$[GIVE$_{CL:\lambda}$]$_2$.
'The man gives a flower to his wife.'

(44) STUDENT$_1$ PROFESSOR$_2$ EXAM WORK$_\lambda$ $_1$[GIVE$_{CL:\lambda}$]$_2$.
'The student handed over the thesis to the professor.'

(45) SET, PUT, CARRY, PLACE, LIFT, TRANSPORT, THROW, TAKE, POUR-IN

In constructions with objects that have been previously specified with a SASS (size and shape-specifier) classifier the verb takes up features of this object through the bound handle-classifier morpheme (notice that SASS classifiers are free classifier morphemes that may fulfil the function of an adjective, cf. Happ & Vorköper: 2006: 155. SASS classifiers are not used as a morphological part of the verb, but are only used for the introduction of the referent later referred to by the verb, cf. Glück & Pfau 1997b: 4).

3.1.3.5 Agreement verbs

Agreement verbs do not contain specifications of their beginning/end locations (Herrmann & Steinbach 2007: 156). Rather, their modulation in space is determined by grammatical and discourse criteria. Table 3.3 provides a sketch of the linguistic levels and grammatical processes involved in constructions with these verbs. Clearly, locus features, relevant at the phonological level, need to be distinguished from the information encoded or associated with particular loci picked out by agreement verbs at the syntactic and discourse levels. We will assume here that the specification of person and number features shared between the verb and its arguments is relevant at the level of syntax, referential identity being relevant at the level of discourse (cf. section 3.1.3.6). Further, agreement verbs can

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3 In Happ & Vorköper's (2006: 161) analysis these are objects with the theta-role THEME. Slobin et al. (2003: 279), by contrast, state that the handshape generally "incorporates the patient of the verb". Schembri (2003: 22) remarks on both the role of 'patient' or 'theme' assumed by the referent (and, at times, the instrument role).

be distinguished depending on the arguments they agree with as is illustrated in Table 3.4 (cf. Hänel 2005: 203).[4]

Table 3.3: Agreement verbs.

Linguistic level	Information		Grammatical process
Phonology	–	beginning / end locations, sign orientation	– readjustment
Syntax	–	person and number features	– agreement
Discourse	–	referential identity	– coindexation

Table 3.4: Types of agreement verbs.

Type of agreement marking	Arguments		DGS examples
Double (*transitive verbs*)	–	subject and direct object (subject optional)	– VISIT, ASK
Double (*ditransitive verbs*)	–	subject and indirect object (subject optional)	– GIVE
Single	–	object	– HATE

Example (46) (from Happ & Vorköper 2006: 43, our transl.) illustrates *subject-object* verb agreement in DGS (Happ & Vorköper 2006: 141). Notice that the verb GIVE-AS-A-PRESENT establishes the loci for the subject and the indirect object. *Object* agreement verbs, however, do not establish loci for their subject. Hence, later reference to subjects introduced in such constructions requires the establishment of a locus through the use of a referential index (cf. example (47) from Happ & Vorköper 2006: 142 our transl.).

(46) LECTURER$_1$ PARTICIPANT$_2$ APPLE $_1$GIVE-AS-A-PRESENT$_2$ HE$_2$ SWEET.
 'The lecturer gives the participant an apple. He is a sweetie.'
 AFTER-THAT HE$_1$ SIGN#LANGUAGE TEACH$_X$.
 'After that he teaches sign language.'

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4 Research on sign languages has shown that subject agreement is more marked than object agreement, that is, if verbs have only one slot for agreement this will be for object agreement, subject agreement being optional if there are two slots, while object agreement is not (because this observation holds of the sign languages studied, Rathmann and Mathur [2002: 372] claim that this is a substantive universal of sign languages. See also Sandler and Lillo-Martin 2006: 46)

(47) CLAUDIA$_1$ [DET$_{ART}$]$_1$ PAULA$_2$ TEXT FAX$_2$.
'Claudia sends the text to Paula via fax.'

3.1.3.6 Agreement: some points of controversy

> *... does it matter to the syntax that verb agreement is realized spatially?* (Lillo-Martin 2002: 252)

The linguistic status of agreement in sign languages has been called into question by some authors who remark, among other things, on the selective nature of agreement (agreement is a phenomenon that is exhibited only by some verbs) and the lack of specification of verb inflection (the actual agreement markings are not listed in the lexicon) (cf. Table 3.5 for an overview of the controversial issues) (cf. Mathur & Rathmann 2012 for a discussion of the relevant literature).

Table 3.5: The status of agreement: controversial issues.

Elements	Controversial characteristic
Agreement markings	− lack of listability (forms)
Verb arguments	− optionality of subject agreement
Lexical items	− selective nature of agreement marking

A detailed discussion of the arguments that have been subject to a longstanding debate is beyond the scope of this work. However, we shall briefly outline the position adopted in this work, which roughly maintains that the information encoded through the initial and final locations of agreement verbs is best characterised as verb agreement (for a detailed discussion of the main arguments see Lillo-Martin 2002: 249 f.). The main tenets of this approach are as follows.

Verb agreement and thematic structure. The choice of verbs participating in the class of verbs that agrees with their subject and object in person and number is not random but constrained by their s-selection features (i.e. their thematic structure) (see Rathmann & Mathur 2002 for a detailed discussion).

Grammatical information encoded. Feature sharing between agreement verbs and their arguments concerns particular syntactic roles (subject and object). The grammatical processes are also reflected in various syntactic phenomena such as the licensing of null arguments (Lillo-Martin 2002: 251).

Person distinction at the lexical level. Following Meier (1990) two categories of loci can be distinguished concerning their specification. The locus used to refer to the first person is listable (the location is fixed). The loci used to refer to a

non-first person represent a bounded set of loci falling within the signing space,[5] which is, however, not listable. The infinity issue, as Rathmann and Mathur (2002: 377) put it, is thus one of listability.

Person distinction at the syntactic level. The dual first/non-first person distinction is relevant to syntax. For example, in the context of referential shift the first person pronoun may pick out a referent other than the signer (a characteristic reserved to the first person). By contrast, the difference between various non-first locations is irrelevant at this linguistic level (no syntactic process treats a location on the right differently than a location on the left) (Lillo-Martin 2002: 255).

Referential identity at the discourse level. The expression of co-reference involves choice of the same locus. Hence, pronouns with identical referential indices are interpreted as picking out the same referent at the discourse level (Lillo-Martin 2002: 255) (we will expand on the constraints relevant at this level in section 3.1.4.2).

3.1.4 Syntax-discourse interface

Throughout the preceding sections we have presented the main (morpho-)syntactic characteristics of DGS. In our sketch, we have focused on the expression of grammatical relations at the sentential level, advancing also the relevance of considering the level beyond syntax proper for a more comprehensive understanding of the linguistic devices used in languages using the visuo-gestural modality of expression. As will become apparent in the following discussion, phenomena that involve the syntax-discourse interface are also indicative of how mastery of the language involves a skilful integration of knowledge from distinct levels of linguistic analysis.

3.1.4.1 Subject drop and discourse topic drop

DGS, like other sign languages, has been found to instantiate properties of sentence-oriented languages and discourse-oriented languages (Hänel 2005: 111). This is reflected in DGS allowing for two types of null arguments, that is, argu-

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5 Previous analyses (see Lillo-Martin 2002: 247 for further details) distinguished (a) first person (marked by the location of the signer), (b) second person (marked by the location of the addressee), and (c) third person marked by using other spatial locations. However, the loci for third and second person are indistinguishable, a distinction being possible only through the role played by the referent in a particular discourse context (Lillo-Martin 2002: 247, pace Meier 1990).

ments that may remain phonetically empty. We learned before that arguments in constructions with *agreement* verbs may remain phonetically unexpressed (or "dropped", hence the notions of *subject drop* or *object drop*) because they are identified through agreement markings. This type of null argument licensing is encountered in sentence-oriented languages. By contrast, the possibility to drop arguments in constructions with *plain* verbs is bound to discourse conditions.[6] Example (48) shows that the subject may remain phonetically empty because it is identical with the subject of the preceding clause (Sauer et al. 1997: 77, our transl.).

(48) WEEK   LAST   STEVE $[$THERE$]_1$ $_1$FLY$_2$ CALIFORNIA.   SUN   ENJOY.
      'Last week, Steven flew to California. He's enjoying sunbathing.'

3.1.4.2 (Co-)Reference: establishing and maintaining reference in signed discourse

We have learned in previous sections how locations in the sign space are used to mark grammatical relations at the syntactic level. Beyond the sentential level, narrative and discourse requirements determine maintenance and change of referent-locus associations. Co-reference involves shared locus features, and, where classifiers are involved, entity features. In other words, a referential locus maintains its association with a particular referent (cf. (49), from Happ & Vorköper 2006: 93, our transl.) until the signer decides to associate the referent with a new locus (or a locus with a new referent).

(49) THOMAS   CAR$_1$ $[$DET$_{ART}]_1$ BUY. $[$PRON$_{PERS}]_1$ CHEAP.
      'Thomas buys a car. It is cheap.'

In sign language production, the choice of locations associated with referents is constrained by several factors, such as (a) person distinction, (b) the referent's presence, and (c) perceptual salience.

Person distinction in sign languages, as remarked upon above, is restricted to the first/non-first person differentiation: the location for the first-person referent being fixed (usually on the chest of the signer), loci for 2nd and 3rd person referents being restricted to locations in the sign space. For referents present in a given discourse situation, the choice of loci is fixed as loci correspond with their actual physical locations during the interaction situation (signer points to addressee or present third person). For non-present referents the signer designates a location

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6 Within a generative model of grammar, indices in these constructions represent variables that are bound by an operator in the topic position, an option that is available in discourse oriented languages (Sauer et al. (1997) based on Lillo-Martin (1991), cf. also Hänel 2005: 111).

that is associated with the referent through indexical pointing to this location or other linguistic means that can be used to establish referential loci. Further, the distribution of loci for non-present referents on either side of the signer can be interpreted to serve the purpose of maximising perceptual saliency (Lillo-Martin 1999: 537). In some cases, however, the locations chosen are representative of real spatial locations (cf. for ASL Lillo-Martin 1999: 537; for DGS Herrmann & Steinbach 2007; Sauer et al. 1997: 54). Finally, Herrmann and Steinbach (2007: 156) remark on default rules applying where new discourse referents are introduced without locus assignment: the first discourse referent mentioned by a right-handed signer will be associated with a locus on the right side and the second with a locus on the left side.

The loci established in the sign space will determine the direction of pointing in pronouns referring to the same referent, as well as the beginning/end locations and facing of agreement verbs (usually,[7] verbs face their objects, cf. Sandler & Lillo-Martin 2006: 27). Crucially, sign languages differ from spoken languages in that the referential index is overtly realised (Lillo-Martin 2002: 253), while it remains unexpressed in spoken languages. Bellugi et al. (1990: 16) remark on this special and complex characteristic of sign languages and potential effects on the learning process when they state that "[t]his gives signed languages a clarity of reference which is powerful and unambiguous. Yet it also raises the possibility that it will be difficult to learn (and perhaps difficult to process)." Table 3.6 provides an overview of the linguistic means used in DGS for the establishment of *referential* loci (i.e. loci picking out a referent whereby this can be a person, an animal or an object), and *spatial* loci (that is, loci picking out locations) (cf. Happ & Vorköper 2006: 109). Happ and Vorköper (2006) provide a detailed discussion of these linguistic devices. Here we will only briefly remark on the use of articles, locative and existential determiners (agreement verbs were already discussed in section 3.1.3.5). A terminological note is due in this context where we shall use the term *index* in a generic sense (and when referring to the work of authors who use this notion), while keeping to the distinction introduced by Happ and Vorköper (2006: 93), who differentiate several determiners in relation to their function. The latter will be specified as we proceed in the discussion.

In DGS, the use of an overt index to designate a referential locus (cf. (50) from Happ & Vorköper 2006: 96, our transl.) is necessary unless the locus is estab-

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7 Exceptions are the so-called backward verbs which move in the opposite direction, from the location of the object to the location of the subject.

lished by the verb, as it is the case in example (51). Following Happ and Vorköper (2006: 93) we will use the gloss DET_{ART} to designate this type of index sign that serves the function of an article determiner.

(50) MAN $[\text{DET}_{\text{ART}}]_1$ FRIEND MEET. $[\text{PRON}_{\text{PERS}}]_1$ BE-PLEASED.
'A man meets a friend. He is pleased about it.'

(51) DOG$_2$ BONE$_\lambda$ $_\text{I}[\text{GIVE}_{\text{CL:}\lambda}]_2$. $[\text{PRON}_{\text{PERS}}]_2$ BE-PLEASED.
'I give the dog a bone. He is pleased about it.'

Whether or not locus assignment occurs for person and object referents depends on the discourse context (co-reference). Spatial loci, in contrast, have to be obligatorily established (Happ & Vorköper 2006: 97). Determiners (DET_{LOC}) can be used for the expression of location, as is illustrated in examples (52)–(54) (from Happ & Vorköper 2006: 98, our transl.).

(52) DESK$_\text{A}$ $[\text{DET}_{\text{LOC}}]_{\text{ON-A}}$ BOOK
'The book is on the table.'

(53) TREE$_\text{A}$ $[\text{DET}_{\text{LOC}}]_{\text{BESIDE-A}}$ BICYCLE
'The bicycle is beside the tree.'

(54) HOUSE$_\text{A}$ $[\text{DET}_{\text{LOC}}]_{\text{BESIDE-A}}$ SOFA.
'The sofa is in the house.'

In DGS, unlike in other sign languages, the sign DA ('there') can be used to establish referential loci (cf. Rathmann & Mathur 2002: 372). It has been suggested that DA represents an existential determiner (hence the gloss $\text{DET}_{\text{EXIST}}$ proposed by Happ & Vorköper 2006: 109, also adopted here). Note that this determiner might be used to establish a *referential* locus (annotated through underscored numbers, cf. (55)) or a *spatial* locus (annotated through underscored capital letters, cf. (56), both examples from Happ & Vorköper 2006: 106, our transl.).

(55) STRUPPI$_1$ $[\text{DET}_{\text{EXIST}}]_1$ BONE.
'Struppi has a bone.'

(56) ZEILGALERIE$_\text{A}$ $[\text{DET}_{\text{EXIST}}]_\text{A}$ COFFEE-SHOP SUPER.
'In the Zeilgalerie there is a super coffee-shop.'

Happ and Vorköper (2006: 650, our transl.) describe the function of this determiner as follows: "Establishes a locus for persons, things, and locations, while indicating that the person or the thing owns something, or that there is something at the location indicated [$\text{DET}_{\text{EXIST}}$]."

Table 3.6: Linguistic means used for the establishment of referential and spatial loci in DGS (based on Happ & Vorköper 2006).

Linguistic means	Locus type	GLOSS / example	(trad. German gloss)
– Personal article	– referent	– $[DET_{ART}]_1$	(DER, DIE, DAS)
– Spatial article	– location	– $[DET_{LOC}]_A$	(DORT)
– Existential determiner	– referent	– $[DET_{EXIST}]_1$	(DA)
	– location	– $[DET_{EXIST}]_A$	(DA)
– Personal agreement marker (**PAM**)	– referent	– PAM_1	(AUF)
– Benefactive agreement marker (**BEM**)	– referent	– BEM_1	(FÜR)
– Possessive pronoun	– referent	– $[DET_{POSS}]_1$	(MEIN, IHR, …)
– Relative pronoun	– referent	– $[DET_{REL}]_1$	(DER, DIE, DAS)
	– location		
– Demonstrative pronoun	– referent	– $[DET_{DEM}]_1$	(DIESE, JENE)
– Quantifier pronoun	– referent	– $[DET_{SOME/ALL/...}]$	(EINIGE, ALLE…)
– Agreement verb	– referent (subject, object)	– $_1$GIVE-AS-A-PRESENT$_2$	
– Spatial verb	– location	– local: SIT, STAND, LIE	
		– directional: GO-(BY…)(TO), GO(TO)	

3.1.4.3 Referential shift

One crucial characteristic of DGS and other sign languages is that the referent associated with the locus of the signer can be *shifted*, that is, it can be associated with a referent other than the signer. This possibility implies that the rest of the referential framework is shifted in relation to this locus (Morgan & Woll 2003: 303). The notions of *referential framework* or *frame of reference* are used to designate a set of referential loci used in a particular discourse situation (cf. Lillo-Martin & Klima 1990: 193; Bellugi et al 1990: 18). Two types of referential frameworks are distinguished in the literature, namely, (a) the *fixed* referential framework (FRF) and (b) the *shifted* referential framework (SRF) (Morgan & Woll 2003: 303; Morgan 2006).

Fixed referential framework. In the FRF (cf. (57a)), the sign space in front of the signer serves to

– pick up referential loci previously established;
– mark subject and object agreement through the movement between the relevant referential loci;
– point to referential loci for pronominal reference;
– position and move classifiers.

Shifted referential framework. In the SRF (cf. (57b)) the sign space incorporates the signer's own body. SRF is used to

– encode morphosyntactic information through location on the signer's own body and locations related to the orientation of the signer's body;
– indicate agreement with subject and object through the movement away or toward the signer's body.

(57)
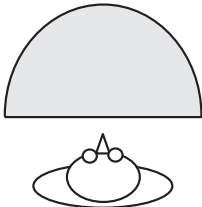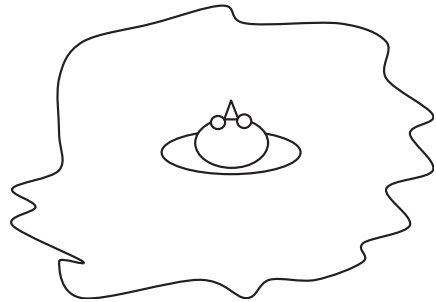
    a. FRF   b. SRF

Referential shift, as will become apparent in the following sections, is a grammatically and lexically constrained phenomenon that can serve various pragmatic functions. It is thus a phenomenon that involves the syntax-discourse interface.

3.1.4.4 Sign spaces: a note on terminology

At this stage, it is important to note that different terms are being used in the literature dedicated to the analysis of the linguistic use of space and the signer's perspectives in sign language discourse. Some of the common terms used in the literature are listed in Table 3.7. Note that from a narrative perspective the notions on the left (first column) correspond with a "character" perspective, while the notions on the right (second column) correspond with the "observer" perspective. Note also that various terms (cf. (58)) are used to refer to the phenomenon of shifting perspective and its use in narrative discourse (Herrmann & Steinbach 2007: 159, Morgan 1999).

(58) Role shift, shifted reference, referential shift, role playing, role taking, con-
     structed action, constructed dialogue, body shift.

The wealth of terms used in the literature reflects the diversity of perspectives
adopted in the investigation of this phenomenon. Following Lillo-Martin (1995:
156), who draws on earlier work of Padden (1986, 1990), we will use the notions
of shifting reference or referential shift as the notion role shift does not capture
the grammatical processes involved. The notion of role shifting implies that the
signer takes over the role of another character which amounts to the conception
of the construction as some kind of role-playing rather than as a part of grammar.
Through this terminological choice we distinguish the linguistic phenomenon
from the functions it may serve in sign language discourse, as for example, the
reporting of *words* in quotation environments (often referred to as *constructed
dialogue*), or the reporting of *actions* from another person's perspective in narra-
tives (often referred to as *constructed action*).

Table 3.7: Terminology used to designate the different perspectives signers may adopt (based
on Perniss 2007: 1317)

Perspective			Authors
Viewer	↔	diagrammatic spatial format	Emmorey & Falgier 1998
Surrogate	↔	depictive space	Liddell 2003
Participant	↔	global viewpoint	Dudis 2004
Shifted	↔	fixed referential framework	Bellugi & Klima 1991, Morgan 1999
Protagonist	↔	narrator perspective	Slobin et al. 2003

3.1.4.5 Signalling referential shift

In signed discourse, moving between referential frameworks involves signalling
the changes between the different points of view, which serves as a means to
create cohesion (Morgan 1999: 47). Different non-manual markers can be used to
signal referential shift, in particular, body/head orientation, eye gaze and facial
expression (for ASL Lillo-Martin 1995: 158; Emmorey & Reilly 1998; for DGS Herr-
mann & Steinbach 2007: 161f.).

Body shifting (and head movement). Signers shift the shoulders slightly to
the right or left / backward or forward. For example, if the locus for "MARIA" was
established at point 1, to the right of the signer, in example (59), then shifting the
body and the head position to the left marks the adoption of her point of view, as
illustrated in example (60).
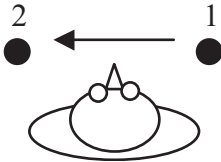
(59) MARIA₁   ALEXANDER₂   ₁HELP₂   (DGS)
    'Maria helps Alexander.'
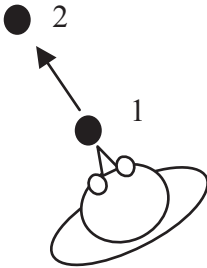
(60) ₁HELP₂   (DGS)
    'I (=Maria) help you (=Alexander).'

Eye gaze. Break in the eye gaze with the addressee is another non-manual means signifying referential shift. Further, the use of different eye gaze levels allows shifts in perspective to be accomplished in the same representational space. Signers may lean forward, looking down (indicates a smaller interlocutor) or lean back, looking up (indicates a taller interlocutor) (Herrmann & Steinbach 2007: 161).

   Shifted facial expression. Referential shift is also marked through a change in facial expression as the signer adopts the facial expression of the referent (or character) whose point of view is being expressed (Lillo-Martin 1995: 158; Emmorey & Reilly 1998: 82).

   Lexical means. In addition to non-manual markers, signers have been found to use lexical means to signal referential shifts in storytelling. Morgan (1999: 51), for example, remarks on the use of perceptual verbs such as LOOK-LEFT or LOOK-UP to signal movement from one representational space to another in BSL discourse. Narrator's comments and mutual eye gaze with the audience are also used to indicate a shift in reference (Morgan 1999: 48).

3.1.4.6 Shifted reference: grammatical aspects

Independently of the functions it may fulfil, referential shift always has the same formal characteristics (Herrmann & Steinbach 2007: 160). Some of the formal constraints are described in the following.

Syntactic contexts of RS. Referential shift has been found to be obligatory in some contexts, as for example, in constructions with embedded questions (Herrmann & Steinbach 2007:160, our transl.):

(61) LENA   DET$_{3A}$ ANNA   DET$_{3B}$ ASK$_{3B}$:   [PRON$_{PERS}$]$_2$ TIRED [PRON$_{PERS}$]$_2$
‘Lena asks Anna if she is tired.’

Happ and Vorköper (2006: 465f.) point out that the shift of perspective is obligatory in constructions with verbs that select a constituent clause as a complement (cf. (62) and (63))[8]. Note that the verbs listed in (62) denote the attitude of the signer to the statement of the constituent clause, whereas verbs listed in (63) select an imperative or an interrogative constituent clause.

(62) bedauern ('to regret'), bereuen ('to regret'), ablehnen ('to decline'), leugnen ('to deny'), sich freuen ('to be pleased'), befürchten ('to be afraid of'), (lästig / erfreulich/ verwunderlich) finden ('to think/find [annoying /pleasant /surprising]'), gefallen ('to like')

(63) bitten ('to ask'), befehlen ('to order'), fordern ('to demand'), empfehlen ('to recommend'), ersuchen ('to request'), raten ('to advise'), warnen ('to warn'), fragen ('to ask')

Further, referential shift in DGS has been found to be obligatory in imperative constructions, but optional in constructions with modal verbs (e.g. HAVE-TO). Finally, several scholars have remarked on the use of referential shift in constructions that involve a reference to body locations not associated with the signer. In ASL, for example, the expression of the proposition "John shaved Bill's nose" (cf. (64), from Bellugi et al. 1990: 18) involves a serial verb construction, in which the verb expressing the location follows a referential shift after the expression of the activity through the verb without a specification of the body location.[9]

(64) [BILL,   JOHN   a   SHAVE$_b$ (shift)   SHAVE-MY-NOSE]   (ASL)

Pronoun reference and agreement in RS. As we mentioned previously, referential shift affects the reference of first person pronouns and verb agreement (Lil-

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8 Verbs are listed in German in the original in the context of a discussion of the syntactic characteristics of German vs. DGS.

9 Morgan and Woll (2003: 303) describe a similar phenomenon for BSL in terms of what they describe as referential shift in paired constructions, involving (a) Verb A, which moves away from the signer's body, describing the action (e.g. girl paints), and (b) Verb B followed immediately by the same verb moving toward the signer's body with B-Cl(body classifier) (boy painted on the face), representing the signer's affected body part. Between the two verbs there is a referential shift.

lo-Martin 1995: 158; Meier 1990). In shifted referential frameworks new referential loci are automatically established (Bellugi et al. 1990: 18). In addition, one or more loci may be reassigned overtly. In example (65), the referent associated with the first person index changes.

(65)   *George's facial expression*
   _aGEORGE   ₁PRONOUN   WIN   WILL   (Lillo-Martin 1995: 158) (ASL)

Note that ₁PRONOUN in ASL can serve as a logophoric pronoun in addition to its use as a first-person pronoun (Lillo-Martin 1995: 161). In the former case, the pronoun is interpreted as coreferential with the subject of the matrix clause (rather than with its regular referent, the speaker), a phenomenon that is observed in reported dialogue contexts.

Few authors have specifically addressed the issue of agreement in the context of reported *action*, which contrasts with the analysis of reported *dialogue*. In the latter, the shifted predicate (also *point of view* or POV predicate) is realised as a non-manual 2-place agreement marking, with the first argument being the signer and the second the addressee. As for reported action, we will assume here that the *dual* perspective characteristic of constructions with reported action predicates is reflected in different agreement phenomena (Happ & Vorköper 2006: 567):

- body part classifiers agree with the subject (the shifted referent adopted by the signer)
- class (or entity) classifiers are not affected by the perspective shift and therefore agree with the object (or the thematic role of THEME, in Happ and Vorköper's terms).

Non-manual markers in RS. In referential shift, the signer often assumes the facial expression, eye gaze and head movements of the character described, onset and offset being linguistically constrained (Emmorey & Reilly 1998: 81). In addition, fixed and shifted referential frameworks differ concerning the referent to which affective behaviours expressed are attributed to: while facial expression, body posture and non-linguistic gesture are attributed to the narrator in the former ("plain" narration in Emmorey and Reilly's terms), non-manual affective behaviour is attributed to the character portrayed in the latter. The contrast is illustrated in examples (66) and (67) (Emmorey & Reilly 1998: 83).

(66) TEACHER_a   STUDENT_b   ARGUE   CONNECT-WITH   PAPER.   (ASL)
   PRO_b   RIP-UP TURN-LEAVE.
   'The teacher and student were arguing about a paper. He (the student) ripped-up the paper, turned, and left.'

(67) TEACHER_a   STUDENT_b   ARGUE   CONNECT-WITH   PAPER.   (ASL)
          student's expression

RS_{student}<RIP-PAPER TURN LEAVE >.

'The teacher and student were arguing about a paper. (The student) ripped up the paper, turned, and left [from the point of view of the student].'

For referential shifts in quotation environments involving a matrix clause, non-manual marking often begins on the verb of the matrix clause (Herrmann & Steinbach 2007: 160). It should be noted, however, that because referential shifts involve a shifted reference of the locus associated with the signer's body (that is, the locus of the referent whose words or actions are reported) the introducing matrix verbs need not be expressed, as the non-manual marking unambiguously refers to the person speaking or carrying out an action (cf. Happ & Vorköper 2006: 465). Hence, this is an instance of non-manual agreement marking.

3.1.4.7 Shifting reference: pragmatic aspects

Choice and change of referential frameworks follow both linguistic and pragmatic (information oriented) criteria (cf. Perniss 2007). Signers might use SRFs to provide additional information, for example, about the manner of an activity described first through the use of FRFs (cf. Tang 2003: 155 for Hong Kong Sign Language, HKSL). Morgan (2006: 330) remarks on rapid changes of sign spaces in narrative discourse, pointing out that "[d]uring a signed narrative these signed spaces are continually changing and being reused for reference to characters, to describe the physical layout of a scene and for expressing the passage of an episode and plot time." Further, prototypical and non-prototypical alignments of frames of reference and choice linguistic means have been found to occur in sign language discourse.

  Prototypical alignment of linguistic means and referential framework. Choice of referential framework prototypically involves choice of specific linguistic means. For example, Perniss (2007: 1316) remarks that there is an alignment in the choice of classifier type and referential framework, as classifiers representing the *handling* of objects (i.e. transitive event types) occur within a life-sized character perspective event space, while classifiers representing the *location* and *motion* of objects (i.e. intransitive event types) occur within a model-sized observer perspective event space.

  Non-prototypical alignment of linguistic means and referential framework. In longer discourse stretches, signers have been found to use mixed perspectives or, in Perniss' terms, non-prototypical alignments of classifier types and narrative perspectives (Perniss 2007: 1320). According to Perniss (2007: 1321), the most prevalent mixed type in DGS narratives involves the use of entity classifiers

in a character perspective. Notice that mixing frames of reference involves the simultaneous use of the sign space in front of the signer (in a narrative, the narrator's perspective) and the sign space including the signer (in a narrative, the character's perspective) (cf. (68)) (see Perniss 2007: 1320 for a detailed discussion).
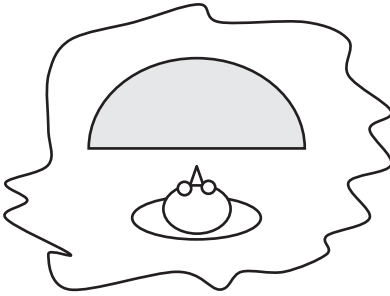
(68) Mixed (simultaneous) frame of reference

From a more general perspective it is important to note that the choice of linguistic devices in sign language discourse is not only determined by grammatical and pragmatic criteria, but might be also affected by general cognitive abilities such as working memory and information processing mechanisms. The establishment and maintenance of reference over long discourse stretches constitutes a complex phenomenon that imposes an additional processing load, which makes the continual change of perspectives in narrative discourse particularly remarkable (Morgan 2006: 330).

3.1.4.8 Reference forms and functions

The preceding observations about the use of referential shift in sign language discourse also raise the more general question about choice of linguistic means in relation to the text or discourse type produced. As remarked by Morgan (1999: 35) the use of agreement verbs in fixed referential frameworks "may not be the most common reference strategy used in discourse". The analysis of adult signers' narrative productions in BSL reveals that signers construct "a direct report of actions" through a shifted referential framework, "rather than using pronominal and agreement forms between spatial locations" within a fixed referential framework (Morgan 1999: 46). Unfotunately, the question of whether this observation would hold of sign language discourse in general or whether it would rather pertain to specific discourse genres remains unanswered thus far. To date, the relevant sign language corpora (including DGS) that would provide information about choice of linguistic means and the functions they serve in specific discourse contexts are not available.

Reference forms and functions. In the course of their narration, narrators are confronted with the task of ensuring that reference to the protagonists is clear. For this purpose, signers, like speakers, have to choose among the reference forms available in their repertoires, according to their information status in a given discourse context. In other words, it is not sufficient to look at the sentential level to understand the choice of particular reference forms. Instead, as Karmiloff-Smith (1981), for example, remarks it is necessary to consider longer discourse stretches to explain "the dynamic interplay of various referential expressions, as subjects move from, say, the use of noun-pronoun reduplication, to full noun phrases, to pronouns and to zero anaphora, in their production of a span of connected utterances."

In research on the choice of referential expressions in spoken language narratives reference forms are analysed with respect to the function they serve in marking anaphoric relationships in discourse (cf. Bamberg 1986). Commonly, the following referential functions are distinguished (cf. Morgan 2006: 318):

– introduction: first mention of a character in the story
– reintroduction: a character that went out of focus because of an intervening referent is reintroduced again
– maintenance: continued reference to a character that remains in discourse focus

As pointed out by Morgan (1999: 52), "[p]ragmatic judgments are made by signers as to how explicit or reduced reference forms are to be used in specific discourse contexts." Morgan (2006: 320–1) distinguishes reference forms used in BSL narratives based on the criterion of explicitness as follows (pronouns were not considered in the study):

– noun phrase: requires little information to identify referent
– entity classifier: requires more previous information (it refers to class of semantically similar objects, rather than a particular member of that group)
– role shift: least explicit in terms of identifying information, therefore it requires the most amount of previous information

As we will see later in this chapter (section 3.2.3.4), first insights into choice of reference forms in relation to the functions they fulfil in BSL narrative discourse were obtained by Morgan (2006) in a study on adult and child narrative productions. Thus far, similar data are missing for DGS. Nevertheless, in our analysis we have been guided by the information that can be gleaned from the available studies on DGS grammar including information about discourse constraints on the choice of reference forms (Happ & Vorköper 2006; Papaspyrou et al. 2008). Table 3.8 provides an overview of the reference forms distinguished and the functions they

might serve in narrative production. The distinction allows for the following generalisations about target-like vis-à-vis target-deviant form-function combinations:

(a) Subject-drop. Subject drop is an appropriate option in narrative contexts involving the same character (reference maintenance), irrespective of whether it occurs in FRFs or SRFs and of the verb type chosen. Where subjects are dropped in contexts in which protagonists are reintroduced, pro-drop must be licensed. Hence, for example, if the signer has established the loci for different characters previously in the sign space and correctly picks up the locus associated with the referent reintroduced via an agreement verb, subject drop is licensed. The same holds of constructions with referential shift. In addition, we might consider the use of spatial verbs, in which the classifier element agrees with a subject identified previously. Note though that reintroduction of protagonists might lead to referential ambiguity where the same classifier could refer to different characters. Finally, we must note that subject drop is ungrammatical where new referents are introduced.

(b) NP and DET$_{ART}$. Full NPs serve the function of introducing new protagonists (if no other means are used to associate a locus with a new referent, DET$_{ART}$ is used in case this referent is co-referred to at a later point in the narrative). NPs can also be used for the reintroduction of referents. NPs might be used in contexts involving the same referent (reference maintenance), but this is a marked option.

(c) Pronouns. The use of pronouns for the reintroduction of referents is appropriate provided the pronouns pick up referential loci established previously.

Table 3.8: Reference forms and referential functions.

Reference form / function	NP	DET$_{ART}$	PRON$_{PERS}$	subject drop*			
				RS	spatial v	plain v	agr v
Introduction	✓	✓	error	error	error	error	error
Reintroduction	✓	✓	✓ (+locus)	✓ (+locus)	✓ (+cl)	error (thematic perspective?)	✓ (+locus)
Maintenance	✓ ***	✓ ***	✓ **	✓	✓	✓	✓

*   Subject drop in this overview is further differentiated according to verb types used (v=verb).

**   Our evaluation differs from Papaspyrou et al. (2008) who claim that the use of pronouns in this context is ungrammatical.

*** The use of a full NP in this context represents a case of "overexplicitness" that might occur following narrative requirements.

Thematic perspective in narrative. In sign language discourse, much like in spoken language discourse, narrators have been found to use a *thematic subject*

strategy. According to Karmiloff-Smith (1981: 127), narrators use pronouns or zero anaphora "as the default case for the thematic subject of a span of utterances" and "deviances therefrom will be marked clearly linguistically by the use of full noun phrases". Hence, the organisation of discourse from the perspective of the thematic subject (commonly the main protagonist involved in a series of events) affects the choice of reference forms (Hickmann 2003). Particularly in reports of complex (simultaneous) events the use of the thematic subject strategy represents an effective means to recount parallel activities of different characters. With respect to BSL discourse, Morgan (1999: 52) observes that "[s]igners set up a thematic perspective when narrating, thus allowing reduced reference to be used in keeping this perspective in discourse focus. The *secondary perspective* is activated through overt reference forms. Thus, in the context of event packaging, two perspectives can be used on events without having to label both overtly."

3.1.4.9 Complex classifier constructions and the expression of spatial relations

Complex classifier constructions. Commonly, the conceptual structure of motion predicates in sign languages involves two components, figure and ground (the latter assuming the semantic roles of location, source or goal). In complex classifier constructions, the spatial relationship between the two might be expressed by the dominant and the non-dominant hand (henceforth, h2) respectively. Note that in the classifier system each hand "instead of being a phonological element, may represent a morpheme by its configuration" (Sandler 2006: 193). Hence, in classifier constructions, the non-dominant hand may function as an independent classifier; it can be used with "articulatory freedom" (Sandler 2006: 202), which implies that it can break phonological constraints that hold otherwise of ordinary words, that is, the Symmetry and Dominance conditions[10].

Discourse buoys. H2 classifiers might also be retained in the signing space during a discourse stretch to serve a discourse regulatory function. These classifiers serving the function of conceptual landmarks for discourse are commonly referred to as discourse *buoys* (for DGS Happ & Vorköper 2006: 417f.; for ASL Sandler 2006: 195; Liddell et al. 2007; for HKSL Tang et al. 2007: 287). For example

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10 Basically, the Dominance condition stipulates that "[i]f the hands of a two-handed lexeme do not share the same specification for handshape, then one hand must be passive while the active hand articulates the movement, and the specification of the passive handshape is restricted to be one of a small set" (Sandler 2006: 188, based on Battison 1978). The Symmetry Condition states that "[i]f both hands move independently, then both hands must be specified for the same handshape and the same movement (whether performed simultaneously or in alternation), and the specifications for location and orientation must be either identical or mirror-image."

(see (69) from Happ & Vorköper 2006: 420, our transl.), a referent introduced in a *locative* predicate (such as TREE, in (69)) can be retained in the subsequent expression of a *motion* predicate, in which the spatial relation is described in relation to the locus of the buoy (that is, CL:TREE in (69)).

(69)

$$\overline{\hspace{6cm}}^{\quad t}$$

[STREET   SASS:90°]$_A$ [DET$_{LOC}$]$_{VERTEX\text{-}A}$ TREE$_\lambda$ [STAND$_{CL:\lambda}$]$_A$.

|$_{CL:TREE}$ ------------------------------|

$$\overline{\hspace{3cm}}^{\quad t}$$

JAN$_{1/\pi}$ [DET$_{ART}$]$_1$,   CAR$_\mu$ [[DRIVE$_{CLASS:\mu}$]$_{PAST\text{-}A}$]$_{ASP:ITER/HABIT}$

'At the vertex of a 90° curve there is a tree. Jan often drives past (this tree).'

Notice, in addition, that the non-dominant hand can be used like a second dominant hand for specific discourse functions, for example, to express the simultaneity of two events.

3.1.5 A structural account of DGS

Following current assumptions, DGS is a head-final language. This implies that the VP and the IP are head-final in this language; hence, the structure of a simple declarative clause is commonly represented as in (70) (Hänel 2005; Happ & Vorköper 2005; Pfau 2001; Pfau & Glück 1999).

(70)

[IP   SpecI   [$_{I'}$ [$_{Vmax}$ [$_{VP}$ ...   V]]   I   ]]

WOMAN   CAKE   SWEET   BAKE.

'The woman bakes a sweet cake.'

Note that we use the generic notion of inflection phrase (IP) for the functional layer above the VP, without going into further detail as to whether further functional projections are needed (Split-INFL analysis, cf. section 2.1.2), or some feature specifications are inserted at a later point (for a more detailed account of the derivation of inflected forms in DGS, based on the Distributed Morphology approach, cf. Glück and Pfau 2000: 432). Implicit to what we consider to be a working proposal for the structure of DGS is the assumption that head-movement (from V to I) applies in all constructions with finite verbs (hence, also in those with plain verbs). As outlined in section 2.1.2, our analysis is based on the assumption that verb raising is motivated by the requirement that the temporal, aspectual and agreement features of the verb are picked up viz. checked in I (Haegeman 1994).

As illustrated in example (71) (from Hänel 2005: 108), the verb is raised from its base position to I, and subject and object NPs[11] (or *pros*) to SpecIP and SpecVP respectively. Notice further that (71) is a construction with an agreement verb in which subject and object arguments may remain lexically empty (see also examples (72) and (73) below). By assumption (Hänel 2005: 108), empty subjects and objects in constructions like (71) represent instances of the empty pronoun *pro*.

(71)
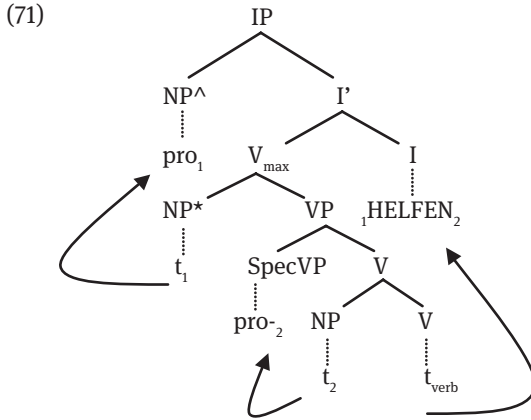
For further illustration see examples (72) and (73) (Happ & Vorköper (2006: 415, our transl.). Notice that the referents are unambiguously marked by the agreement verb forms in (72) and so are the objects marked by the classifier verb forms (provided the forms are sufficiently contrasting in shape) in (73). Following the assumption that agreement is also marked in constructions with classifying verbs, such constructions are also captured by the structure provided in (71). In other words, we assume that in classifier constructions feature sharing between the classifier morpheme and the respective argument involves a structural relationship between the (argument) NPs and the verb (*spec-head agreement*). The grammatical processes involve a functional projection above the VP, which we assume to be represented by the IP layer in (71). We will not delve here with issues concerning the derivation of inflected forms (but see Glück & Pfau 1997; 1999 for detailed discussions).

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11 Hänel (2005: 108) follows Koopman and Sportiche in representing the canonical subject position in Vmax as NP* and NP^ as the subject position in IP.

(72) YESTERDAY   DANIELA₁   STEFAN₂   SUSANNE₃   NANA₄   ₁VISIT₂
   ₁VISIT₃   ₁VISIT₄.   LETTER_λ   ₁[GIVE_CL:λ]₂ ,
   DGS   ₁EXPLAIN₃   ₁TALK-TO₄.
   'Yesterday, Daniela visited Stefan, Susanne and Nana. She gave a letter to
   Stefan, explained DGS to Susanne and talked with Nana.'

(73) YESTERDAY   DANIELA₁   [DET_ART]₁   BOOK_λ   FLOWER_μ
   [VODKA_(CL:SASS)]_Π   BUY.   AFTER-THAT   NANA₂   SUSANNE₃   STEFAN₄
   ₁VISIT₂   ₁VISIT₃   ₁VISIT₄.   ₁[GIVE_CL:λ]₂   ₁[GIVE_CL:μ]₃   ₁[GIVE_CL:Π]₄.
   'Yesterday, Daniela bought a book, a flower and a (bottle of) vodka. After that
   she visited Susanne, Nana and Stefan, and gave Nana the book, Susanne the
   flower, and Stefan the vodka.'

Turning to constructions with referential shift, we basically follow Lillo-Martin
(1995: 161–163) and Herrmann & Steinbach (2007: 171) and assume that referential
shift (role shift in Herrmann and Steinbach's terms) consists of a biclausal struc-
ture. POV (Point-of-view), used to indicate the referential shift, is assumed to be
a predicate that takes a clausal complement. It agrees with the subject (by being
produced at its location). As a consequence, any ₁PRONOUNs in the POV are logo-
phoric (which means, as remarked upon previously, that they are interpreted as
coreferential with the subject of the POV). During discourse stretches, the referen-
tial shift can be maintained whereby every other sentence is assumed to contain
a null subject followed by a POV. According to Lillo-Martin (1995: 163) this is the
case because the physical manifestation of POV continues to be present.

    Following Herrmann & Steinbach (2007: 172–3) we will assume that construc-
tions with a referential shift, independently of the function they serve, involve
CP-recursion (cf. (74)). The POV is placed in the head of the C-domain. The opera-
tor PVOp accounts for the non-manual marking and binding of indexical expres-
sions. The expanded CP can be embedded into a matrix clause.

(74)
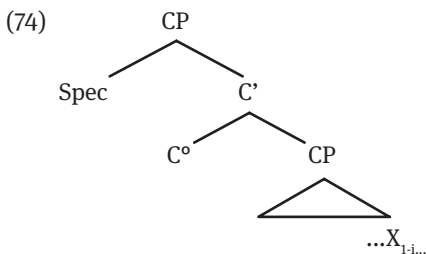
3.2 Research on the acquisition of DGS (and other sign languages)

The child's job does not look easy. (Bellugi et al. 1990: 17)

Following our sketch of the main characteristics of DGS with a view to identifying *what* is acquired in sign language acquisition we turn now to the available research on sign language acquisition, with a focus on the main developmental milestones in the acquisition of DGS. Before, however, some notes are due regarding the research available.

Acquisition scenarios. One major difference between research into spoken language acquisition and sign language acquisition concerns the type of acquisitions situations that have been examined in the research. Thus, for example, the acquisition of German is well documented for different acquisition situations (child monolingual and bilingual, as well as adult bilingual), whereas the only available study on DGS acquisition concerns two children of native DGS signers. Comparative data of different types of learners (with respect to their age of exposure) are available for ASL; however, these studies are largely cross-sectional, with a focus on a quantitative account of the skills measured. Qualitative studies are available, but they concern individual aspects of the language. Thus far the available evidence has not been interpreted in terms of a developmental sequence, although some attempts have been made to summarise the characteristics of different developmental phases (cf. Baker et al. 2005 and Chen-Pichler 2012 for overviews). Finally, developmental studies are available for children who attained sign language as a first language at home. Based on what we know about the sociolinguistic situation of deaf individuals (cf. chapter 1.2) we need to acknowledge that these children, too, are growing up in a bilingual environment although this aspect is seldom considered. Although sign language is most probably their preferred and dominant language, the acquisition situation is not monolingual in a strict sense, because the language of the environment (the oral language) is present to a greater or lesser extent in their everyday lives. Van den Bogaerde and Baker's findings (2008) concerning NGT-Dutch language mixing in the input to and output from deaf children provide intriguing evidence of how parents and children combine the two languages in their productions.

Theoretical approaches. There is a general lack of a uniform approach to sign language acquisition that would be based on a common theoretical framework and seek to systematically account for the phenomena observed (see Hänel 2005: 146 for a similar critique along these lines). Typically, studies on sign language acquisition contain descriptive accounts of children's productions at

different ages, including the documentation of error types. As outlined previously, however, a comprehensive understanding of sign language development will only be possible if the findings are analysed in the light of linguistic theory and current models of language acquisition. Without a theoretical foundation, whether or not different error types are related, and whether this is the consequence of unspecified or unavailable structures, cannot be decided. Hence, some of the developmental sequences proposed in the literature contain numerous developmental phases which seem to be distinguished by error type or grammatical property that becomes productive. In addition, a systematic comparison of these findings reveals that they do not always coincide in the timing of when grammatical phenomena become productive, which is related to individual variation, on the one hand, and on the criteria used to establish "productivity" on the other hand. Finally, there is also considerable variation concerning the phenomena taken into consideration, with different definitions of what is counted as agreement, for example.

With these issues in mind, we turn next to a critical appraisal of the major findings documented in the literature about the main developmental patterns in the acquisition of sign languages. In our discussion, we will focus on three main areas of language knowledge, namely, word order, morpho-syntax, and the syntax-discourse interface. Based on our descriptive framework of DGS, the acquisition task involves the mastery of several phenomena pertaining to these areas (cf. Table 3.9 for an overview of the phenomena considered in this study).

Table 3.9: Acquisition of DGS: linguistic areas and related structures, processes, and properties.

Area	Processes / properties	
Discourse	– fixed and shifted referential frameworks – expression of spatial relations – reference forms and functions – co-reference (referential establishment/maintenance)	
Syntax	– interrogation, subordination, referential shift (POV)	(CP-level)
	– finiteness distinction (verb raising)	(IP-level)
	– feature checking, IP headedness	
	– projection of categorial-thematic structure,	(VP-level)
	– VP headedness	
Morphology	– inflection morphology (first/non-first person distinction, classifier selection)	
Lexicon	– distinction of agreement, spatial and plain verbs	

3.2.1 Word order

From the one-word to the multi-word stage. Despite the difference in the modality of expression, developmental trajectories in L1 sign language and L1 spoken language acquisition have been found to be similar. After the transition from the babbling stage to the one-word stage, L1 sign language learners, like L1 spoken language learners, also go through a two-word stage before they produce more complex utterances (Baker et al. 2005). This evidence indicates that "the child's discovery of the units and rules of grammar is an abstract process that transcends sensory-motor modality" (Mayberry & Squires 2006: 291).

Early production of signs combined with what is referred to as a *point* have been found to occur at age 12 months (Schick 2003: 222). Whether these combinations already represent multiword combinations remains controversial given the unclear status of the pointing (sign or gesture) at this stage. Schick (2003: 222), for example, remarks that "in young hearing children, who also point to objects and name them, the pointing is considered to be a gesture." Multiword combinations of 2–3 signs appear about half a year later (between 12–18 months) (Schick 2003: 222 for ASL; Coerts & Mills 1994 for NGT).

Studies dedicated to mother-child interactions reveal that the early input provided to the children also contains few signs only (cf. Spencer & Harris 2006 for ASL; Van den Bogaerde 2000 for NGT). According to Spencer and Harris (2006: 81) mothers tend to produce short utterances (of 1–2 signs), but with multiple repetitions. Further the overall number of signed utterances was found to be lower if compared to the spoken utterances of hearing mothers. These observations are interpreted as evidence for "the mother's sensitivity to their children's immature patterns of visual attention" (Spencer & Harris 2006: 81).

Basic word order. With regard to the acquisition of the target word order, the studies undertaken reflect a lack of a clear picture about what would constitute the main developmental milestones. What can be gleaned from the available studies on ASL and NGT is that there is variation in the early learner data. With respect to the productions of young infants learning ASL, there is no consensus as to what they reveal regarding word order development. The focus of these studies is on the attainment of the canonical word order, that is, a surface word order (this needs to be distinguished from the investigation of the acquisition of the underlying structure and its specifications). Some authors have pointed out that early sequences follow a rigid linearisation pattern; other researchers have provided support for variable order at this stage (cf. Lillo-Martin 2006; and Lillo-Martin & Chen Pichler 2006 for detailed discussions).

In a study of children acquiring ASL (12 children aged 24 months), Schick (2006: 150–153), showed that L1 ASL learners did not follow any structural posi-

tional pattern at this age (at which an average of 28% of the utterances consist of an NP and a point [= Index sign]. Although the children seemed to have a preference for the VERB-THEME order with some verbs and the THEME-VERB pattern with other verbs (similarly, the AGENT-VERB ordering was subject to variation). Interestingly, some of the children were also observed to use alternate orders in AGENT-VERB constructions, with an even percentage for the orderings AGENT-VERB and VERB-AGENT for one child. The examples in (75) illustrate the alternate verb position patterns in the productions of this child (cf. Schick 2002: 155).[12]

(75) a. LOOK-FOR   REBECCA   (child 10) (ASL)

    b. REBECCA   LOOK-FOR

    c. VIDEOTAPE   BRENDA

    d. BRENDA   VIDEOTAPE

    e. POINT-BRENDA   ME   VIDEOTAPE

       'Brenda is videotaping me.'

    f. VIDEOTAPE   REBECCA VIDEOTAPE   BRENDA

       'Brenda is videotaping Rebecca'

Different hypotheses have been put forward to account for the variation observed. Lillo-Martin and Chen Pichler (2006), for example, speculate on the children's knowledge of several grammatical processes responsible for word order rearrangements in ASL, apart from the target head-complement order parameter. Schick (2006), in turn, assumes that the children's productions reflect variation in the input. Hence, Schick's focus is on the children's challenge to figure out the target word order regularities (e.g. concerning the use of topicalisation or non-manual markers). According to Schick (2006: 156) children might arrive at the conclusion that word order is free in ASL.

Word order variation in deaf children's early sign language productions is also remarked upon in studies on the acquisition of NGT (cf. Coerts & Mills 1994; Coerts 2000; Van den Bogaerde 2000). NGT, like DGS, represents an SOV language. Although verb-final structures are acknowledged, the evidence obtained reveals that the frequency of this pattern in utterances with two or more signs equals that of verb-initial sequences, and is even slightly lower than that of V2 order (12%) (cf. Van den Bogaerde 2000: 205). Verb-only utterances in the children's output during the time span covered by the study amount to 38%. Interestingly, verb-only utterances in the children's *input* were found to make up 57% of the mothers' NGT utterances directed to their deaf children aged 1;0–3;0 years

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12 The examples are also worthy of further analysis in relation to child's attempt to express the thematic structure of a verb like VIDEOTAPE, an issue that is not addressed by Schick (2002).

(Van den Bogaerde 2000: 201). Van den Bogaerde (2000: 201) remarks that "these verbs occurring by themselves give the children no clue as to the grammatical structure of SLN [= NGT, CPP]."

Complex structures. The development of complex structures in sign languages has received relatively little attention in the literature (Schick 2003). Some studies on the acquisition of ASL have focused on the development of non-manual markers in diverse constructions including conditional and interrogative clauses (Reilly & Anderson 2002; Schick 2002); others have been dedicated to the acquisition of referential shift in quotation environments and reported action (Emmorey & Reilly 1998). There is a general agreement that constructions with non-manual markers are acquired late (we will come back to this issue in section 3.2.3.3).

What is interesting is that prior to the productive use of non-manual markers in the respective constructions children produce conditional or interrogative clauses with lexical elements (Reilly & Anderson 2002). Based on the data obtained in a study of deaf children acquiring ASL (age 1–10) Reilly and Anderson (2002: 174) remark on an the early production of single sign utterances containing *wh*-signs accompanied by non-manual markers (furrowed brows). As children begin to produce sign combinations, they only use the manual signs in the interrogative utterances they produce (compare (76) and (77) (from Reilly & Anderson 2002: 174). According to Reilly & Anderson (2002: 174) children do not use the non-manual morphology appropriately until school age.

(76) WHERE   DOLL   (age 1;6) (ASL)

(77) WOLF   WHERE   (age 2;3) (ASL)

Hence, the pattern that emerges from developmental data is that "[d]eaf children consistently acquire the manual signals for a given linguistic structure before the acquire the required facial morphology. That is, children use free lexical morphemes, the manual signs, before they acquire the bound non-manual morphology" (Reilly & Anderson 2002: 175). To the best of our knowledge the acquisition of other complex clauses, such as constructions with modal or psychological verbs or rhetorical question-answer pairs remains unexplored thus far.

3.2.2 Morphosyntax

The grammatical information encoded in verbal morphology of sign languages, as we learned in section 3.1.3, comprises agreement with the object, or the subject and the object, aspect, and location. Studies on the acquisition of verb inflection

have largely focused on the acquisition of person agreement and the expression of spatial relations through complex classifier constructions. In this section, we will focus on the evidence obtained regarding the former. The latter will be taken up in section 3.2.3.2, in the context of the discussion of those properties that involve the syntax-discourse interface.

With respect to acquisition of verb agreement, the developmental pattern that emerges from the evidence discussed in several studies allows for the distinction of two broad developmental stages which, in our view, reflects the gradual development of the target structure (based on the theoretical outline provided in section 3.1.5, phenomena that are commonly described in terms of developmental phases are collapsed in this analysis).[13]

Stage I. Agreement verbs have been found to appear about half a year after the production of the first multi-word combinations (between age 2 and 2;5 [Baker et al. 2005] [2–2;6 in Schick 2003]). Before age 2 children do not produce agreement verbs, but rather use verbs that do not participate in the agreement system (Lillo-Martin 1999: 538).[14] Interestingly, early agreement verb forms produced appear in their citation form with a short movement in the neutral sign space (Lillo-Martin 1999: 538; Meier 2002, 2006). Such forms have also been observed at the initial stage of a late learner of DGS (exposure to DGS at age 3;7), one year after her exposure to DGS (cf. (78), (Leuninger & Happ 1997: 92, our transl.).

(78) DADDY   HELP   (Lena 4;7) (DGS)
      'Daddy help (me).'

The few correct forms that appear at this stage in the productions of some children represent unanalysed forms (Morgan 2006: 35; Schick 2006: 109). Examples (79) and (80) illustrate a DGS learner's use of the same verb form irrespective of whether the subject person is first or non-first (cf. Hänel 2005: 169, our transl.)[15].

(79) $_1$HELP$_2$ [PRON$_{PERS}$]$_I$ (Katja 2;5) (DGS)
      'I help you.'

(80) *[PRON$_{PERS}$]   MUM $_1$HELP$_2$ (Katja 2;5) (DGS)
      'Mum helps (me).'

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13 Ages at which the emergence/productivity of phenomena were observed are provided in brackets; where age specifications provided in the literature differ, the respective references are provided.

14 Unfortunately, no data are available for DGS. The recordings in Hänel's study started at age 2;2.

15 In the examples quoted, underscored numbers indicate first person (1), and second person (2) respectively (1c indicates contact with the signer's chest).

Some authors remark on the children's use of overt (lexical) arguments with citation forms (Lillo-Martin 1999: 554) (cf. example (81)); others observe the use of pointing to present referents (cf. Morgan 2006: 30) or pictures of a story-book to indicate arguments (compare example (82)). Evidence of the use of pointing with a movement between locations, as is the case in example (83), produced by a learner of BSL, indicates that, at a stage where verb marking is not yet available, learners might resort to the sequential expression of the relation between the verb and its arguments. Incidentally, the use of the index for this purpose is reminiscent of DGS constructions involving PAM, that is, the sign used in that language to mark the agreement relation in constructions with plain verbs.

(81) BOY GIVE_[uninflected] BALLOON (Steve, 2;3) (ASL)
'The boy gave (him) a balloon.' (Lillo-Martin 1991: 126)

(82) [index to picture] PAINT-FACE (Monica, 2;3) (ASL)
'(He) paints her face.' (Lillo-Martin 1991: 127)

(83) At 2;2 an adult signed to Mark: $_1$BITE$_3$ '(I) bite (it).' (BSL)
Immediately after this Mark signed: BITE $_1$IX$_3$ 'Bite me on it.'
The verb BITE was uninflected but the index point moved between himself
and the object location: $_1$IX$_3$ 'me on it.' (Morgan 2006: 33)

The sequential expression of complex meanings prior to the target-like simultaneous expression of meanings, either through the simultaneous combination of manual and non-manual components or through the modulation of elements in the sign space, seems to represent a recurrent developmental pattern in sign language acquisition (recall that this pattern was observed regarding the non-manual marking of sentence-types [section 3.2.1]; further, we will see in section 3.2.3.3 that lexical elements are used to introduce referential shifts prior to the use of non-manual markings).

It is interesting to note in this context that deaf children exposed to sign language might encounter this type of non-target-like use of agreement verbs in their input, as has been reported for children learning BSL and NGT respectively. In a study on the acquisition of BSL, Morgan et al. (2006: 34) provide a preliminary analysis of a mother's BSL productions in the interaction with her child (referred to as child-directed-signing). Morgan et al. (2006: 34) remark on the alternative use of agreement verbs in their inflected and in their citation form, the latter accompanied with overt pronominals for subject and object (for example, YOU ASK HIM), with the same verbs in the same session. Thus far, the effect of the inconsistent use of agreement markings in the input is unclear. As Morgan et al. (2006: 39) put it "[w]e are left with the problem of deciding which is the more important factor: does the child omit inflections because of performance

limitations in perception and production or because he observes omissions in the input?" Notice that this holds independently of the mothers' motivations for their linguistic behaviour.[16]

A discrepancy between the input provided to children and the adult language use is also remarked upon by Van den Bogaerde (2000) in a study of the interactions between deaf mothers and their deaf and hearing children acquiring NGT and Dutch. As for the input provided to the children in NGT, the author (2000: 213) remarks that "[i]n general, we find only very few morphological markers on verbs in the signed input". The high incidence of citation forms used by the mothers (more than 72%) was found to remain constant throughout the recording time (1–3 years of age) (Van den Bogaerde 2000: 212). Van den Bogaerde speculates, as does Morgan (2006), on the potential connection between the input to and output from deaf children (incidentally, the main topic of her work) (notice that for the children, a rate of 89% of citation forms is documented). On a critical note, these observations raise the critical question about when mothers change their signing behaviour and whether this would be related to changes in their children's output (upon their attainment of the target grammatical properties), as would be assumed by proponents of the motherese hypothesis regarding spoken language development.

Stage II. Children begin to mark verbs for agreement with present referents several months after the production of the first agreement verbs in citation form (about 3–3;6 [Baker et al. 2005], [2;3–2;8 in Hänel 2005 for DGS]; [3;0 in Van den Bogaerde 2000:218 for NGT]). It is important to note in this context that there is some disagreement in the literature about the timing of agreement markings associated with present vis-à-vis non-present referents.

According to Hänel, children learning DGS mark agreement verbs productively for present *and* non-present referents at the same age. Examples (84) and (85) (from Hänel 2005: 224, our transl.) illustrate the establishment of loci for non-present referents, and the production of correct agreement forms where needed. Further, Hänel (2005: 223) also remarks on an increase of pronominal references to non-present objects or persons.

(84) NINA   DET$_{ART(NINA)}$ $_1$VISIT$_{IX(NINA)}$ (Katja 2;8) (DGS)
     'I visit Nina.'

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[16] The problem is well known in the area of spoken language acquisition where the facilitating effect of motherese has been called into question. One important argument against its alleged use concerns the absence of metalinguistic information that would tell the child at which aspect she should pay attention and why, if the child was to understand this meta-information at all at this age (cf. Tracy 1991 for a detailed discussion).

(85) [PRON~PERS~]~I~   [PRON~PERS~]~IX(NINA)~   (1X)   PLAY   (Katja 2;8) (DGS)
    'Me and she are playing.'

An additional piece of evidence for the progression in the acquisition of the target grammatical properties of DGS is the productive use of the sign DA ('there') (also glossed DET~EXIST~, as we noted previously) to establish non-present referents, and to mark agreement (cf. examples (86)– (88) (Hänel 2005: 224, our transl.).

(86) TIGER   [DET~EXIST~]~IX~   (Katja 2;9) (DGS)
    'There is a tiger.'

(87) SHEEP   [PRON~PERS~]~I~   SEE~IX(ZOO)~   [DET~EXIST~]~IX(ZOO)~   (Katja 2;9) (DGS)
    'There (in the zoo) I see a sheep.'

(88) [PRON~PERS~]~I~   BICYCLE   BICYCLE-RIDE   AWAY   (Stefan 2;4) (DGS)
    ALL   [DET~EXIST~]~IX(FINAL POINT OF AWAY)~
    'I go out with my bike. All are there (at the place to which I went).'

Hänel's observations contrast with the findings obtained in studies on the acquisition of ASL and BSL, indicating that there is a temporal lag in the acquisition of verb agreement with non-present referents. The discrepancy is acknowledged by Hänel (2005: 267) who argues that it might be an effect of the methods used in the respective data collections (spontaneous DGS data vis-à-vis elicited ASL data). Unfortunately, the author does not elaborate on what she argues to be a well-known "delay effect" associated with elicited data. Nevertheless, and in line with Morgan et al. (2006), one might speculate on the impact of the different cognitive demands imposed by different tasks. "[M]astery of narrative", as this author (Morgan et al. 2006: 27) remark, "involves additional cognitive demands that may influence the age at which inflections are used. The use of agreement in narratives with non-present participant roles develops late, with children showing a prolonged period of acquisition that continues past age 5;0 (ASL: Loew 1984; BSL: Morgan 2000), marked by the use of appropriate movements in agreement verbs but without identification of their arguments." In this context, it is useful to recall the sophisticated use of referential frameworks in signed narratives described in section 3.1.4.7. Given that this involves the interface between syntax and discourse, the issue will be taken up in section 3.2.3.3. Suffice it to mention here that late mastery comes as no surprise in view of the complexity of the task.

What is interesting for present purposes is that studies coincide in the observation of variation in the production of verb agreement markings. Hänel (2005: 242), for example, remarks that verb agreement is not applied across the board. The author remarks on a high incidence of errors, whereby both errors of omission (for example, verbs produced in their citation form) and of commission (for

example, verbs with erroneous inflection markings) were observed. Example (89) illustrates the erroneous repetition of a verb, whereby the first form agrees with the subject and the second with the object, the intended meaning being "you inform the person filming", cf. Hänel 2005: 233, our transl.):

(89) *INFORM$_2$ INFORM$_{3(the\ person\ filming)}$ (Stefan 2;7) (DGS)

Children learning ASL, too, have been found to occasionally mark the wrong arguments (for example, producing verb forms that agree with the direct instead of the indirect argument, compare example (90) (from Bellugi et al. 1988, cited in Hänel 2005: 132). Other types of error documented include occasional overgeneralisations of agreement marking with plain verbs (for example with the ASL verb EAT to agree with the subject; Hänel 2005: 132 pace Bellugi et al. 1988). Notice that the latter type of error reflects the rule-based character of agreement marking at this stage, on the one hand, and the remaining challenge of learning the lexical properties of the verbs participating in the class, on the other hand.

(90) *Index$^{[:\ cookie]}$ GIVE$^{[I:\ to\ cookie]}$ URSULA   EAT   (Shirley 3;0) (ASL)

3.2.3 Syntax-discourse interface

On their way toward full mastery of the language, children are faced with the complex task of acquiring the target language properties at the distinct levels of linguistic analysis, on the one hand, and, on the other hand, they face the challenge of integrating the knowledge attained and using it appropriately for different purposes. The production of narratives, for example, involves the orchestration of several linguistic devices from distinct levels of analysis, within and across sentences, and bigger discourse units (Berman & Slobin 1994; Morgan 2006). Against this backdrop we turn next to the research undertaken regarding sign language learners' attainment of those properties that involve the syntax-discourse interface.

3.2.3.1 Referential establishment and maintenance

Scholars coincide in the observation that gaining mastery of nominal establishment and reference maintenance represents a prolonged process. To a certain extent, this observation comes as no surprise, given the complexity of the acquisition task. It might be useful at this point, to recollect what learners of a sign language like ASL have to accomplish, by drawing on Lillo-Martin's (1999: 538) succinct description of what the child has to learn to use pronouns and verb agreement appropriately, that is, "(a) to associate a referent with a location (b) to

use different locations for different referents (except when a group of referents is being referred to or, in some cases, for possession), (c) to use verb agreement or pronouns for non-present referents, and (d) to remember the association of referents with locations over a stretch of discourse." Notice that lexical, morphosyntactic and discourse knowledge is involved as well as general cognitive abilities, needed, for example, for the memory of several spatial locations.

Interestingly, as indicated previously, there is consensus that it takes some time before children master the appropriate use of referential loci, including the choice of contrastive locations and their consistent use to indicate referential identity during longer discourse stretches. By constrast, the question of whether young children are able to understand the information encoded through referential frameworks remains virtually unexplored (but see Lillo-Martin 1999 for a study indicating that a high level of comprehension was not observed until age 5). We turn next to a summary of the main findings obtained in production studies.

First pronouns. The change from a prelinguistic use of indexical pointing as a gesture to the use of pointing as a linguistic unit (that is, as a pronoun) has been found to occur during the second year (at about age 1;6–1;11 according to Baker et al. 2005). Pronoun reference to the addressee ("YOU") is reported to appear at about 2 years (though at times with reversal errors[17]) and reference to a third person at about age 2;5. The following two examples illustrate the use of personal pronouns in a child learning DGS. The pronoun in (91) refers to the addressee, the pronoun in (92) to a 3rd person (the person referred with a locus established toward the door is in the adjacent room) (cf. Hänel 2005: 168, our transl.).

(91) [PRON$_{PERS}$]$_2$ DADDY   [PRON$_{PERS}$]$_2$ (Katja 2;3) (DGS)
       'You are Daddy'.

(92) ELIAS   DEAF   [PRON$_{PERS}$]$_{3(DIRECTION\ DOOR)}$ (Katja 2;2) (DGS)
       'Elias, he is deaf.'

Present vs. non-present referents. During an initial phase, non-present referents are not established productively, which patterns with the development observed for agreement verbs; as we have seen in the previous section, the association of referents with referential loci, for example, in constructions with agreement verbs is only mastered late (4;11, Baker et al. 2005).

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17 So-called "reversal errors" refer to the use of the first person pronoun to refer to the addressee and the non-first person pronoun to refer to the first person, a phenomenon that has also been observed in spoken language acquisition (Foster-Cohen 1999).

We mentioned previously the discrepancy observed by some authors regarding the use of agreement markings with present and with non-present referents. Interestingly, children have been found to express reference to non-present referents through the use of agreement verbs in their citation form together with overtly realised arguments (until the age of about 3;6 in Lillo-Martin 1999: 538). Because a similar "distribution" of target-like and deviant verb forms has not been observed in spoken language acquisition the question arises as to the linguistic and general cognitive factors that might affect the acquisition of agreement with "non-present referents" vis-à-vis its acquisition with "present referents" (Morgan et al. 2006: 27). Morgan et al. (2006: 27), for example, remark that "[i]t is not clear whether this late use of agreement morphology and abstract locations in sign space has to do with linking a word to a non-present referent (a general conceptual issue) or more to do with the particular linguistic devices used to refer to a non-present referent (indexing of abstract locations in sign space)."

Clearly, from a linguistic perspective, the apparent distinction is unexpected once the mechanisms necessary to mark agreement are in place (cf. also Hänel 2005: 210). If agreement morphology is the overt reflection of the establishment of an abstract grammatical relation, children should not make any difference with respect to present and non-present referents. So, most authors seem to agree on the assumption that the observed linguistic behaviour is related to performance limitations pertaining, in particular, to memory for abstract spatial locations (Lillo-Martin & Chen Pichler 2006: 241). What is important about these considerations is that what is assumed to be cognitively demanding for the language learner pertains to the broader level of discourse, as a consistent and appropriate use of referential frameworks involves the orchestration of linguistic devices beyond the sentential level.

Inconsistent use of referential loci. Indeed, the studies available make apparent that prior to the mastery of the agreement system at about the age of 5 (age 4;9 [in Lillo-Martin 1999: 538] [4;11 in Baker et al. 2005]), children do not use referential loci consistently, failing to distinguish different loci for different referents (using one and the same locus, referred to as "stacking"), or not using the same loci for the same referents throughout a narrative. Further, children were also observed to use substitute referents (as for example, the pictures of a picture story, cf. Hänel 2005: 135f.; Lillo-Martin 1999: 538–9). Example (93) illustrates the use of the picture story book as a referent for the object, the subject being null (Lillo-Martin 1991: 158).

(93) a. GIRL AND BOY PAINT   (Robbie, 5;9) (ASL)
      'A girl and a boy are painting.'

    b. BOY   PAINT-FACE   ON   GIRL´S   FACE,
         LOOK-LIKE   INDIAN.
         'The boy paints on the girl's face, like an indian.'
    c. GIRL   PAINT$_a$ ON   POSS[to book]   FACE.
         'The girl paints on his face.'
    d. $_a$POUR(2h)$_b$[on book]   WATER   ON   THE   GIRL.
         '(He) pours water on the girl.'

Integration of information from different levels of linguistic analysis. Following our differentiation of the information involved in referential establishment and maintenance (section 3.1.4.2), learners' errors reflect remaining shortcomings at the level of discourse. Note that learners are not only confronted with the tasks of learning (a) the different mechanisms that can be used to establish and maintain reference, and (b) the lexical items that might be involved in these processes (distinction of verbs belonging to different classes), they also need to learn (c) that there is the possibility of shifting the referential framework (Lillo-Martin 1991: 162). What the preceding observations make apparent is that that the powerful "clarity of reference" in sign language production remarked upon previously (Bellugi et al. 1990: 16, cf. section 3.1.4.2) does indeed pose a challenge for language learners. The data discussed in this section suggest that the mastery of this "clarity", involving the integration of knowledge from distinct levels of linguistic analyses, represents a task that is not mastered in a one-step process. From a more general language learning perspective, this fits well with Leuninger's (2000: 255) observation that learners do not tackle all tasks at once and that the new tasks they confront background the knowledge attained. This view of language learning processes is certainly well in line with what we know about the complex dynamics that characterises a modularly organised grammar.

3.2.3.2 Complex classifier constructions

> *In the acquisition of either a signed or spoken language, the greatest challenges lie in the integration of elements into larger structured wholes.*   (Slobin 2008: 22)

Several studies have been concerned with the acquisition of constructions with classifiers, including those with verbs of motion and location. Acquisition tasks commonly distinguished in the literature (Schick 2006: 111; Slobin 2008) concern (a) the selection of handshape to represent a semantic category (*entity classifier*), a category on how the hand interacts with the object (*handle classifier*), or a category based on the visual geometric features of the referent (*entity classifier*, based on SASS properties defined previously), the choice being

related to the thematic structure of the verb, (b) the expression of spatial relations through simultaneous coordination of the hands to represent a moving or located figure with reference to a ground, or description of the ground prior to the articulation of the figure in relationship to the ground, and (c) the selection of handshapes in relation to entities established previously in discourse (for the purpose of creating cohesion).

In general terms, studies on the acquisition of classifier constructions in learners of various sign languages (ASL, BSL, HKSL) coincide in the observation that the target-like mastery is not achieved until well into school age (around the age of 8–9 years, cf. Schick 2006: 111, or later, cf. Slobin et al. 2003). Interestingly, children have been found to master individual components of classifier constructions rather early; however, they continue to have difficulties for some time before they appropriately integrate figure and ground while expressing path or manner through the motion of the verb (Morgan et al. 2008: 5, pace Newport and Meier 1985). The intricate use of linguistic means in the expression of spatial relations is succinctly described by Slobin (2008: 22; cf. also Schick 2006: 112):

> The handshapes for figure and ground must be contextually correct and conventionally appropriate; the ground must be indicated as well as the figure, with appropriate timing; the orientations of both figure and ground must be referentially appropriate; the movement must be within signing space and performed with conventional trajectory, rate, and rhythm; and co-occurring features such as path and manner/rate/intensity must be articulated simultaneously.

We turn next to a summary of the major developmental steps identified in the literature.

Whole body depictions. In their longitudinal study of a deaf child aged 1;0–3;0 Morgan et al. (2008: 8f.) observed that before age 2;0 the child used whole body depictions to describe movements such as "falling" or "jumping". Such whole body depictions impose physical limitation on the simultaneous expression of figure and ground so that learners a this stage express either path or figure.

Real-world substitutes. In a next step, between ages 2;0–2;6, ground, path or manner are expressed through finger tracing, real-world objects or the physical ground itself (Morgan et al. 2008: 8f.). Children express complex movement and manner paths through tracing of an index finger (e.g. ZIGZAGGING, PIROUETTING, OVERTAKING, CROSSING-OVER), without, however, combining these descriptions with a handshape classifier for figure. Instead descriptions are preceded by nominal signs (e.g. CAR, PLANE, MAN). In their study, Morgan et al. (2008: 14) observed that "many meaning components were expressed by the child in our

study through gesture before he developed conventionalised signs."[18] At times, the child would use real-world objects (e.g. a toy car) to depict the movement, or use the surface of a table or the floor to depict the path while using a flat palm handshape classifier (vehicle). Notice that Morgan et al. (2008: 7) categorised utterances involving real object manipulation as gestures (and also utterances with whole body pantomime depictions, and directional traces without hand-shape classifiers), because although "these different types of gestures success-fully express different semantic aspects of motion and location events (…) [they] do not use the representational sign space in front of the signer."

Slobin et al. (2003: 274), based on a study of ASL and NGT acquisition, too, remark on the early ability to productively combine meaning components (includ-ing conventional ones and ad hoc gestures) in early learners (2-year old children and hearing parents with 1 year or less of signing experience). Further, although children were found to have problems with the coordination of two handshapes to represent the spatial relation of a figure and a ground at this age, they managed to produce two handed classifier constructions when provided with an adult model; such imitations, as Slobin et al. (2003: 283) remark "provide information about the "growing points" or "zone of proximal development" in their signing. Slobin et al. (2003: 284) also mention that children have been found to initially use objects or the body (their own or the adults') to circumvent the difficulty of using the two hands in figure-ground classifier constructions (a strategy that is apparently also being used by the signing adults interacting with the children) (Slobin 2003: 284).

In their study of a group of deaf children at the ages of 6–13 years who had been exposed to HKSL at various ages and reached different levels of profi-ciency, Tang et al. (2007: 297), too, observed an initial stage at which children with little lexical knowledge of HKSL used real-world substitutes (in particular, their own body) for figure or ground. Notice, that the use of real-world objects are also used as "substitutes" by young infants' to refer to non-present referents (section 3.2.3.1).

Early classifier constructions. According to Morgan et al. (2008: 10) gesture forms disappear from age 2;6 onwards, coinciding with the time the authors iden-tify as the onset for the productivity of classifiers. However, handshape selection

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18 As pointed out in a commentary article to Morgan et al.'s (2008) study, Slobin (2008: 22) re-marks that "the spontaneous use of roughly representational handshapes and movements may be a sort of gestural bootstrap into sign language", but that beyond this "start" children have to learn the conventionalised handshapes and movement patterns and use the sign space appropri-ately. The assumption is discussed in more detail in Slobin et al. (2003: 272).

errors continue to occur after this age. The systematic use of motion forms, with different handshapes, was not observed until between 2;6–3;0, neither was the systematic use of the same handshape with different motion and location forms.[19]

Children do not yet produce two-handed classifier constructions to express spatial relations appropriately. According to Tang et al. (2007: 294) two-handed classifier constructions in which "specific thematic information is assigned to the two articulators independently" (cf. example (94)) are acquired later than what they call "typical classifier predicates" (encoding one argument) because they involve a higher degree of morphological complexity.

(94) RH: CL:PERSON-DIVE-FROM   (HKSL)
     LH: CL:BOAT
     'A person dived from the boat.'

Later development. Studies on sign language learners' productions of constructions with two classifiers to encode spatial configurations of entities (transitive motion predicates and locative predicates), such as the one reported in Tang et al. (2007) on the acquisition of HKSL, show that learners are better at encoding figure than ground. Slobin et al. (2003: 289f.) remark that after an initial phase, in which classifiers for ground entities are omitted, NGT learners of late preschool/early school age often fail to correctly integrate these classifiers. In their study of HKSL learners, Tang et al. (2007: 307) too, observed a frequent drop of ground vis-à-vis figure, which they relate to the roles the figure assumes semantically (i.e. AGENT or THEME) "thus making omission impossible" (Tang et al. 2007: 308).

Further, Tang et al. (2007: 305) point out that the higher frequency of two-handed constructions in the productions of the more advanced (Level 3) learners goes along with a greater number of errors. Mostly, these consist in the wrong choice of orientation of the figure hand against the ground hand. Although the proportion of errors in the expression of ground using the non-dominant hand is lower for these advanced learners, errors remain, which leads Tang et al. (2007: 305) to conclude that the "non-dominant hand for encoding a ground object emerges at a later stage of the acquisition process." According to Schick (1990: 369) the prolonged development documented for predicates expressing locative relationships is related to the circumstance that this information is "best considered adjunct information" vis-à-vis verb agreement associated with the thematic

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19 Schick (2006: 113) summarising the available evidence (including her own study) remarks on the early mastery of entity classifiers (at about age 5) whereas SASS and handle classifiers seem to still pose problems at that age. In general, the author remarks on the use of classifiers "that are more generic than needed".

structure of the verbs (subcategorisation), with the latter type of information being generally acquired earlier than the former.

Integration of information from different levels of linguistic analysis. In our view, the late mastery of these constructions reflect the challenges imposed by constructions that involve the interface between syntax and discourse. This aspect is reflected in a type of learner error observed by several authors. Tang et al. (2007: 308), for example, remark on the use of classifier predicates without previous production of a lexical antecedent referring to the referent of the classifier (cf. also Morgan 2006; Slobin et al. 2003). The ability to retain a classifier in a narrative was observed in more advanced learners. According to Tang et al. (2007: 310) the results show that learners progressively acquire (a) the knowledge about the morphological composition of classifier constructions, and (b) the referential characteristics of classifiers (relation between classifier and antecedent). The latter dimension, pertaining to the information status of reference forms at the level of discourse, is taken up again in section 3.2.3.4, dedicated to narrative development.

3.2.3.3 Referential shift

Finally, we turn our attention to the acquisition of referential shift which, as we learned in section 3.1.4.3 is determined by grammatical and discourse constraints. We also learned in that section that referential shifts represent a characteristic of sign language discourse and that they serve various pragmatic functions. Unfortunately, the development of this linguistic means remains largely unexplored in sign language acquisition research. First insights were obtained in a study of ASL narratives produced by deaf children aged 3–7 (cf. Emmorey & Reilly 1998). This study examined the use of reported quotation and reported action. The results obtained are summarised in the following (cf. also Table 3.10).

Table 3.10: Direct quotation and reported action in children's productions (based on Emmorey & Reilly 1998).

Age	Direct quotation	Reported action
3 years	– mostly labelling (narratives mostly contain only single nouns or verbs), no quotations – no shifted facial expressions	– few reported action predicates – perspectives used remain unclear – shifts unmarked

Table 3.10: continued

Age	Direct quotation	Reported action
5 years	– direct quotes, when encouraged by the story context – inconsistent or no use of shifted facial expressions – frequent use of lexical signs to introduce quotes	– some predicates with reported action – even distribution of perspectives (for about a third of RA predicates perspective unclear)
7 years	– direct quotes, when encouraged by the story context – shifted facial expressions appropriate – non-manual markers introduce direct quotations	– mainly plain narrative discourse with only few instances of reported action – one perspective predominates (commonly that of the secondary character)

Direct quotation. What can be gleaned from Emmorey and Reilly's study is that 3-year olds (with the exception of one child) do not use direct quotation in their story retelling. While only one child produced a character's facial expression, 5-year olds made no or an inconsistent use of shifted facial expressions. 7-year olds were found to use facial expressions much like adults. With respect to the linguistic means used to introduce direct quotation, Emmorey and Reilly (1998: 86) remark on the 5-year olds' use of lexical means (that is, performative verbs such as the verb SAY) which is uncommon in adult narratives. As 7-year olds correctly use non-manual markers, the developmental pattern observed previously[20] becomes apparent here again: early lexical signalling is replaced later by non-manual marking, which is indicative of "a re-organisation and transition to incorporating affective facial expression into the linguistic system" (Emmorey & Reilly 1998: 86).

Reported action. 3-year old children were found to use reported action, however, the perspective adopted remains unclear which contrasts with the adults' use. These children use affective facial expression but fail to identify the subject through lexical or pronominal marking. 5-year olds' use of reported action, in turn, is characterised by an even distribution of the perspectives reported between the different characters (according to the authors, adults, in contrast, show a preference toward the use of one perspective; in the case of the picture story used to elicit the signed narratives, the so-called *frog story*, the boy's

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20 In addition to the phenomena we noted previously, Emmorey and Reilly (1998) also mention negation, adverbial modification, and conditionals.

perspective was chosen). Finally, Emmorey and Reilly report that when 7-year olds' used reported action, which they seldom did, their perspective choice differed from that of the adults (they chose the dog's perspective). Emmorey and Reilly (1998: 87) remark on the discrepancy between the narratives of 7-year olds and those produced by adults and 5-year olds regarding the relative frequency of reported action predicates. According to these authors (1998: 87), the higher incidence of reported action predicates in the narratives of adults and 5-year olds (about 82% in the adult narratives) compared to the predominance of the use of the narrator perspective in 7-year olds' productions patterns with the findings obtained in studies on narrative development in English and Hebrew showing that "7 and 8 year olds tell structurally more complex, but affectively more bland narratives than younger children."

Crucially, Emmorey and Reilly (1998: 90) conclude that children master direct quotation before reported action. They assume that this difference is related to two factors. First, direct quotation is assumed to present "a single and coherent perspective" (that of the quoted character) whereas reported action involves a "dual perspective" (manual means reflecting the narrator's and non-manual the character's perspective): "That is, the signer as narrator chooses the verbs that describe the action. However, the facial expression is not that of the signer, but of the character whose actions are described" (Emmorey & Reilly 1998: 90). Secondly, direct quotation and reported action are assumed to differ in the possibility to use a lexical sign to introduce the referential shift to the extent that "the lexical sign SAY can be used to introduce quotation (in fact, five year olds use this mechanism to introduce a quote), but no lexical marker signals referential shift for reported action" (Emmorey & Reilly 1998: 90). Indeed, Emmorey and Reilly (1998: 90) speculate on the possibility that "[t]he availability of the lexical sign SAY may aid children in acquiring the use of referential shift for direct quotation." Notice that the assumption patterns well with the observation that learners express several grammatical phenomena manually first before they use the target non-manual means.

3.2.3.4 Reference forms and functions

The skilful organisation of referential content in a narrative involves the syntax-discourse (or pragmatics) interface. The acquisition of the mechanisms needed to create cohesion and coherence in sign language discourse, much like in spoken language discourse, comprises mastery of the different types of reference forms, the syntactic context they may appear in, as well as the functions they fulfil in a given discourse context. As pointed out by Verbist (2010: 116) "children not only need to learn to generate different nominal expressions in

the appropriate positions at the syntactic level, but also to identify the discourse information status."

While young (hearing) infants have been found to master the new-given information distinction (by the age of two, or even younger, as even at the one word stage, the words produced tend to express new information) (cf. Verbist 2010: 116), "[m]apping this pragmatic knowledge on to the syntactic set of co-referring expressions is a much more complex operation." Indeed, form-function relations in learners' productions have been found to change over time, which is reflected also in the use of different strategies in the organisation of a narrative.

Morgan (2000: 282), who draws on the work of Karmiloff-Smith (1985), summarises the developmental phases distinguished in the literature with respect to the strategies learners use in their organisation of narratives. Children before age 5 begin with a bottom-up strategy, whereby the focus is put on the local sentential level (and, hence, on the relations of referents within a sentence). Where picture books are used as in the elicitation of narratives, the organisation of the narrative produced follows the order of these pictures. In the next phase, after age 5, children choose a "thematic subject" for their story (the main protagonist) following a top-down strategy in the narrative organisation. Finally, older children and adults have been found to make a balanced use of top-down and bottom-up strategies. Narratives are organised in relation to larger discourse units.

Adultlike usage of this pragmatic knowledge continues to develop in the teenage years. It has been observed, for example, that the expression of narrative parts involving two characters in separate but co-occurring activities, is managed only by the 11–13 year old participants in a study of children age 4–13 acquiring BSL (Morgan 2006). Only this age group managed to refer to two characters involved in the same episode and to overlay perspectives through the sequential and simultaneous use of fixed and shifted referential frameworks (for similar observations concerning the use of perspective in learners of ASL and NGT, see Slobin et al. 2003: 291f.).

Reference forms and functions. Choice of reference forms and the functions they fulfil at the discourse level have been investigated in a comparative study of deaf children's and adults' narrative productions in BSL, elicited on the basis of the famous frog story (Morgan 2006). As outlined in section 3.1.4.8 three referential functions reference forms might serve in a discourse context are commonly distinguished, namely, reference introduction, reintroduction, and maintenance.

As for the form-function patterns used by the adult participants in the study, Morgan's analysis (2006: 325) revealed that reference maintenance was primarily expressed through role shift (about 59%), followed by entity classifiers (31%), and noun phrases (6%). As for the introduction of new referents, Morgan remarks that this seldom occurs through entity classifiers (only 4%, used with a cataphoric ref-

erence, that is, these forms were immediately followed by a noun phrase identifying the referent explicitly), as new referents were typically introduced via noun phrases (referential shift was not found to be used for introduction). Turning to the data of the children participating in the study (aged 4–13), Morgan (2006: 324f.) remarks on the progressive decrease of ambiguous forms (that is those forms for which it was impossible to identify the character they referred to), from 16% at age 4 to 0.2% at age 13.

As for the referential functions served by the different reference forms the study revealed the following:

(a) *Noun phrases*. In all age groups, noun phrases are used to introduce and reintroduce characters, although the youngest children (age 4–6) often failed to use noun phrases to introduce new characters. The highest percentage of use noun phrases for reference maintenance was observed in the younger children (22,5%) (a high percentage reappears at age 11, which is interpreted as an indication for the continuing narrative development). This use of noun phrases is interpreted to reflect the learners' focus on reference at the sentential level (Morgan 2006). Interestingly, the use of noun phrases for reference maintenance equals the first phase identified in hearing children learning a spoken language.

(b) *Entity classifiers*. Entity classifiers were found to be used less by younger participants for reference maintenance (about 12,5%) than by adults (about 31%). But the younger children used this form to introduce referents (8%), without a cataphoric or following noun phrase (as adults would do). Hence, children master the use of these forms at sentence level, but the narrative knowledge about the pragmatic functions is still lacking. Interestingly, in the youngest children's productions classifiers appeared across the three referential functions fairly uniformly.

(c) *Referential shift*. Finally, regarding referential shift, it was found to be predominantly used for reference maintenance across all age groups. Youngest children (age 4–6), however, use this form for about 11,25% to introduce new referents, which can be interpreted as one of the main causes for the referential ambiguity observed in their stories.

Morgan (2006: 327) concludes that "[i]n general, control of the pragmatic role of entity classifiers and role shift in discourse develops gradually with initial mastery at the sentential level, where young children may use these constructions correctly but fail to use them appropriately in relation to their new referential functions in discourse." Crucially, the increasing mastery of the functions served by reference forms at the narrative level reflect "a major growth in the child's pragmatic abilities to assess the knowledge of the listener as well as monitor the narrative for ambiguity" (Morgan 2006: 323).

3.2.3.5 Development of coherence and cohesion

Between the ages of 2 and 5 children learn to produce several narrative genres, whereby the ability to retell past events in dialogue develops first, several years before the production of fantasy types of narrative is mastered (for a detailed discussion see Morgan 2000: 281). It is important to note that although the linguistic devices used in the different genres may be similar, the pragmatic functions they fulfil vary across narrative types. Children acquire the necessary pragmatic skills at different ages (Berman & Slobin 1994; Morgan 2000).

Among the few studies that have looked at the inter-relation of available grammatical devices and narrative skills in sign language acquisition are those that were undertaken by Bellugi and colleagues (Bellugi et al. 1990). The narratives elicited in this research were analysed with respect to verb agreement, pronouns and cross-sentential cohesion (Bellugi et al. 1990). Four developmental stages were distinguished (cf. Lillo-Martin 1999: 551):

Stage I. At around age 2, children's productions consist of short isolated sentences, verbs appear in their uninflected form. Spatial syntax, at this stage, is absent. According to Lillo-Martin (1999: 551) word order is used to convey grammatical relations. Utterances produced at this stage are often incomplete, fragmentary (95), and elements (subjects or objects) might be missing (96).

(95) BOY...   BALLOON...   CRY   (Monika 1;7) (ASL)

(96) GIVE   BALLOON   (Steve 2;3) (ASL)
                                                      (Bellugi et al. 1990: 19)

Stage II. At age 2;6–3;6 verb agreement occurs with present referents. Pictures in the story books (that is, the characters depicted on the pages) are sometimes used as "present referents" (children are assumed to need a crutch for non-present referents). At this stage, children are able to describe isolated events, but their stories don't cohere (Bellugi et al. 1990: 20). Children produce verbs with spatial location (e.g. SPILL-ON-HEAD) but fail to indicate the referential shift.

Stage III. Coherence is still absent at this stage. It is only toward the end of this period lasting from age 3;6 to 5 years that verb agreement with non-present referents becomes productive. However, children may stack locations (cf. example (97) which shows the use of the same locations for two different objects) or use them indiscriminately without maintaining consistent associations of loci with referents. Hence, sentences are grammatical but reference maintenance is not observed at the discourse level. Rather than using pronominals, children tend to repeat the name of the referent each time it is used (Bellugi et al. 1990: 21). Children do not use the shifted referential framework at this stage.

(97) BOY   SEE_b   BALLOON   (Maureen, 3;8) (Bellugi et al. 1990: 22) (ASL)
     'The boy saw a balloon.'
     MAN   GIVE_b BOY   BALLOON
     'The man gave the boy a balloon.'

Stage IV. Co-reference is achieved at this stage (age 5–6). The children's cross-sentential use of verb agreement and anaphoric pronouns is accurate. Verbs that need to be marked for agreement appear in their inflected form. The example of a story provided in (98), produced at age 6;2, illustrates the availability of the relevant mechanisms. Notice that verbs are correctly marked for agreement, and that the referential loci for mother and girl are established through verb agreement. The construction with the verb SPILL correctly involves a referential shift (showing body location for the water spilling).

(98) PRONOUN   BOY   WANT   PAINT   (Susan, 6;2) (ASL)
     _aPAINT_b   GIRL   (Bellugi et al. 1990: 23)
     THEN   GIRL_b PAINTa
     THEN   BOY _APOUR_b (shift)   SPILL-HEAD
     GIRL   _bPOUR_a
     THEN   MOTHER   _cSCOLD_{a,b}

We close this section with a note on the caution imposed on the interpretation of data when it comes to the properties involving the syntax-discourse interface. As pointed out by Schick (2006: 119) "children do not have difficulty in understanding the concepts that underlie the abstract use of space to represent people and events, especially when these spatial maps are richly grounded in reality." However, as this author remarks (2006: 119), "early evidence of the use of frames of reference and role shift during narration does not translate into early mastery". Apart from the complexity of the task of integrating information from different levels of linguistic analysis for narrative purposes, Schick also remarks on the potential relevance of cognitive factors when it comes to the representation and production of narratives.

3.3 Sign language acquisition: diagnostic criteria

In this section, we elaborate a working proposal on what we assume constitute the main milestones in the development of the target sign language structure based on the evidence discussed in the previous sections. Unfortunately, as our review of the available literature makes apparent, there is a lack of longitudinal studies that would provide further insights into how learners *develop* the target

structure, for example, by identifying the main developmental milestones as it is commonly the case in spoken language acquisition research. Such developmental studies, as those undertaken on the acquisition of German, provide further insights into (a) the progressive development of the target structure and associated grammatical processes, and (b) the spectrum of variation observed at the different developmental stages.

With a few exceptions, notably the studies undertaken by Chen Pichler, Lillo-Martin, and Hänel, there is a persistent lack of theoretically founded studies that would address current issues in the broader field of language acquisition. The authors mentioned coincide in their assumption of a continuity view of development, which basically assumes that the target structure is available early on, and that language-specific properties are specified equally early. The alternative hypothesis of a gradual development of syntax (cf. section 2.2.2) is not taken into consideration. Instead, structural characteristics and grammatical processes in language development are largely regarded in isolation (for example, the relation of word order and verb inflection remains unaccounted for).

In our view, however, the Structuring-building hypothesis elaborated previously (cf. section 2.2.2), accounts better for the changes documented in the development of sign language learner grammars. Following this hypothesis, we assume that the evidence obtained in sign language acquisition studies reflects a progressive expansion of the structure of the learner systems, in accordance with the evidence obtained from the input. Further, we argue that intra-individual variation is bound to transitions between stages, in line with the UG based dynamic model of language development we proposed in section 2.2.3.

In our working proposal about the development of DGS we distinguish different milestones (cf. also Table 3.11). Note that the characteristics at each stage serve also as diagnostic criteria in the evaluation of children's learner grammars which is why the descriptor is followed by an indication of the respective developmental phase in brackets in the following summary.

VP structures (Phase I): No evidence of grammatical processes. VP structures observed at the beginning of sign language development (cf. Hänel 2005: 208) are categorial-thematic in nature (cf. Radford 1990). Grammatical processes related to the functional projection IP run vacuously. Hence, word order at this stage may vary. There is no checking of subject-verb agreement. Neither can null arguments be licensed, as the necessary structural relations are not available (notice that the empty elements, that is, *pro* vs. *topic drop* are not distinguished, which will only be possible once INFL is in place, cf. Hänel 2005: 222). The few agreement verbs that are produced at this stage appear in their default or citation form. That referential loci are not established overtly at this stage also reflects

the lack of the relevant abstract features; the same holds of errors concerning the first/non-first person distinction (Hänel 2005: 266).

IP structures (Phase II): verb inflection, PAM, *complex classifier constructions.* IP structures and their (language-specific) associated features are reflected at the level of word order. Structural requirements are in place for grammatical processes like verb raising and feature checking to become operative. Verb agreement and classifier inflection morphology is productively used at this stage. Following Hänel (2005: 259) the establishment of non-present referents goes along with productive verb agreement marking. The temporal coincidence comes as no surprise given the inter-relation between both mechanisms and relevance of abstract (grammatical features) for their mastery. An additional piece of evidence for the availability of the IP concerns the use of PAM with plain verbs and adjectival predicates.[21] Although the use of PAM was not an issue investigated by Hänel, this author (2005: 244, our transl.) provides one example with the agreement marker (cf. (99)). The sequence illustrates nicely how the sign is used to mark agreement in a construction with an adjectival predicate.

(99)   RITA $_1$PAM$_{IX(RITA)}$ PRON$_{PERS(RITA)}$ CROSS   (Stefan 2;11) (DGS)
       'I am cross with Rita.'

CP structures (part of phase II or a milestone of phase III?): complex sentential constructions, interrogation, referential shift (POV). CP structures and their associated features are reflected in the production of wh-questions, embedded clauses, including those that involve referential shift. Thus far, the development of complex structures and referential shift have only received little attention (there are no available studies on DGS learners). Further, there is no consensus on whether the structural expansion by a CP layer coincides with the projection of the IP. Hänel (2005) assumes that the acquisition of the inflection system with its feature specifications goes along with the activation of an additional syntactic position, namely, a topic position that allows for the licensing of empty elements in constructions with plain verbs (by assumption, a specification of the C-system)[22].

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21 Notice, that Van den Bogaerde (2000: 218) too, though not in the context of a structural analysis, remarks on the production of the auxiliary "OP" at the time subject verb agreement begins to be marked in the acquisition of NGT.

22 The assumption that the activation of the INFL features goes along with specification of another functional category raises the question about a potential modality effect. According to Hänel (2005: 268, our transl.) this is so because the R-locus carries referential features as a phi-feature: "It is understood that the location features must be made available discourse grammatically". For this purpose, referential relations are made visible as overt indices: "It is the overt presentation that could have an influence on the effect observed in acquisition."

Syntax-discourse interface. Learners of a sign language like DGS are confronted with the task of integrating information from different levels of linguistic analysis. In our work, we have focused on the following phenomena:

(a) Referential establishment and maintenance. Several linguistic devices are used in sign languages to establish and maintain reference (cf. Table 3.6 above for an overview). Verb inflection, for example, involves the picking out of referential loci to mark agreement; yet the consistent use of these loci throughout a narrative to create cohesion, as well as the contrastive choice of loci for different referents represent phenomena that are modelled by discourse requirements. Hence, learners need not only have a command of the processes associated with the IP, that is, the domain of grammatical relations that hold between syntactic constituents (e.g. subject-verb, verb-object). Their mastery of DGS verb inflection is related also to (a) lexical competence (involving the distinction of plain, agreement and spatial verbs), (b) morphological competence (involving the inflection of verbs to encode their arguments [first / non-first distinction, classifier selection, spatial relations], and (c) discourse (involving the overt marking of coindexation).

(b) Referential shift. The skilful use of fixed and shifted referential frameworks involves (a) lexical knowledge (in particular, where verbs select for a POV complement), (b) the IP level (that is, the level at which grammatical relations, including agreement, need to be marked) (c) the CP level (that is, the level at which referential shift is signalled and marked), and (d) the discourse domain (modelling the choice of loci for the purpose of creating cohesion).

(c) Reference forms and their functions. We have seen also that signers deal with the functional dimension of the linguistic devices they choose to use to make reference. The challenge here is not only to make an appropriate selection among various lexically overt reference forms. Because DGS is a discourse oriented language and a pro-drop language, learners have to acquire the grammatical constraints and learn the discourse requirements that need to be met in the use of null elements. As they make a choice among the different linguistic forms available, signers will also have to consider the referential function these forms might serve depending on the respective discourse context they appear in.

(d) Spatial relations. Finally, the intricate interaction of information from distinct linguistic levels also becomes apparent in the expression of spatial relations in the narration of the story characters' locations or movements. Notice that variation regarding the degree of detail provided is determined, on the one hand, by the overall organisation of a narrative, and, on the other hand, by grammatical requirements. Beyond the issue of narrative style, the question that arises from a developmental perspective concerns the availability and use of the relevant linguistic devices necessary to express spatial relations. The use of complex classifier constructions, for example, involves the competence to integrate informa-

tion from different levels of linguistic analysis, including (a) morphosyntax (verb inflection), (b) syntax (word order, in particular where lexical antecedents are involved), and (c) discourse (where h2-classifiers background information provided previously).

Table 3.11: Working proposal about structure-building in DGS.*

Syntax-discourse interface	Simultaneous constructions, expression of spatial relations, fixed / shifted referential frameworks, co-reference (referential establishment / maintenance), reference forms / functions
CP	Referential shift (POV), questions, embedded clauses
IP	Complex classifier constructions
	PAM -agreement — RITA $_1$PAM$_{IX(RITA)}$ PRON$_{PERS(RITA)}$ CROSS 'I am cross with Rita.'
	DET$_{EXIST}$-("DA")-agreement — SHEEP [PRON$_{PERS}$]$_i$ SEE$_{IX(ZOO)}$ [DET$_{EXIST}$]$_{IX(ZOO)}$ 'There (in the zoo) I see a sheep.'
	Verb agreement — NINA DET$_{ART(NINA)}$ $_1$VISIT$_{IX(NINA)}$ 'I visit Nina.'
VP	no evidence of grammatical processes (Word order variation)

*To illustrate the structure-building process, structures are provided bottom-up (from Hänel 2005)

3.4 Analyses of DGS data and outline of the empirical chapters

In the investigation of the participants' command of DGS we conducted qualitative and quantitative analyses of the data. We have used the diagnostic criteria established in section 3.3 for the assessment of the main structural properties of DGS associated with the VP, IP, and CP levels respectively, including phenomena involving the syntax-discourse interface.[23]

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23 In 2006, the first preliminary findings obtained were presented in collaboration with Knut Weinmeister at the TISLR conference in Florianópolis, Brazil (cf. Plaza-Pust & Weinmeister 2008). In that presentation we focused on what the preliminary findings revealed about developmentally constrained language contact phenomena. For the present study those preliminary findings have been subjected to a reanalysis. In addition we carried out qualitative and quantitative measures for the purpose of obtaining a more detailed picture of grammatical phenomena, on the one hand, and the syntax-discourse interaction, on the other hand. The latter dimension, not considered in the preliminary analysis turned out to be crucial for an appropriate understanding of what the data revealed about the particpants' command of DGS.

Developmental profiles. Based on the results obtained concerning their DGS competence at the onset of the study (file 1) and further progress (file 3), we established a developmental profile for each participant. Individual profiles are summarised in a schematic manner following the template in Table 3.12. Because the mastery of several phenomena involves the syntax-discourse interface, the table includes a summarising evaluation of the participants' command of these phenomena, in particular, choice of reference forms and functions they serve, referential establishment and maintenance, referential shift, simultaneous constructions and expression of spatial relations. Potential candidates for language mixing are provided in a separate line, shaded in grey.

Table 3.12: Template used for the sketch of participants' DGS profiles.

Syntax-discourse interface		[file]	Simultaneous constructions
		[file]	Expression of spatial relations
		[file]	Fixed/shifted referential frameworks
		[file]	Co-reference (referential establishment / maintenance)
		[file]	Reference forms / functions
CP	Referential shift (POV)	[file]	
	Questions	[file]	
	Embedded clauses	[file]	
IP	Complex classifier constructions	[file]	
	DET$_{EXIST}$-agreement	[file]	
	PAM -agreement	[file]	
	Verb agreement	[file]	
	IP- headedness	[file]	
VP	VP-headedness	[file]	(*no evidence of grammatical processes*)

Individual learner grammars. Presentations of developmental profiles are followed by a more in-depth discussion of the participants' DGS competence at the onset of the study (file 1) and the progress they make (file 3), with a focus on the properties involving the levels of syntax, morphosyntax, and the syntax-discourse interface.

Quantitative and qualitative measures were used to assess the distribution of reference forms and their functions. For each file, the results obtained in a quan-

titative measure of the distribution of reference forms used for each character are summarised according to the template sketched in Table 3.13. Reference forms were coded for whether they introduced, reintroduced or maintained reference to a character. Notice that the first column captures the distinction of referential functions (introduction, reintroduction and maintenance), the first line of the table distinguishes the main reference forms (NP, DET, PRON, subject drop). The second level sets apart DET_{ART} / $PRON_{PERS}$. Relative proportions of reference forms serving specific functions are provided in separate tables and diagrams.

Table 3.13: Template used for the summary of results on the distribution of reference forms and their referential functions.

Function	Character	n	NP	DET_{ART} / $PRON_{PERS}$			Subject drop
				Σ	DET_{ART}*	$PRON_{PERS}$	
Introduction							
Reintroduction							
Maintenance							
Total							

* DET_{ART} occurs in combination with NP.

The results of a qualitative measure used to investigate whether participants managed to integrate information from different linguistic levels in their expression of spatial relations, namely, (a) morphosyntax (verb inflection), (b) syntax (word order), and (c) discourse (co-reference) are summarised in a schematic manner for each file, following the template sketched in Table 3.14. The table informs about the forms used for the expression of ground and figure respectively, the type of referential framework used to express the spatial relation, as well the type of verb used. Additionally, it includes information on antecedents where these are produced prior to complex classifier constructions.

Table 3.14: Template used for the summary of results on the expression of figure-ground relations.

Ground / figure	Reference forms		Context		
	Ground [antecedent]	*Figure*	*R.-Framework*	*Verb/DET [activity]*	

3.5 Developmental profile: Muhammed

Muhammed's file 1 frog story reveals an advanced knowledge of DGS, both at the grammatical and at the narrative level. At the onset of this study, Muhammed demonstrates a command of the full sentential structure of DGS (cf. Table 3.15). Grammatical processes associated with the functional projections above the VP, the IP and the CP, are operative.

In file 3 the information from distinct levels of linguistic analysis is skilfully orchestrated. The data reflect a broader range of the structures that were already apparent in file 1 (in particular, complex sentential constructions and interrogative clauses), as well as a skilful shifting of referential frameworks. From a narrative perspective, Muhammed's narration of the frog story in file 3 is remarkably complex and detailed. Referential frameworks are skilfully used to describe the events from the characters' and the narrator's perspectives. Temporal and causal relations are appropriately narrated. Only information on the background is omitted at times, possibly an effect of the presence of the story booklet during the data collection.

Finally, language mixing occurring occasionally in files 1 and 3, is restricted to constructions with PAM (files 1 and 3) and BEFORE (file 3). Because Muhammed's narratives document his mastery of the target grammar, it is unlikely that these potential candidates for language borrowing are developmentally constrained.

3.5.1 DGS competence at the onset of the study

3.5.1.1 Syntax
Word order. Muhammed adheres to the target sentence structure as of the onset of the study. In his file 1 narrative there are no utterances in which elements would be arranged in a target-deviant order (e.g. SVO). Although this file contains no SOV sequences, in which all elements would be expressed overtly, constructions, in which adverbials appear in preverbal position (cf. (100b) and (101e)), provide evidence of target-like sentence-final verb placement.

(100) a. BOY$_\lambda$ [FALL$_{CL:\lambda}$]   (Muh.-file 1)
            'The boy falls.'
       b. WATER$_F$ DIVE-IN$_{IN\text{-}F}$
            '(He) dives deep into the water.'

Table 3.15: Muhammed's DGS profile.

Syntax-discourse interface		[file 3]	Simultaneous constructions
		[file 3]	Fixed/shifted referential frameworks
		X*	Expression of spatial relations
		[file 1]	Reference forms / functions
		[file 1]	Co-reference (referential establishment / maintenance)
CP	Referential shift (POV)	[file 1]	₅<_____> nm: CL:BODY: with the body bent down, frightening a. ₅PECK₃ '(It = the owl) pecks at (him = the boy).' ₃<_____> nm: CL:BODY: looking up, confused b. SHOO-AWAY '(He) shoos (it) away.'
	Questions	[file 3]	[– dom] [CL:FORM(round object)ᴅ]ᴅ WHO HONEY^ [+ dom] [CL:FORM(round object)ᴅ]ᴅ KNOW 'Who knows the honey object (beehive)?
		[file 1]	[Single wh-words only]
	Embedded clauses	[file 1]	[– dom] [CL:FORM (opening) --------] IF [+ dom] FROG₁ [DETₑₓᵢₛₜ]₁, INSIDE 'If the frog is there, inside the hole...'
IP	Word order	[file 3]	[DETₐᵣₜ]₁ BOY₁ NAME BEFORE P-EE-W-EE BOY NAME 'The boy's name in the past was Peewee.'
	PAM -agreement	[file 3]	THEN FIRST BOY CROSS PAM₂ DOG₂ 'Then firstly the boy is cross with the dog.'
	Complex classifier constructions	[file 1]	₃<_____> [– dom] [CL:FORM (opening) -----------]ɢ TREE [+ dom] LOOKɢ SEARCH '(He = the boy) looks into a hole in the tree. (He) searches in it.'
	DETₑₓᵢₛₜ-agreement	[file 1]	THEN SEE₁ : [DETₑₓᵢₛₜ]₁ FROG₁ 'Then (he) sees there is a frog.'
	Verb agreement	[file 1]	₃<____> [PRONₚₑᵣₛ]₃ WAVE₈ '(He = the boy) waves to (them = the frogs).'
	Figure-ground	[file 1]	BOYλ [FALLCL:λ]. WATERꜰ DIVE-INᵢₙ₋ꜰ 'Then the boy falls. (He) dives deep into the water.'
	IP-headedness	[file 1]	AGAIN OUTSIDE SEARCH 'He searches again outside.'
VP	VP-headedness	[file 1]	- see IP headedness -

* X = Partial mastery in file 3 (occasional omission of background information in the expression of figure-ground relations).

(101) a. $_3$<̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲_̲ (Muh.-file 1)
            n̲m̲:̲ ̲s̲u̲r̲p̲r̲i̲s̲e̲d̲_̲_̲_̲_̲_̲_̲_̲_̲
            THEN   BOY$_3$ LOOK$_1$:   FROG$_1$ DISAPPEAR
            'Then the boy sees with surprise that the frog has disappeared.'
            _̲_̲_̲_̲_̲_̲>

       b. WHERE
            'Where is (he = the frog)?'

       c. SEARCH+++
            '(He) searches.'

       d. m̲a̲n̲n̲e̲r̲:̲ ̲s̲l̲o̲w̲l̲y̲,̲ ̲e̲v̲e̲r̲y̲w̲h̲e̲r̲e̲
            SEARCH
            '(He) searches, everywhere.'

       e. AGAIN   OUTSIDE   SEARCH
            '(He) searches again outside.'

Because DGS is a discourse-oriented and a pro-drop language, the low incidence of overt SOV patterns comes as no surprise. Null elements (subject drop as in example (100b) or object drop in (101c,d,e)) are licensed as the referents are identified unambiguously in their respective contexts, providing evidence for Muhammed's command of the target constraints.

Complex syntax: subordination and interrogation. Muhammed produces several complex sentential constructions in his file 1 narrative. Example (101a) above illustrates Muhammed's command of the target word order in subordinated constituent clauses selected by the verb LOOK. Other complex constructions in this file involve psychological verbs (such as (102) with the verb THINK) or modal verbs (such as (103) with the verb WANT). There is one instance of a conditional clause introduced with the conjunction IF (compare example (104)), but the meaning of this sequence is not completely clear.

(102) BOY   THINK :   DOG   PERHAPS   GONE   (Muh.-file 1)
       'The boy thinks that the dog might be gone.'

(103) FROG   WANT   GET-OUT,   WITH   MOTHER   AT-HOME   (Muh.-file 1)
       'The frog wants to get out, (to be) with his mother, at home.'

(104) a.   [– dom   ] [CL:FORM (opening)]   (Muh.-file 1)
            IF   [+ dom   ] FROG$_1$ [DET$_{EXIST}$]$_1$
            'If the frog is there...'

       b. INSIDE
            'inside (the tree hole)...'

       c. IF   FROG   NO-ONE
            'If there is no frog,...'

    d. THEN   ANY   OTHER
      'then other...'

In file 1, Muhammed produces only one interrogative clause (cf. (101b) above) which consists of a single wh-word expressed after the narration of the boy's realisation of the frog's escape. Notice that the use of a wh-word only to express the protagonist's enquiry about the frog's location (in the sense of "where is the frog?") is target-like: DGS knows no copula and the subject can be dropped, particularly in a context where it has been mentioned overtly before. Nevertheless we must concede that (101b) does not represent sufficient evidence for the purpose of establishing whether the target mechanisms for question formation are in place.

    Complex syntax: referential shifts. Turning to complex constructions with referential shifts, the analysis reveals that Muhammed uses POVs in two main contexts, (a) where they are subcategorised by the verb in the matrix clause, and (b) where he provides detailed descriptions of the signers activities. The former case is given in examples with the verb REGARD and in constructions with reported dialogue (compare example (110) below, in which the boy calls the frog, asking him to come back). Furthermore, the analysis reveals that Muhammed has a command of the grammatical processes involved in complex constructions with POVs, including, (a) the signalling of changes in the perspective adopted, (b) the marking of shifted reference, and (c) the shifting of the referential framework (reassignment of referential loci). Example (101) above, in which the signer adopts the perspective of the boy, who realises that the frog is gone and asks himself about the frog's whereabouts, documents the use of non-manual means to signal the shift to an SRF: the adoption of the boy's perspective is marked through a change in body orientation (to the right), eye gaze direction (to the right bottom) and facial expression (surprise).

    Target-like agreement marking is illustrated in example (105), in which the signer adopts the perspective of the boy: body part classifiers agree with subject (the boy puts on his boots) and the entity classifier correctly agrees with the objects (the boots) which are, however, not referred to overtly before. Interestingly, eye gaze direction changes several times during this sequence, whereby not all of these changes are linguistically motivated: apart from eye gaze to the respective loci of the right and the left boot (marking object agreement) Muhammed also directs eye gaze to his left, toward the location of the pictures of the story book.

    Example (106) illustrates the skilful alternation of SRFs and FRFs. Muhammed uses non-manual means (facial expression, body orientation) to mark the perspective of the boy in (106b), in which he describes the surprise of the boy when confronted with the owl (the narrator does not explain that the owl suddenly

appears out of the tree hole the boy was looking into before, but rather produces the sign COME with an initial locus to his right). Several POVs follow each other in (107). Examples (107a-c) show how referential shift is used to describe the frightening behaviour of the owl, whereas in (107d) a shifted referential framework is used to recount that the boy tries to shoo away the owl. The change in perspective is marked clearly through non-manual means, that is, through a change in body orientation (body lean forward is used to mark the POV involving the owl as a protagonist, and a return to an upright body position, slightly to the left, to mark the POV involving the boy as a protagonist), and through a change in eye gaze direction (to the bottom and to the top respectively). The agreement verbs used correctly agree with the arguments they encode.

(105) $_3$<_____   (Muh.-file 1)
         [– dom]   [PUT-ON$_{CL:BOOT}$]$_{LOC:RIGHT\ FOOT}$
    THEN   [+ dom]   [PUT-ON$_{CL:BOOT}$]$_{LOC:RIGHT\ FOOT}$
    'Then (he) puts on (a boot) on the right foot...'

    _____>
    [– dom]   [PUT-ON$_{CL:BOOT}$]$_{LOC:LEFT\ FOOT}$
    [+ dom]   [PUT-ON$_{CL:BOOT}$]$_{LOC:LEFT\ FOOT}$
    (and) on the left foot.'

(106)   a.   THEN   BOY$_3$ SEARCH.   (Muh.-file 1)
            'Then the boy searches.'

      b. $_3$<_____>
         manner: surprised
         JUMP
         '(He) jumps in surprise.'

      c.   OWL   COME$_{TO-I}$
         'An owl approaches.'

      d.   FALL
         '(He) falls down.'

(107)   a. $_5$<_____   (Muh.-file 1)
         OWL$_5$ [LOOK$_{DOWN}$]$_3$
         'The owl looks down (at him).'

      b.   _____
         manner: frightening
         FLAP
         '... flaps its wings in a frightening manner.'

c. _____>
    manner: frightening
    ₅PECK₃
    '(It = the owl) pecks at (him = the boy) in a frightening manner.'

d. ₃<_____>
    manner: confused
    SHOO-AWAY
    '(He) shoos (it) away, confused.'

3.5.1.2 Morphosyntax

The analysis of the data reveals that the grammatical processes related to a higher functional projection above the VP, the IP, are operative. In particular, verbs are correctly inflected in accordance with the target constraints.

Agreement verbs. Muhammed produces several constructions with verbs that agree with their object. These involve for their greater part verbs like LOOK-AT, which is largely due to the plot of the frog story revolving around the protagonists' search of the runaway frog. Examples (107c) above (repeated here in (108)) and (109) illustrate constructions with other agreement verbs, that is, PECK and WAVE respectively.

(108) ₅<____>   (Muh.-file 1)
       manner: frightening
       ₅PECK₃
       '(It = the owl) pecks at (him = the boy) in a frightening manner.'

(109)   ₃<____>   (Muh.-file 1)
       [PRON_PERS]₃   WAVE₈
       'He (= the boy) waves to (them = the frogs).'

Spatial verbs. Muhammed's file 1 also contains various constructions with spatial verbs. As we can see in (110) the direction of the verb form COME correctly agrees with the locus associated with the signer (ending point of the sign). In (111) the verb form FOLLOW-EACH-OTHER is used to express how two characters run, one after the other. Note, though, that the audience has to infer from the context that the one following the deer must be the dog as this is not made explicit by the narrator. Spatial verbs with subject classifiers are also used at this stage (compare example (100) above, which involves the spatial verb FALL with the target-like classifier element for human beings).

(110)   ₃<_____> (Muh.-file 1)
         THEN   BOY₃   CALL+++ :   FROG₁   PLEASE   COME_{TO-I.}
         'Then the boy calls. Frog, please come here.'

(111)   FOLLOW-EACH-OTHER   (Muh.-file 1)
         '(They = the deer and the dog) follow each other.'

Complex classifier constructions. In file 1, we also find instances of complex classifier constructions such as the one provided in (112), a sequence which describes the boy looking into a tree hole. Note that the location complement, the hole in the tree, is introduced via an h2-classifier (the classifier construction follows the production of the NP TREE). Notice that the first proposition involves an agreement verb, that is, LOOK, whereas the second proposition involves a plain verb, that is, SEARCH. Consequently, the status of the information provided via the h2-classifier differs: verb complement in the former case, adverbial adjunct in the second. As the h2-classifier is retained after a short interruption in the discourse (compare example (104) above, in which Muhammed goes on to recount the boy's speculations about whether the frog might be in the hole), we are dealing here with an instance of a discourse buoy, that is, the use of a classifier as a device serving a discourse regulatory function.

(112)   ₃<_____>   (Muh.-file 1)
              [– dom]   [CL:FORM (opening) --]_G
         TREE   [+ dom]   LOOK_G   SEARCH
         '(He = the boy) looks into a hole in the tree. (He) searches in it.'

3.5.1.3 Syntax-discourse interface

Muhammed's file 1 narrative, as we will see next, reveals his advanced command of the mechanisms that involve the syntax-discourse interface.

   Referential establishment and maintenance. Muhammed uses several linguistic devices to establish and maintain reference, including agreement verbs and DET_{EXIST} as in (113b), in which he correctly establishes and picks up the locus associated with the rediscovered frog. The target-like choice of loci to express referential identity is also illustrated in (113c): the initial locus of the verb form TAKE corresponds with the locus associated previously with the frog in (113b) (incidentally, this locus in turn corresponds with the locus picked up by DET_{LOC} in (113a), in which the signer speculates on the frog's whereabouts).

(113)   a.   PERHAPS   FROG_μ   [DET_{LOC}]_E   (Muh.-file 1)
              'Perhaps the frog is there.'

b. THEN   SEE$_1$:   [DET$_{EXIST}$]$_1$ FROG$_1$
   'Then (he) sees there is a frog.'

c. THEN   [TAKE$_{CL:\mu}$]
   'Then (he) takes (him = the frog).'

Interestingly, some determiners and pronouns are associated with a locus to the left of the signer, toward the location of the story book pictures. This is the case of PRON$_{PERS}$ in example (109) discussed above, in which the pronoun refers to the boy. In fact, with the exception of the two instances of DET$_{ART}$ used in combination with the NP DOG, all other determiners or pronouns associated with this locus refer to the boy. Examples of pronouns and determiners associated with other loci in the sign space are provided in (114), in which the frog parents are reported to bid good-bye to the boy, and in (115), in which the signer as a narrator comments upon the story. A change in eye gaze direction and body orientation occurs in case of referential shifts (cf. (109) and (114)), where the perspective marked through these non-manual means agrees with the loci established previously for the boy and the frog's parents. Agreement is also marked appropriately in the context of the shifted referential frameworks (the boy waves to the parents in (109) and the parents to the boy in (114)). Taken together, these observations allow for the conclusion that the contrastive use of loci is mastered by Muhammed at this stage. The use of a locus corresponding with the location of the story book pictures might be interpreted as a strategy to ensure an unambiguous association of loci with the respective characters. This is clearly different from the pronoun-stacking phenomenon observed in the production of infant signers (cf. section 3.2.3.1).

(114) $_8$<____>   (Muh.-file 1)
    DET$_{BOTH}$ PARENTS$_8$ WAVE$_3$
    'The parents both wave to (him).'

(115)   (Muh.-file 1)
    [PRON$_{PERS}$]$_{SIGNER}$ THINK: SHORT   CAN   FROG   SEE
    'I think (he) can see the frog shortly.'

Reference forms and functions. As we can glean from Table 3.16, NPs predominate as a means used to reintroduce a protagonist that was temporarily out of discourse focus with a percentage of 66.7 out of a total percentage of 28.3 of reference forms serving this function. However, pronouns and determiners are also occasionally used to reintroduce a referent (26.7%). Notice that these linguistic devices contribute to an unambiguous identification of the characters reintroduced. As for reference maintenance, subject drop clearly predominates (78.1% out of a total percentage of 60.4), with full NPs and DET/PRON serving this function on an occasional basis (12.5% and 9.4% respectively). All in all the analysis

reveals that while some form-function correspondences predominate, some reference forms are used to serve various functions (cf. Figure 3.1 for further illustration).

Table 3.16: Reference forms and functions in Muhammed's file 1.*

Reference form	% of all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	37.7	11.3	(100)	18.9	(66.7)	7.5	(12.5)
DET$_{ART}$/PRON$_{PERS}$	13.2	0	(0)	7.5	(26.7)	5.7	(9.4)
Subject drop	49.1	0	(0)	1.9	(6.7)	47.2	(78.1)
All forms	100	11.3		28.3		60.4	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-1.
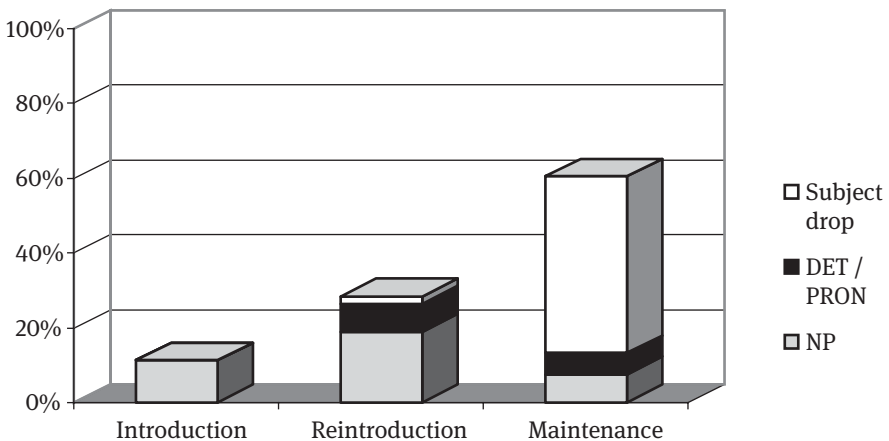
Figure 3.1: Proportion of reference forms and functions in Muhammed's file 1.

Expression of spatial relations. As we can see in Table 3.17, which provides an overview of spatial relations expressed in file 1, Muhammed provides information on the ground only in two contexts, namely, in the episode involving the boy's searching of a tree hole and, secondly, in the episode concerning the boy's falling into the water. In the former case, the ground is introduced overtly via an NP, before it is backgrounded via the h2-classifier, as we could see in example (112). In

the latter, the NP establishes the location representing the ground for the spatial verb FALL.

Apart from these cases, Muhammed provides little detailed information on the ground in this narrative. For example, Muhammed narrates that the frog "wants to get out", but does not specify that the frog is sitting in a jar before he decides to run away. Further, the complexity of the event involving the deer is not narrated in detail. Muhammed does not mention the misperception of tree branches that are in reality the deer's antlers. Crucially, the boy's falling on the deer's head, which ultimately leads to his falling into the water remains unexpressed, too. Finally, although we learn that the frogs are located at some place, the information on their sitting behind a log is not provided. It is important to note, though, that the information missed out does not reflect a deficit at the grammatical level or a gap concerning the syntax-discourse interface. Rather, the overview leads us to conclude that Muhammed produces a narrative that is organised top-down, with little detail on information that is considered to be part of the background.

Table 3.17: Expression of spatial relations in Muhammed's file 1.

Ground / figure		Reference forms			Context		
		Ground	[antecedent]	Figure	R.-Framework	Verb/DET	[activity]
tree hole	boy	h2cl	[NP (tree)]	drop	SRF	agreement	[look-into]
tree hole	boy	h2cl		drop	SRF	plain	[search]
tree hole	boy	h2cl		drop	SRF	agreement	[look-into]
water	boy	./.	NP	drop	FRF	spatial	[dive into]

Summarising, the analysis of the data makes apparent that Muhammed produces a largely coherent story. The narrator's comments on parts of the story (as in example (115) above) or the expression of characters' thoughts (as in example (116) produced after the boy's calling the frog) reveal that he is well advanced at the narrative level.

(116)   neg
         HEAR.   DOESN´T-MATTER.   FROG   GONE.   (Muh.-file 1)
         '(He = the frog) doesn't hear. It doesn't matter. The frog is gone.'

3.5.2 Further development: increasing narrative complexity

If Muhammed's file 1 already reflects his mastery of DGS grammar, the analysis of file 3 reveals Muhammed's skilful orchestration of linguistic devices for narrative purposes. The result is a lively and complex narration of the frog story.

3.5.2.1 Syntax and morphosyntax
Range and functions of complex sentential constructions. Complex sentential constructions were already produced in file 1, but the range of the structures produced in file 3 is broader. Note that the examples in (117) and (118) do not only indicate that Muhammed has a command of the target OV property; the sequences also show that the mechanisms necessary for the building of complex clauses are well in place. The sequence in (117) involves a relative clause modifying the noun NAME which is, in turn, part of a subordinated clause selected by the verb WISH. Example (118), too, involves the verb WISH, which is combined with a constituent clause. The complex construction in (119) involves the modal verb LIKE-TO. Other examples of complex clauses involve the psychological verb THINK (cf. (120). In addition, Muhammed also produces complex clauses with subordinating conjunctions and wh-words (compare example (125) below).

(117) DOG   NAME   SAME   AS   POLICE-DOG   WISH   (Muh.-file 3)
      'The dog wishes to have police dog as a name.'

(118) THEN   WISH   WOODS   GO   (Muh.-file 3)
      'Then (he) wishes to go into the woods.'

(119) $_{12}$<_____>   (Muh.-file 3)
    a. ONE   FROG$_{12}$ LIKE-NEG   WAVE$_{1,2}$
       'One of the frogs does not want to wave (to them = the boy and the dog).'
    b. [PRON$_{PERS}$]$_{12}$ WISH :   CALM   SLEEP   (Muh.-file 3)
       'He wants to sleep calmly.'

(120) BEE$_6$ THINK :   [DET$_{ART}$]$_2$ DOG   DO $_2$BITE$_6$
      'The bee thinks the dog will bite (it = the bee).'   (Muh.-file 3)

In this narrative, we also find several repetitions, in which the activity or event expressed in the first place is described in more detail. Typically, these sequences involve the same verb combined with additional complements, compare (121).

(121)   asp: ongoing   asp: ongoing
    THEN   GO-ON.   DET$_{TO}$ WOODS   GO-ON   (Muh.-file 3)
    'Then (he) walks and walks. To the woods (he) walks.'

Interrogation. Interrogative clauses not only occur more frequently in file 3, they also serve various functions. In this narrative, Muhammed often addresses the audience, to interact, to confirm, with the result that the narrative appears lively in style. The following examples illustrate the functions and types of questions produced.

Yes-no questions typically serve a rhetorical function as Muhammed addresses the audience, for example to enquire about the comprehension of the narrative event described (compare (122)). Further, Muhammed also produces single wh-word interrogations, such as the one provided in (123) serving the same narrative function (in the sense of an invitation to "guess what happened next"). Other similar sequences are discussed below (compare (133d) where the name of the boy is guessed). Typically, questions involving the wh-words WHAT, WHY (cf. example (124)), or HOW (cf. example (125)) are used as a stylistic means to provide additional background information.

(122) $_{\text{SIGNER}}$<_____>
    UNDERSTAND   [PRON$_{\text{PERS}}$]$_{\text{AUDIENCE}}$ (Muh.-file 3)
    'Do you (= the audience) understand?'

(123) $_{\text{SIGNER}}$<___>   (Muh.-file 3)
    THEN   SUDDENLY   WHAT
    'Then, suddenly, (guess) what?'

(124) $_3$<_____>   (Muh.-file 3)
    a.   FRIGHT   DOG
        '(He = the frog) is scared about the dog.'
    b.   WHY   BECAUSE   DOG   CANINE- TEETH
        'Why? Because of the dog's canine teeth.'

(125)   a.   THEN [PRON$_{\text{PERS}}$]$_3$ MUST JUMP BECAUSE DOOR LOCKED (Muh.-file 3)
        'Then he (= the dog) must jump out because the door is closed.'
    b.   HOW   HEAR-NEG
        'How (the door was closed), (he) did not hear.'

Complex classifier constructions. Compared with file 1, the file 3 narrative contains more detailed information about spatial locations and movements, including the expression of figure-ground relations via complex classifier constructions. The following sequence illustrates how these constructions are used in the description of a complex event, in which the boy bumps into a beehive he has not seen, with the effect that the beehive falls and the bees get out of it. After the introduction of the object (126c) (the beehive), including the rhetorical question

to the audience of whether a beehive is known to them (cf. (126d,e)), the beehive is backgrounded through the h2-classifier in the description of the boy's bumping into it (127c) and the bees getting out of it in (127e).

(126) a.   <u>neg   </u>   (Muh.-file 3)
          THEN   BOY   KNOW
          'Then the boy doesn't know...'
          <u>neg</u>
    b.   SEE
          '(He) doesn't see...'
    c.   [− dom]   [CL:FORM (round object)   -----------   ]$_D$
          [+ dom]   [CL:FORM (round object)   [DET$_{LOC}$]$_D$]$_D$
          '... (there is) an object up there.'
    d.   [− dom]   [CL:FORM (round object)]$_D$
          WHO   HONEY^   [+ dom]   [CL:FORM (round object)]$_D$ KNOW
          'Who knows the honey object (beehive)?
                              <u>nm: nodding</u>
    e.   HONEY   BEE   INSECT   KNOW   PRON$_{PERS}$
          '... honey, bee, insect, ... you know, you do...'
    f.   [− dom]   [CL:FORM (beehive)]$_D$ [− dom]   [CL:FORM (beehive)]$_D$
          [+ dom]   [CL:FORM (beehive)]$_D$ [+ dom]   [DET$_{LOC}$]$_D$
          'the beehive, it is there.'

(127) a.   THEN   BOY$_1$ NOT   SEE   (Muh.-file 3)
          'Then the boy does not see...'
          $_1$<u><   ></u>
          <u>nm: bumping his head</u>
    b.   BUMP$_{LOC:ON-HEAD}$
          '(He) bumps his head on (it = beehive).'
    c. $_1$<u><   ></u>
          [− dom]   [CL:FORM (beehive)]$_D$
          [+ dom]   "ouch" (on head)
          'Ouch.'
    d.   [− dom]   [CL:FORM (beehive)]$_D$ FALL$_{CL:θ}$
          [+ dom]   [CL:FORM (beehive)]$_D$ FALL$_{CL:θ}$
          'The beehive falls down.'
    e.   [− dom]   [CL:FORM (beehive)]$_D$
          THEN   [+ dom]   GET-OUT+++
          'Then (they = the bees) get out of the beehive.'

Agreement verbs. Muhammed's sophisticated narration of the frog story events in file 3 includes various constructions with agreement verbs, such as BITE (cf. (120b) above), STING (compare example (128c)), HELP (compare example ((129c)) and GIVE (compare example (130)). The verb forms correctly agree with the loci of the arguments encoded. The target-like use of agreement verbs, including the verb STING, can also be observed in complex constructions involving referential shift. In (128), the sign STING is modulated so as to agree with the shifted subject and object; in (129), in which the boy asks the dog to help him after he has fallen on the deer, the verb form HELP agrees with the shifted subject and object.

(128) a. $_1$<⸺⸺⸺   (Muh.-file 3)
       BOY$_1$ P-EE-W-EE   FALL$_{CL:BODY}$
       'The boy, Peewee, falls down.'

       b.   ⸺⸺⸺⸺⸺⸺⸺⸺>
       WANT   NOT $_7$STING$_1$
       '(I) don't want to be stung.'

(129) a. $_2$<⸺⸺⸺
       DOG   FRIGHTEN   (Muh.-file 3)
       'The dog is frightened.'

       b.   ⸺⸺>
       RUN$_{CL:BODY PART}$
       '(He) runs.'

                    $_1$<⸺⸺>
       c. BOY$_1$ SAY : $_2$HELP$_1$
       'The boy says: help me.'

(130) $_{9,10}$<⸺⸺⸺⸺⸺⸺>   (Muh.-file 3)
       nm:nodding
       MAY   ONE $_{9,10}$GIVE$_{CL:\pi}$
       '(We) may give you one (frog)...'

Example (131), another construction with the agreement verb STING, is an instance of a construction, in which the agreement relation is marked twice, once, through the modulation of the verb STING, and, in addition, through PAM. At first sight, this double marking might be assumed to be an effect of the story context: previously, Muhammed has described the boy's bumping into the beehive, a scene that was described without mentioning the presence of the dog. He goes on to describe how the bees get out of the beehive and how one of them stings the dog. While we might assume that this information is provided *a posteriori* in (131) so

as not to interrupt the story flow (at a moment at which the bees are the protago-
nists), we have to acknowledge that the object also appears after the agreement
auxiliary PAM in example (132), a predicate construction. Because elements are
arranged in a target-deviant manner that is rather reminiscent of German main
clause word order (VO), we are left to conclude that we are dealing with potential
candidates for language mixing.

(131) $_7$STING$_2$ PAM$_2$ DOG$_2$ (Muh.-file 3)
'The bees sting the dog.'

(132) THEN   FIRST   BOY   CROSS   PAM$_2$ DOG$_2$ (Muh.-file 3)
'Then firstly the boy is cross with the dog.'

3.5.2.2 Syntax-discourse interface

Referential establishment and maintenance. Muhammed demonstrates a more
advanced command of the linguistic devices used for referential establishment
and maintenance. If the location of the picture book was used as a substitute
locus for the main protagonist (the boy) in the first narrative, this strategy is not
used anymore at this stage. All loci are established consistently and contrastively
in the sign space.

In file 3, Muhammed uses determiners productively to establish and to
maintain reference. The sequence in (133) documents a sophisticated use of
different determiners to refer to a story protagonist, the audience or the signer
himself:

– in (133a) DET$_{ART}$ is used to inform about the boy's name
– in (133b) PRON$_{YOU}$ is used to address the audience
– in (133c) PRON$_I$ refers to the narrator himself
– in (133d) DET$_{ART}$ is used with a full NP to refer to the boy (we will come back to
  the use of BEFORE in examples (133d) and (133f) in section 3.5.3).

Furthermore, we can see in (134) that Muhammed pays attention to an unam-
biguous interpretation of reference: the use of PRON in a request expressed in a
reported dialogue context is followed by the use of an NP in the repetition of the
original request, probably with the purpose of further clarification about the ref-
erent referred to via the non-first person PRON (that is, the dog). Another example
of the correct use of pronouns in SRF contexts is provided in (135), where the
parents of the boy are telling him that he may go to sleep.

Finally, (136) documents in a remarkable way how Muhammed uses a full
array of linguistic devices to ensure referential identity in a sequence, in which

the boy is reintroduced as a protagonist: in addition to the choice of a generic noun BOY, he uses the proper name he previously assigned to this character and an article determiner (DET$_{ART}$).

(133) a. THEN   ONE   BOY$_1$ SMALL   (Muh.-file 3)
           SASS:THICK   [DET$_{ART}$]$_1$ NAME   EXAMPLE
           'Then there is a small fat boy named, for example, …'

       b. $_{SIGNER}$<———————————
           [PRON$_{PERS}$]$_{YOU}$ WISH
           'You (audience) wish…'

       c. ———————————————>
           [PRON$_{PERS}$]$_I$ KNOW:
           'I know…'

       d. BOY$_1$ [DET$_{ART}$]$_1$ NAME   BEFORE   WHAT   (signer reflects)
           'The boy's name was what?'

       e. [DET$_{ART}$]$_1$ BOY$_1$ NAME   BEFORE   P-EE-W-EE
           BOY   NAME
           'The boy's name in the past was Peewee.'

(134) $_1$<————————————————————————————>   (Muh.-file 3)
       [PRON$_{PERS}$]$_2$ QUIET.   DOG$_2$ QUIET
       'You be quiet. Dog, be quiet.'

(135) $_4$<———————————————————>   (Muh.-file 3)
       PARENTS$_4$ SAY: [PRON$_{PERS}$]$_1$ MAY   SLEEP
       'The parents say: You may sleep.'

(136) THEN   SECONDLY   BOY$_1$ P-EE-W-EE   [DET$_{ART}$]$_1$ JUMP-OUT$_{CL:\lambda}$ (Muh.-file 3)
       'Then, secondly, the boy, Peewee, jumps out.'

Referential loci. While loci are established contrastively to the right and in front of the signer at the beginning of the narrative (associated, respectively, with the boy to the signer's right, and the frog with the locus in front of him), new associations are established in the course of the narrative as the number of protagonists and the use of SRFs to describe their activities increase. The analysis of the loci chosen reveals the following pattern:

– Loci are associated with right, left and central locations (whereby choice of loci to the left of the signer occurs seldom).
– The locus at the centre of the sign space, toward the bottom is initially associated with the jar, and the frog inside it.
– The locus at the centre in front of the signer is used to refer to the addressee.

– The story protagonists (boy, dog) are commonly associated with loci on the right. This choice might be related to the circumstance that the story book pictures are hanging on the left, and the camera (addressee) is in front of the signer.
– Loci in the left area are only picked up in the upper sign space area; they are associated with referents that happen to be in a position above another referent, as is the case of the bees (in relation to the dog).

As we can see in the sequences provided in example (137), the locus associated with the frog changes from a location at the centre of the sign space to a location to the right in (137d). By assumption, this reassignment, which occurs after the signer's comment in (137c) concerning the lack of water in the jar (associated with the locus at the centre of the sign space), is produced to avoid confusion between reference to the jar and the frog.

(137)   [– dom]   [CL:FORM (jar)]   (Muh.-file 3)
  a. [+ dom]   [CL:FORM (jar)]   [DET$_{LOC}$]$_B$
      'The jar there...'
                                        [– dom]   [CL:FORM (jar)]$_B$
      FROG$_3$ LIKES   NOT   [+ dom]   [CL:FORM (jar)]$_B$
      '... the frog doesn't like the jar...'
  b. WHY
      'Why?'
  c. NOT   [DET$_{EXIST}$]$_B$ WATER
      '(Because) there is no water in it.'
  d. [PRON$_{PERS}$]$_3$ LIKE   WATER
      'He likes water.'

Reference forms and functions. Because referential shifts are abundant, perspective changes have to be marked unambiguously, so as not to confuse the audience. As we pointed out previously, Muhammed exploits the full range of linguistic means for this purpose. From a narrative perspective it is interesting to note, as we can glean from Table 3.18, that introduction and reintroduction of characters occurs predominantly via NPs, as it was already the case in file 1. While pronouns are occasionally used to refer to the same referent in a series of events involving the same character, null subjects predominate. Finally, if we compare the distribution of function-form relations obtained for file 3 (cf. Figure 3.2) with that of file 1 (cf. Figure 3.1 above) the similar distribution of reference forms and functions is certainly striking (compare Table 3.16 above with Table 3.18).

Table 3.18: Reference forms and functions in Muhammed's file 3.*

Reference forms	% of all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	35.8	8.2	(100)	22.4	(78.9)	5.2	(8.2)
DET$_{ART}$/PRON$_{PERS}$	11.2	0	(0)	3.7	(13.2)	7.5	(11.8)
Subject drop	53.0	0	(0)	2.2	(7.9)	50.7	(80.0)
All forms	100	8.2		28.4		63.4	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-2.
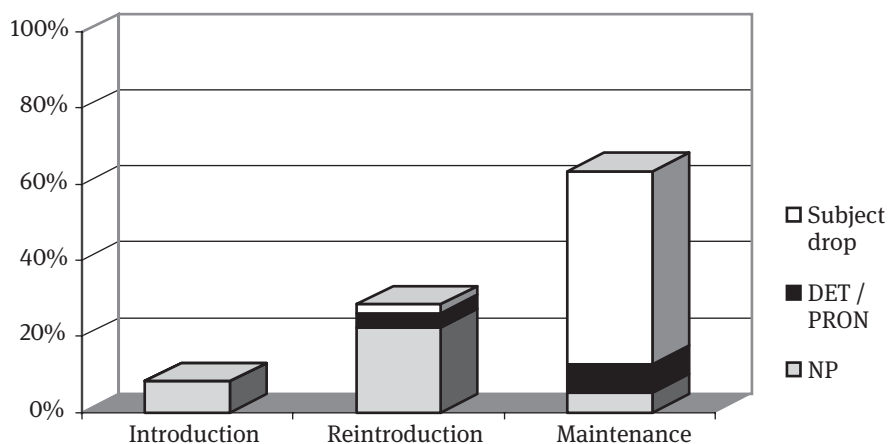
Figure 3.2: Proportion of reference forms and functions in Muhammed's file 3.

Shifted reference. Muhammed's file 3 narrative documents a sophisticated use of SRFs for narrative purposes. Narrator and character perspectives are skilfully chosen to describe the activities and emotions of the characters in more detail. The sequence in (138), for example, is produced after the description of the frog's scare about the dog's teeth in (124) above. Subsequent to that complex sequence, Muhammed goes on to narrate that the frog does not know the dog (cf. (138a)) and is scared about the whole situation, sitting in the jar, being observed by the boy and the dog, which is why he looks around with unease (cf. (138b)). Notice that this proposition is expressed through manual and non-manual means, as the handshape used corresponds with the one of the sign FROG and the activity (looking around with unease) is expressed non-manually (body orientation from left to right and back to the left, facial expression of scare).

(138)　a.　　　　　　　　__neg__
　　　　　FROG₃　KNOW　　　　　　　　　　　　　　　　(Muh.-file 3)
　　　　　'The frog does not know (him = the dog).'
　　b.　　　　　　　₃<_____>
　　　　　　　　　manner:with unease
　　　　　　　　　nm: CL:BODY look-around
　　　　　[– dom]　　FROG
　　　　　[+dom]　　FROG
　　　　　'The frog looks around with unease.'

Non-manual components, agreement and pronouns are appropriately used in shifted referential frameworks. Compared with file 1, the rapid change of perspectives is easier to follow as referential shifts are marked more clearly. Typically, non-manual means marking POVs involve a change in body orientation (body lean forward/backward, or left/right body rotation) and eye gaze direction (upward/ downward or left/right).

　　　Finally, (139) is a remarkable example illustrating the orchestration of manual and non-manual means to mark referential shifts (in particular, the use of body orientation [left/right], and head-orientation [top/down]). In this narrative episode, the frog parents first confirm to the small frog that he is right (he was the frog who formerly belonged to the boy), then they turn to the boy, tell him that he might have one frog and give it to him; finally they wave to the boy, and the boy, in turn, waves to them.

(139)　　　　　　　　　　　　　　　　₉,₁₀<_____> (Muh.-file 3)
　　　　　　　　　　　　　　　　　　　　nm: nodding
　　　　　　　　　　　　　　　[– dom]　　YES+++
　　a.　MOTHER₉　AND　FATHER₁₀　[+ dom]　　SEE₃
　　　　'Mother and father look at the frog (and say to the frog), yes.'
　　b.　₉,₁₀<_____>
　　　　nm: nodding
　　　　SEE₁
　　　　'(They) look at (him = the boy), nodding.'
　　c.　₉,₁₀<_____>
+　　　　[– dom]　　YES
　　　　[+ dom]　　MAY
　　　　'Yes, (we) may...'
　　d.　₉,₁₀<_____>
　　　　HAVE　MANY　9
　　　　'(We) have many, nine...'

e. $_{9,10}$<_____>

    MAY   ONE $_{9,10}$GIVE$_{CL:\mu}$

    '(We) may give you one.'

d. $_{9,10}$<_____>

    $_{9,10}$TAKE$_{CL:\mu}$

    '(We) take one.'

e. $_{9,10}$<_____>

    THEN   9 8+++

    'Then of nine there are eight left.'

f. $_{9,10}$<_____>

    THEN   WAVE$_1$

    'Then (they) wave to (him = the boy).'

g. $_1$<_____>

    [− dom]   HOLD$_{CL:\mu}$

    BOY$_1$ [+ dom]   WAVE$_{9,10}$

    'The boy waves to (them = the parents), holding (it = the frog) in the hand.'

Simultaneous constructions. Interestingly, Muhammed produces some constructions in which the simultaneity of events is expressed through mixed perspectives. A remarkable example is provided in (140). In this example, Muhammed's information about the frog sitting in the jar, looking up to the boy, is expressed through an SRF from the perspective of the frog. Object agreement of the verb form LOOK, with the boy as the object argument, is expressed (a) lexically (right hand) and (b) through shifted reference via eye gaze (to the right) and (c) body orientation (to the right). At the same time (while keeping body orientation to the right and retaining the lexical sign on hold on the right hand), the signer adopts the narrator perspective to explain that the frog does not know what the boy is up to, which is expressed through signs produced with the left hand (the negation element being produced simultaneously non-manually –head-nod- and manually – via the sign NOT). In a similar way, in example (141) the boy's hearing of the frog and the information about its location are expressed simultaneously.

(140) a. THEN   [DET$_{ART}$]$_3$ FROG$_3$ (Muh.-file 3)

        'Then the frog…'

        <u>nm: body direction to the left, gaze upwards</u>

    b. [− dom] KNOW   NOT   MEANING   [DET$_{ART}$]$_1$ BOY$_1$

        [+ dom] [LOOK$_1$--]

        '(He) looks up (at him = the boy), (he) does not know what the boy is up to.'

(141) $_1$<_____   (Muh.-file 3)

     $[DET_{ART}]_1$ BOY   EAVESDROP

     'Then the boy eavesdrops...'

                                nm: nodding

                _____>

     [– dom] [LISTEN   --------------------------------]

     [+ dom] $[DET_{LOC:EAR}$ $[DET_{EXIST}]_3$ $FROG_3]$

     '(He) listens, the frog is there, yes.'

Throughout the narrative, Muhammed produces several such simultaneous constructions, which not only show an advance level of sign language competence but also advanced narrative skills as the signer is expressing the simultaneity of events.

     Expression of spatial relations. Finally, turning to the expression of figure-ground relations (compare Table 3.19), the analysis reveals that although more information on the ground is included in the file 3 narrative the information remains vague in some instances. Some narrative episodes are recounted without any specification on the ground (for example, in the deer scene, Muhammed does not narrate that the boy falls on the deer). As a consequence, some cause-effect relations remain implicit, with the effect that only the audience acquainted with the frog story might fully understand the events described. By assumption, the omission of the background information is an effect of the presence of the story booklet during the elicitation of the data.[24]

Table 3.19: Expression of figure-ground relations in Muhammed's file 3.

Ground / figure		Reference forms			Context		
		Ground [antecedent]		*Figure*	*R.-Framework*	*Verb/DET*	*[activity]*
jar	frog	DET_{LOC}	[CL:FORM]	NP	FRF	DET_{LOC}	[*be inside*]
jar	frog	drop		drop	SRF	spatial	[*hold on rim*]
jar	frog	h2cl		$PRON_{PERS}$	FRF	spatial	[*climb out*][25]
jar	dog	CL:FORM		drop	SRF	agreement	[*stick into*]

---

24 This effect has been remarked upon in the literature (cf. Schneider & Dubé 1997).

25 Muhammed explains first that the frog knows how to get out of the jar. In the second proposition he describes how the frog manages to do so. He uses the V-handshape to represent the frog's legs and how the frog would pull one after the other over the rim of the jar to get out of it.

Table 3.19: continued

Ground / figure		Reference forms			Context		
		Ground [antecedent]		Figure	R.-Framework	Verb/DET	[activity]
forest	boy, dog	NP		drop	FRF	spatial	[*go on*]
beehive	boy	h2cl		drop	SRF	spatial	[*butt*]
beehive	bee	h2cl		drop	FRF	spatial	[*get out*]
beehive	bee	h2cl	[CL:FORM]	drop	FRF	spatial	[*get out*]
water	boy, dog	NP		drop	FRF	spatial	[*fall down*]
water	boy, dog	NP		NP	SRF	spatial	[*swirl*]

3.5.3 Language contact

Finally, a note is due on Muhammed's use of the adverbial BEFORE. In this narrative we find three instances of the use of BEFORE, two of them quoted previously in examples (133d) and (133f), repeated in (142) and (143) for further illustration, and another one provided in (144). Note that the temporal specification in these constructions does not appear in sentence-initial position as it would be required by the target grammar. Instead, it seems, Muhammed chooses an SVX format with this adverbial. Because these are the only instances of erroneous word order in Muhammed's file 3, apart from the constructions with PAM discussed previously (cf. 3.5.2.1) we are left to speculate on the possibility that the use of the sign with this word order is an effect of LBG. Note that we consider borrowing only at the level of word order. Although LBG uses a similar sign (WAR, 'was') created to represent the German expression *war* (that is, the preterite form of the copula *sein*, 'to be'), it is unlikely that BEFORE in the examples quoted has the status attributed to WAR (that is, the copula) in LBG. This assumption is corroborated further by the circumstance that Muhammed does not use the expression *war* in his written narratives at the time; rather, he uses the perfect tense to refer to past events.

(142) BOY$_1$ [DET$_{ART}$]$_1$ NAME BEFORE WHAT (Muh.-file 3)
'In the past, the boy's name was what?'

(143) [DET$_{ART}$]$_1$ BOY$_1$ NAME BEFORE P-EE-W-EE BOY NAME (Muh.-file 3)
'The boy's name in the past (was) Peewee, the boy's name.'

(144)   (Muh.-file 3)

<div style="text-align:center">₁<―――――――――――――――――――――――――――――――――――――></div>

[PRON$_{PERS}$]$_1$ KNOW   WHO?   ONE   FROG   BEFORE   DET$_{LOC}$
'I know whom? One frog, in the past, this one.'

3.6 Developmental profile: Simon

By assumption, the structure available to Simon at the onset of the study consists of a CP (cf. Table 3.20). Grammatical processes associated with the IP layer are operative, notably verb inflection. Complex sentential constructions involving POVs or constituent clauses provide support for the availability of the CP-structure. However, there is only one single-wh-word interrogative clause in file 1. By the time of the production of file 3, in contrast, Simon skilfully uses complex structures to narrate the intricate events of the story. Some deficits that were observed concerning the interface between syntax and discourse in file 1 are not apparent anymore. However, referential identity continues to be difficult to establish, at times, indicating that deficits remain regarding the use of the sign space for narrative purposes.

3.6.1 DGS competence at the onset of the study

3.6.1.1 Syntax
Word order. In file 1, Simon rarely produces sentential patterns, in which all arguments would be expressed overtly. Typically (cf. (145)), short (simple) sentences are used to narrate the activities of the main protagonist (= the boy) as he sets out to search the runaway frog. Subject and object drop is licensed in (145): the subject (the boy) has been reintroduced previously, at the beginning of the narrative passage, and the runaway frog is a discourse topic after the boy's realisation of its disappearance, also recounted previously. Interestingly, the overt expression of subjects and/or objects in Simon's file 1 narrative occurs in the context of repetitions. Typically, semi-repetitions such as the one in example (146) contain more details about the activity described in the original proposition (in (146c) the object complement is added).

(145)   THEN++   WALK$_{ABOUT}$.   SEARCH++.   (Sim.-file 1)
         'Then (he) walks about.   (He) searches.'

Table 3.20: Simon's DGS profile.

Syntax-discourse interface		[no evidence]	Simultaneous constructions
		X*	Referential shift
		[file 3]	Spatial relations
		X*	Reference forms / functions
		[file 3]	Referential establishment / maintenance
CP	Questions	[file 3]	$_2$<_____> CALL+ : WHERE FROG '(He) calls 'Where (is?) frog?''
		[file 1]	[single wh-words only]

	Referential shift (POV)	[file 1]	$_1$<_____>
			 a. SAY: PLEASE SLEEP
			     '(He = the boy) says, please (I want to) sleep.'
			 b. $_X$<_____>
			     O-K SLEEP
			     'Ok, you (may) sleep.'

	Embedded clauses	[file 1]	$_1$<___> THEN [PRON$_{PERS}$]$_1$ NEXT MORNING SEE$_2$: GONE 'Then, the morning after, (he = the boy) sees that (he = the frog) is gone.'
IP	PAM-agreement	[file 3]	LIKE PAM$_3$ ONE FROG$_3$ '(They = the dog and the boy) like a frog.'
	Complex classifier constructions	[file 1]	[– dom] CL:FORM (B-handshape)$_E$ FALL$_{CL:\lambda}$. [+ dom] [SIT$_{CL:\delta}$]$_{ON-E}$ '(He = the boy) falls down, ending up sitting (like a horserider on something).'
	DET$_{EXIST}$-agreement	[file 1]	$_1$<_____> nm: CL:BODY: bent forward, looking inside [– dom] [CL:FORM (hole) --------]$_D$ [+dom] SEARCH. NOT [DET$_{EXIST}$]$_{D/2}$. '(He = the boy) is looking for (the frog) in a hole. (He = the frog) is not there.'

	Verb agreement	[file 1]	a. THEN DOG$_3$ TAKE$_{CL:\mu}$
			     'Then the dog takes (it) …'
			 b. ONE [BRING-OVER$_{CL:\mu}$]$_{TO-E}$
			     '(He) takes one from down there to their side.'

	IP-headedness	[file 1]	$_X$<_____> NEW FROG$_2$ LOOK$_2$++ '(He) is looking at a new frog.'
VP	VP-headedness (SOV)	[file 1]	*- see IP headedness -*

* X = partial mastery in file 3 (indicates inter-relation of referential shift, referential establishment and maintenance, reference forms / functions)

(146) a. $_X$<___>

   #unclear#   LOOK$_X$ (Sim.-file 1)

   '(He = the boy?) is looking at...'

   b. HAPPY

   '... happily...'

   c. $_X$<_____>

   NEW   FROG$_2$ LOOK$_2$++

   '... (he) is looking at the new frog.'

Descriptions of spatial relations in which the ground is expressed lexically, as is the case in example (147a), represent additional evidence for Simon's adherence to the target grammar. In (147a), the expression of the ground via a lexical antecedent prior to the production of a complex classifier predicate involving an h2-classifier derives an XV sequence. The observation that Simon only provides generic information about the ground is taken up below, when we discuss Simon's expression of spatial relations.

(147) a. [– dom] [CL:FORM]$_C$ [– dom]   [CL:FORM]$_C$ (Sim.-file 1)

   [+ dom] [CL:FORM]$_C$ [+ dom]   [CLIMB-OUT$_{CL:\mu}$]$_{OUT-OF-C}$

   'There is a container, (he) climbs out it.'

   b. FALL

   '(He) falls down.'

Complex syntax: subordination. Simon produces several complex sentential constructions with the verb SEE, one of them with a constituent clause, when he narrates that the boy sees that the frog is gone (cf. (148)). In (149) we find the only instance of a sequence with a psychological verb in this file (cf. (149c)). However the meaning of the clause subordinated to the main clause with the matrix verb THINK remains unclear. Other complex constructions in this file involve referential shifts. We will elaborate on Simon's sophisticated use of referential shifts below, when we discuss referential establishment and maintenance from a discourse perspective.

(148) $_1$<__>

   THEN   [PRON$_{PERS}$]$_1$ NEXT   MORNING   SEE$_2$:   GONE (Sim.-file 1)

   'Then, the morning after, (he) sees that (he = the frog) is gone.'

(149) a. $_3$<__>

   [DET$_{SELF}$]$_3$ LOOK$_X$ (Sim.-file 1)

   'He (= the dog) sees...'

   b. LOOK-AROUND$_{Y,Z}$

   '(He) looks around.'

c. ₃<_____>

THINK :   #unclear (SENSITIVE?)#   ONLY   SEARCH

'(He) thinks, only search.'

Complex syntax: Interrogation. Among the range of sentential patterns produced in file 1 we only find one instance of an interrogative wh-clause. Example (150b) is produced in the context of the scene where the boy hears somebody calling (as it turns out, he hears the frogs). Single wh-word interrogatives appear frequently in the narratives collected in this study, as we already remarked upon in our discussion of Muhammed's narratives, where we could also see that they might serve a range of narrative functions.

Interrogative clauses such as the one produced by Simon in (150) conform to the target constraints (notice that (150b) is produced in the context of an SRF, in which the signer adopts the perspective of the boy, which is marked via a change in body orientation and eye gaze to the right) and are appropriate also from a discourse perspective. However, because we find only one instance in file 1 we consider that this is no sufficient evidence to conclusively establish whether the mechanisms for question formation are in place.

(150)   a. ₁<___

HEAR   (Sim.-file 1)

'(He = the boy) hears.'

b. ____

WHO

'Who?'

c. _____

LISTEN

'(He) listens carefully.'

d. _____>

HEAR-CALLING

'(He) hears somebody calling.'

3.6.1.2 Morphosyntax

Turning to the evidence of grammatical processes related to the functional layer above the VP, that is, the IP, the analysis reveals that these processes are operative. In particular, verbs are inflected in accordance with the target-like constraints.

Agreement verbs. Simon produces several constructions with agreement verbs. Example (146) above illustrates the use of the verb LOOK to establish the locus for the frog in the first proposition; further, as the locus of the repeated verb

in the second proposition coincides with the first, the example is also illustrative of reference maintenance via agreement. The same holds also of example (148) above, as the final locus of LOOK coincides with the locus established previously for the frog so that the referential identity of the subject of GONE is clear. Other agreement verbs used in this narrative include the verbs PICK-UP, TAKE-SOME-WHERE or STING. We will discuss the utterances containing these verbs below when we turn our attention to linguistic devices used by Simon for referential establishment and maintenance.

Spatial verbs. Utterances with spatial verbs, such as the ones provided in (151) and (152) document the target-like choice of classifier elements: in (151) the verb GO contains the classifier for a human being (V-handshape), and in (152) the classifier for a group of flying insects. Further examples will be discussed below, when we elaborate on Simon's expression of spatial relations.

(151)   THEN+++   [WALK$_{CL:\lambda}$]$_{TO\text{-}AND\text{-}FRO}$ (Sim.-file 1)
         'Then (he = the boy) wanders about.'

(152)   [– dom]   [SWARM-AROUND$_{CL:\theta}$]   (Sim.-file 1)
         [+ dom]   [SWARM-AROUND$_{CL:\theta}$].   FLY$_{TO\text{-}A}$ BEE+   FLY$_{TO\text{-}B}$
         '(They = the bees) swarm all around. (They) fly (to this side). The bees fly (to that side).'

3.6.1.3 Syntax-discourse interface

Simon uses the linguistic space to mark grammatical relations at the local level of individual narrative episodes. Yet failure to secure unambiguous referential identity over longer stretches of narrative discourse indicates that he does not yet fully master the use of the relevant linguistic devices to create cohesion at the global narrative level.

Referential establishment and maintenance. In file 1, Simon uses several linguistic means for referential establishment and maintenance. The sequence provided in (153) illustrates how Simon first establishes the loci for the frog group in a semicircle in front of him, recounting afterwards that the dog picks up one of the frogs from this group. In (154) the verbs THANK and WAVE pick up the locus established previously for the frog group (non-manual means, that is, body-shift and eye gaze direction to the right, are used to mark the shifted reference).

(153)   a.   MANY   FROG+++   MANY   (Sim.-file 1)
              'There are many frogs.'
         b.   GROUP   SASS$_A$ SASS$_B$ SASS$_C$ SASS$_D$ SASS$_E$ SASS$_F$ SASS$_G$
              '(There is) a group (of frogs), (sitting) next to each other, in a semicircle.'

c.   MANY
     '(They) are many.'
d.   THEN   DOG$_3$ TAKE$_{CL:\mu}$
     'Then the dog takes (it) …'
e.   ONE   [BRING-OVER$_{CL:\mu}$]$_{TO-E}$
     '(He) takes one from down there to their side.'

(154) $_1$<_____>   (Sim.-file 1)
        MANY$^\wedge$ THANK$_{7,8}$.   WAVE$_7$
        '(He = the boy) says thank you (to the frogs). (He) waves (to them).'

Although Simon uses determiners and pronouns only occasionally in this narrative, he uses them appropriately to establish or maintain reference. Example (148), discussed above in relation to complex constructions, documents the use of a personal pronoun to refer to the boy, introduced earlier in the narrative, when the locus for this character was established to the right of the signer. In (155) the determiner DET$_{SELF}$ appears in combination with the NP BOY, at a point in the narrative when the boy is reintroduced as a character (before Simon retells an event with the dog as a protagonist). The loci of the determiners referring to the boy coincide. Further, in example (156) DET$_{LOC}$ establishes the locus for the location the boy has fallen into, causing his clothes to be wet.

(155)   nm: CL:BODY: with the body bent forward
        [DET$_{SELF}$]$_1$ BOY$_1$ SEARCH   (Sim.-file 1)
        'The boy searches.'

(156)   [− dom] (gesture: touches his trousers)   WET
        AND   WATER   [+ dom] DET$_{LOC}$ WET
        'And the water, makes (him) wet…'

In this narrative, Simon uses DET$_{EXIST}$ only once (cf. (157)), when he narrates that the frog is not where the boy expected him to be. It must be noted, however, that the absent subject (the frog) is not referred to explicitly. Incidentally, the sequence in (157) is also illustrative of Simon's use of h2-classifiers as discourse buoys. In this case, the classifier used to designate the location, though not specified further, is retained in the sign space during the recount of the boy's search and realisation that the frog searched is not there.

(157) $_1$<_____>
        nm: CL:BODY: bent forward, looking inside
        [− dom]   [CL:FORM (hole) -----------]$_D$ (Sim.-file 1)
        [+ dom]   SEARCH.   NOT   [DET$_{EXIST}$]$_{D/2}$.
        '(He = the boy) is looking (for the frog) in a hole. (He = the frog) is not there.'

Referential identity in Simon's recount of the narrative episode involving the frightened dog followed by the bees is only expressed through non-manual means (cf. (158)). Simon uses an NP to reintroduce the dog as a protagonist, without, however assigning him a locus. He then goes on to recount that the dog runs fast. The SRF used for this purpose is marked through head movement and eye gaze direction to the right. Notice that a locus to the right is later picked up in the sequence with the agreement verb STING. So eye gaze direction and head orientation are the only means that are used in this case to maintain reference. However, this type of non-manual marking only represents an optional agreement marker in DGS. Consequently, whether or not the object associated with a locus by STING and the subject of the previous narrative passage (the dog) are identical cannot be established unambiguously.

(158) a. $_3$<____>   (Sim.-file 1)
       THEN   **DOG**$_3$ **RUN**$_{\text{CL:BODY PART}}$
       'Then the dog runs.'

    b. $_3$<____>
       FAST   **RUN**$_{\text{CL:BODY PART}}$
       '(He) runs fast.'

       [– dom]   **SWARM**$_{\text{CL:δ}}$
    c. [+ dom]   **SWARM**$_{\text{CL:δ}}$
       '(They = the bees) swarm about ....'

    d. **FLY**$_{\text{TO-F}}$
       '(They) fly from left to right.

       [– dom]   [**SWARM**$_{\text{CL:δ}}$]$_{\text{TO-F}}$
    e. **BEE**   [+ dom]   [**SWARM** $_{\text{CL:δ}}$]$_{\text{TO-F}}$
       'The bees swarm from the centre to the right.'

    f. $_4$**STING**$_X$
       '(They) sting (him = the dog?).'

    g. **FLY**$_{\text{TO-F}}$
       '(They) fly to the right.'

Another complex sequence involving a rapid change of perspectives is provided in (159), which follows the description of the boy falling and then sitting like a horse rider on something that is not specified any further (we will discuss that sequence [cf. (161) below] in the context of the expression of spatial relations). That description, expressed from a narrator perspective (FRF), is followed by a shift in perspective in (159a), signalled non-manually via eye gaze to the right. The problem with this SRF in (159a) is that the identity of the subject is difficult to establish because the description of somebody supporting himself on something with surprise could represent either the boy's reaction –after falling on the

deer– or the deer's –realising that something has fallen on his back. As the deer is introduced only after this sequence (that is, in (159b)) the former interpretation seems more likely. In this sequence (159b), the referential framework is shifted to express the deer's fright. Reference is maintained until (159g) in which Simon switches back to the narrator perspective to describe that the boy falls down from the deer's head. Note though that the boy is not referred to overtly. That it is the boy falling down can be inferred from the story context and Simon's choice of a verb form of FALL with a classifier element for human beings in (159g).

The analysis makes apparent that POVs are signalled through a lexically overt expression in those contexts in which the signer adopts a character's perspective other than the boy's and that character is introduced as a protagonist. It is important to note, in addition, that although non-manual means signal and mark POVs, referential loci are established contrastively only in a few instances. In other words, Simon marks POVs involving the perspectives of different characters via a change of body orientation and eye gaze direction to the right.

Where non-manual marking of POVs is ambiguous and no overt reference forms are used to signal referential shift, an unambiguous interpretation of the utterances is not possible. Consider the sequence in (160), the only sequence containing a performative verb (that is, SAY). In this sequence, referential loci are not marked contrastively. In (160a) the boy asks for permission to go to sleep (the sequence contains no overt subject, but is part of the initial part of the narrative in which the boy is the protagonist). Neither is the addressee expressed through a lexically overt expression or through non-manual means (eye gaze is directed to a neutral location in the sign space). The same holds of (160b), in which eye gaze is directed toward the audience during the production of the expression OK.

(159) a. $_{(1)}$<____ >   (Sim.-file 1)
           <u>manner: with-surprise</u>

           SIT$_{\text{CL:BODY PART}}$
           '(He = the boy?) sits with surprise.'

       b. $_6$<_____
           DEER$_6$ DET$_{\text{LOC}}$ FRIGHT
           'The deer is frightened.'

       c. _____>
           [– dom]   RUN$_{\text{CL:BODY PART}}$
           [+ dom]   RUN$_{\text{CL:BODY PART}}$
           '(He) runs.'

d. [RUN$_{CL:ß}$]$_{TO-D}$
'(He) runs away.'

e. $_6$<_____
REAR $_{CL:BODY}$
'(He) rears.'

f. _____>
THROW$_{LOC:DOWN-FROM-THE-HEAD}$
'(He) throws something down from his head.'

g. [– dom]   FALL$_{CL:λ}$
[+ dom]   FALL$_{CL:λ}$
'(He = the boy) falls down from his head.'

(160) a. $_1$<_____>   (Sim.-file 1)
SAY: PLEASE   SLEEP
'(He = the boy) says: please (I) (want to) sleep.'

b. $_x$<_____>
O-K   SLEEP
'Ok, you (may) sleep.'

Reference forms and functions. All referents in file 1 are introduced via NPs. It is interesting to note in this context that, compared with other narratives, the dog is only introduced as a protagonist relatively late in the course of the story, that is, after the boy's realisation of the frog's escape. Further, the analysis reveals that reference to characters that are reintroduced as a protagonist remains unexpressed in many cases (60% out of 23.8% of reference forms serving this function) (cf. Table 3.21 and Figure 3.3). Against this backdrop, it comes as no surprise that it is difficult, at times, to establish who is the agent of the activities described. This holds equally of those narrative passages that involve the boy as a protagonist. Recall that we repeatedly commented on the lack of an overtly expressed reference to the boy in reintroductory contexts, with the effect that some narrative passages remain ambiguous even if we attributed the main thematic perspective to the boy. This is the case of example (154) above, in which the boy is reintroduced as a protagonist (waving to the frogs) after a sequence in which the dog is reported to take one of the frogs. Notice that the effect of ambiguity is reinforced by the circumstance that referential loci picked up to mark the subject of POVs are not distributed contrastively, as we remarked upon previously.

Table 3.21: Reference forms and functions in Simon's file 1.*

Reference form	% of all forms	Referential function					
		Introduction		Reintroduction		Maintenance	
NP	17.5	11.1	(100)	4.8	(20)	1.6	(2.4)
DET$_{ART}$/PRON$_{PERS}$	9.5	0.0	(0)	4.8	(20)	4.8	(7.3)
Subject drop	73.0	0.0	(0)	14.3	(60)	58.7	(90.2)
All forms	100	11.1		23.8		65.1	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-3.
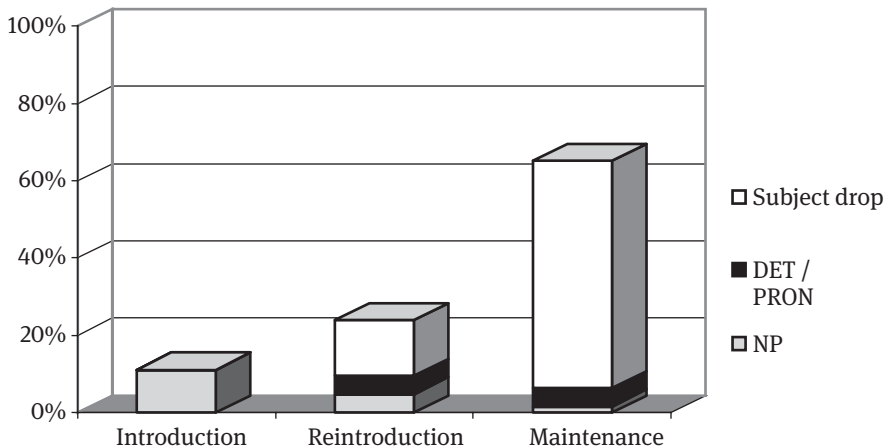
Figure 3.3: Proportion of reference forms and functions in Simon's file 1.

Expression of spatial relations. In file 1, Simon seldom provides information on ground entities in descriptions of activities that would rather require prior information about them. Consider, for example, Simon's recount of the boy's falling on the deer (cf. (161). The boy is reported to fall, ending up in a position like a horse rider on a horse. However, the ground (= the deer) is not specified. Coincidentally, this information gap is consistent with the plot of the narrative as it reflects the misperception of the boy (who thought that he was clinging to the branches of a tree before he eventually finds himself falling on a deer). The misperception as such, however, is not addressed by Simon.

(161)   [– dom]   CL:FORM(B-handshape)$_E$ (Sim.-file 1)
     FALL$_{CL:λ}$.   [+ dom]   [SIT$_{CL:δ}$]$_{ON-E}$
     '(He = the boy) falls down ending up sitting (like a horse rider on some-
     thing).'

Another example of a missing specification of the ground is provided in example
(162), in which Simon describes the frog's climbing out of a container. The
sequence is target-like from a grammatical perspective. However, from a narra-
tive perspective it remains unclear from where the frog escapes, as neither the
ground (the jar) has been introduced previously nor has the circumstance that
the frog is sitting in the jar been narrated. Moreover, the audience is left to infer
that it is actually the frog climbing out of the jar (the two signs preceding (162) are
unclear). Another example lacking specification about the ground was discussed
above (cf. (157)). Recall, that in (157) Simon reports that the boy is searching the
frog, leaning over and looking into a location that has the shape of a hole, back-
grounded via an h2-classifier, without any prior specification of where the loca-
tion might be.

(162)   [– dom]   [CL:FORM (narrow object)]$_B$
     #(PRON$_{PERS}$]$_1$?)   (DET?)#   [+ dom]   CLIMB$_{OUT-OF-B}$ (Sim.-file 1)
     '(He = the frog) gets out (of a container), over the rim.'

Another factor that contributes to remaining ambiguities in the interpretation of
some narrative episodes is the use of generic CL:FORM signs in the place of con-
ventional signs. This is the case in example (147) above, in which Simon reports
on the falling down of an object (the beehive) that is, however, not specified any
further. Note that in example (163), too, it is only through the narrative context
that the audience might guess who is being reintroduced (the frog, into the jar).

(163) $_X$<_____>   (Sim.-file 1)
     manner: carefully
     HOLD$_{CL:π}$.   PUT-INTO$_X$
     '(He) holds something carefully. (He) puts (it) inside.'

Table 3.22 provides a summary of the linguistic means used to express fig-
ure-ground relations in file 1. We can see that out of five spatial configurations,
three are narrated without a prior specification of the ground (instead, the signer
uses a default h2-classifier). In one case, the ground is overtly referred to via a
conventional sign, and in another case through a generic CL:FORM sign.

Table 3.22: Expression of figure-ground relations in Simon's file 1.

Ground / figure		Reference forms		Context		
		Ground [antecedent]	*Figure*	*R.-Framework*	*Verb/DET [activity]*	
jar	frog	h2cl	cl	FRF	spatial	[get out]
beehive	(unclear)	CL:FORM	cl	FRF	spatial	[get out]
hole	boy	h2cl	NP	mixed	plain	[search]
deer	boy	h2cl	cl	FRF	spatial	[get-on]
water	boy, dog	NP, DET	cl	FRF	spatial	[fall]

3.6.2 Further development

Compared to file 1, Simon's file 3 narrative is much clearer in expression and more sophisticated also in terms of the linguistic means used.

3.6.2.1 Syntax

Complex syntax. File 3 documents a broader range of complex sentential constructions, including sequences with psychological verbs and performative verbs (cf. examples (165) and (168) below).

   Word order in repetitions. In file 3, repetitions occur fairly frequently. In these sequences, the repetition typically involves a more elaborate structure than the proposition produced in the first place. Such is the case of example (164), in which we learn that the boy is not aware of standing on something, more precisely, that he is standing on the head of the deer. Notice that the second proposition with the spatial verb STAND-ON includes a locative complement in preverbal position. Example (165), in turn, shows that such repetitions are not only produced to add locative but also object complements not provided in the first place. From a discourse perspective, we may assume that Simon uses repetitions as a rhetorical device to provide further detail about the activities described (as in (164)) or the protagonists involved (as in (165)).

(164) a. <u>neg</u>   <u>nm: CL:BODY: startles</u>   (Sim.-file 3)
           SEE   STAND-ON$_{CL:\lambda}$
           '(He) doesn't see (he)'s standing on something, startled.'
       b. [DET$_{LOC}$]$_E$ HEAD$_E$ STAND-ON$_{CL:\lambda}$
           'On the head, (he)'s standing.'

(165)　a.　THEN　　#BOY#　　[DET$_{LOC}$]$_H$　$_{(2)}$ASK$_X$　　　　　　　(Sim.-file 3)
　　　　　'Then there, (he = the boy) asks.'
　　　b.
　　　　　　　　　　　　　　　　　　$_2$<＿＿＿＿＿＿>
　　　　　HEDGEHOG$_7$　$_{(2)}$ASK$_7$;　　WHERE　　FROG
　　　　　'(He) asks the hedgehog: "Where is the frog?"'

3.6.2.2 Syntax-discourse interface

In keeping with our observation about the increasing mastery of DGS properties
that involve the interface between syntax and discourse the analysis of file 3 also
reveals a skilful use of those mechanisms that contribute to the creation of cohe-
sion.

Referential establishment and maintenance. In file 3, Simon uses several
means to establish and maintain reference. For further illustration consider
(166). In (166a), the first clause of this narrative sequence, Simon uses the body
as a classifier in an SRF to express that the boy supports himself on something,
leaning forward, before he finally spots the frog. In (166b) the boy's position and
his discovery are expressed simultaneously through a complex classifier con-
struction: the h2-classifier is used to background the information that the boy
is leaning on something and the dominant hand is used to foreground the infor-
mation about the boy spotting the frog through the agreement verb SPOT. Note
that the locus encoding the object argument in this verb and the locus associated
with [DET$_{EXIST}$]$_G$ used in (166c) to inform about the frog's location coincide, which
illustrates not only the diversity of linguistic means used to mark agreement, but
also the mastery of the mechanisms necessary to mark reference maintenance.

(166)　a.　$_2$<＿＿＿＿＿＿>　　　　　　　　　　　　(Sim.-file 3)
　　　　　nm: CL:BODY: looking over something
　　　　　SUPPORT-ONESELF$_{CL:ξ}$
　　　　　'Then (he) supports himself (on something), looking over it.'
　　　b.　[-dom]　　SUPPORT-ONESELF$_{CL:ξ}$
　　　　　[+dom]　　SPOT$_3$
　　　　　'He spots (it = ?), whilst supporting himself on something.'
　　　c.　[DET$_{EXIST}$]$_3$　　FROG$_3$
　　　　　'There is the frog.'

For further illustration of how loci are established and maintained we might con-
sider example (167). The locus for the frog is established through the agreement
verb LOOK in (167a); referential identity is marked through the choice of the same
locus for the frog in the next clause (167b), in which the auxiliary PAM marks the
agreement between the subject (the dog and the boy) and the object (the frog)

(note, however, that the word order in (167b) follows the VO pattern which could be an instance of structural borrowing of German; recall that we remarked upon this phenomenon in our discussion of Muhammed's data). DET$_{LOC}$ in (167c) associates a locus with the location of the frog, sitting inside a jar.

(167) a.

$$_{1,2}\overset{<\underline{}}{}$$

[DET$_{LOC}$]$_A$ DOG$_1$ AND   BOY$_2$ LOOK$_X$ (Sim.-file 3)

'There, the dog and the boy look at something on the floor.'

b.

$$\underline{}>$$

LIKE   PAM$_3$ ONE   FROG$_3$

'(They) like a frog...'

c. [DET$_{LOC}$]$_{BELOW}$

'... there below...'

d. [– dom]   CL:FORM (round object)

[+ dom]   [DET$_{LOC}$]$_{IN-B}$ BOWL^GLASS$_B$

'... (he= the frog) is inside a jar ...'

e. [– dom]   CL:FORM (round object)

[+ dom]   CL:FORM (round object)

'... like this...'

At times, however, referential identity is difficult to establish in this file. Ambiguities obtain where Simon does not establish referential loci contrastively, or where he does not use overt lexical expressions to reintroduce the boy as a protagonist. Consider, for example, the two successive sequences in (168) and (169), involving the dog and the boy respectively as a protagonist. In (168) the referential framework is shifted in a quotation environment, in which the dog says that he doesn't see anything (because his head is stuck in the jar). Notice that the POV is signalled through the matrix verb SAY, a change of facial expression, and a shift of body orientation and eye gaze direction to the left. Example (168) is followed by the sequence in (169), in which the boy is reintroduced as a protagonist. The subject is dropped in (169a), the utterance that precedes a POV in (169b), in which the signer adopts the perspective of the boy. Notice that the non-manual means used to signal this shift in (169b) coincide with the ones used to mark the shifted perspective in (168), indicating that no distinction is made at this point regarding the loci associated with the two referents (the dog and the boy). It must be noted that Simon uses of a full NP at the beginning of the narrative passage involving the dog as a protagonist, which contributes to an unambiguous interpretation of referential identity in (168). This is not the case in (169a), in which the boy is reintroduced as a protagonist. So, in this narrative, too, it seems the boy is chosen as a thematic subject, an observation we will take up below when we discuss the choice of reference forms used to refer to the story characters. The same phenom-

enon can be observed in the sequence describing the boy's falling on the deer, after his misperception of the antlers. Notice that the NP DEER in (170a) signals the referential shift, as the signer adopts the perspective of the deer, marked non-manually by a slight change in body orientation and eye gaze direction (to the right). Again, the change of perspective in (170e) recounting the boy's falling from the deer's head is not signalled lexically.

Finally, another problematic sequence involving a shift of perspective is provided in (171). Notice that Simon has not introduced the agents of the activity before. The audience learns that the boy has found the frog, but is not informed about the family that is together with him, including the parents that are commonly identified as the ones offering the boy one of their offspring. The referential shift is marked non-manually through a change in body orientation and eye gaze direction (to the right). Previously, Simon used this locus when he adopted the perspective of the boy. So, although the object is clear, the subject remains unclear, leaving the audience to infer its identity.

(168) $_1$<____>
           neg
     SAY: SEE   (Sim.-file 3)
     '(He = the dog) says that (he) cannot see.'

(169) a. THEN   GO$_{ABOUT}$ (Sim.-file 3)
           'Then (he = the boy?) goes about.'
       b. $_2$<_____>
           CALL+:   WHERE   FROG
           '(He) calls: Where is the frog?'

(170) a. $_{10}$<_____>   (Sim.-file 3)
                  nm: cl-body: turning the head to the right
                  [– dom] CL:FORM (antlers)
           DEER$_{10}$ [+ dom] CL:FORM (antlers)
           'The deer turns his head around.'
       c. _neg_
           SEE
           '(He) does not see.'
       d.   ?<____>
           HEAD   BOW
           '(He = ?) bows his head.'
       e. FALL$_{CL:\lambda}$
           '(He = the boy?) falls forward.'

(171) a.   ?<_____ >

       THEN   ONE $_X$GIVE$_Y$ (Sim.-file 3)

       'Then   (he?) gives one to (?).'

   b. FROG$_{11}$ [SMALL $_{CL:\theta}$]$_{11}$

       'The frog is small.'

Reference forms and functions. Turning to the choice of reference forms used to refer to story characters in file 3, it is interesting to note that reference to the boy only occurs once through an NP in the introductory statement at the beginning of the narration and shortly after, when Simon explains that the boy wants to go to sleep because he is tired. All other references to the boy throughout the narrative occur without an overt lexical expression, which, as we remarked upon previously, makes it difficult at times to appropriately determine referential identity in some sequences. This phenomenon is reflected in the proportion of subject-drop in reintroductory contexts; notice that the percentage, though lower than in file 1, remains relatively high. Indicentally, the percentage of 10.7% out of a total of 23.2% of forms serving the function of reintroduction is the same for NPs (cf. also Figure 3.4).

Table 3.23: Reference forms and functions in Simon's file 3.*

Reference form	% of all forms	Functions served					
		Introduction		Reintroduction		Maintenance	
NP	26.8	10.7	(100)	10.7	(46.2)	5.4	(8.1)
DET$_{ART}$/PRON$_{PERS}$	1.8	0	(0)	1.8	(7.7)	0.0	(0)
Subject drop	71.4	0	(0)	10.7	(46.2)	60.7	(91.9)
All forms	100	10.7		23.2		66.1	

*Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-4.
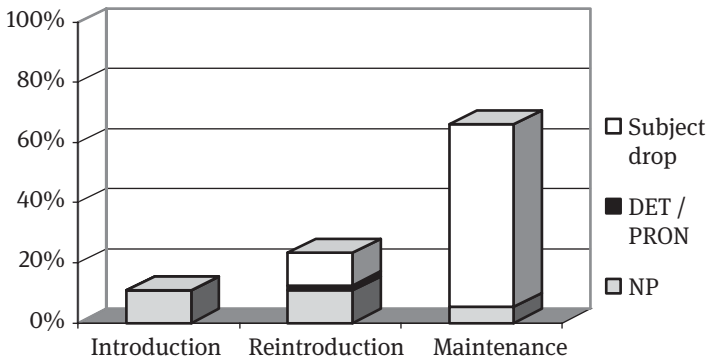
Figure 3.4: Proportion of reference forms and functions in Simon's file 3.

The assumption that the boy is chosen as a thematic subject is corroborated by the choice of reference forms to refer to the other story characters. Reintroduction of the dog as a protagonist always occurs via an NP. Two other characters, the mole and the deer, only appear in individual scenes respectively. The frog, in turn, is introduced via an NP at the beginning and explicitly referred to whenever the boy calls for him or asks another character about his whereabouts. Whenever the result of a search in a certain place turns out to be negative, however, the expression "not there" does not contain an explicit reference to the runaway frog. This phenomenon, as we explained before, might be an effect of the main story topic (the search of the runaway frog). For further illustration consider example (172), which documents subject drop in a sequence, in which the boy is reintroduced as a protagonist (following the scene describing the frog's escape). Also, it is not mentioned explicitly in (172c) that it is the frog that is absent. While referential identity of the subject in (172a) and (172b) must be inferred from the context, the identity of the object arguments in (172b) and (172d) is clear because verb forms pick up the locus associated previously with the frog.

(172) a. IN-THE-MORNING   THEN   SLEEP   (Sim.-file 3)
           'In the morning, then (he = the boy) sleeps,...'
       b. $_x$<_____>
           manner: with-surprise
           LOOK$_3$
           '(He) looks down with surprise...'
       c. AWAY
           '(It = the frog) is gone.'
       d. SPOT$_3$
           '(He) spots it.'

Expression of spatial relations. Table 3.24 provides an overview of the linguistic devices used by Simon in file 3 to express figure-ground relations. As we can see, information on the ground is always provided in this file, and it is always expressed clearly. This observation marks an important difference to file 1. For further illustration, consider the sequences in (173) and (174). In example (173) the boy is reported to look at and then climb on a rock. The rock is introduced via an NP followed by a specification of its shape. Notice that in (174), Simon first reports the falling of the boy (174a), which is followed by a sequence with the information on where the boy falls down (into the water) (cf. (174d)).

(173) a. THEN   GO   (Sim.-file 3)
           'Then (he) goes about...'

  b. SEE$_X$ OBSERVE$_X$

    '... (he) sees, looks around.'

             [– dom] [CL:FORM (stone)]$_D$

  c. [DET$_{LOC}$]$_D$ STONE [+ dom] [CL:FORM (stone)]$_D$

    CLIMB-UP$_{ON\text{-}D}$

    'There is a stone, with this shape, (he) climbs on (it).'

(174) a. $_{10}$<——————>

    DEER$_{10}$ LOOK$_{CL:BODY}$ (Sim.-file 3)

    'The deer looks back...'

  b. <u>neg</u>

    SEE

    '... (he) can't see...'

  c. $_{10}$<————————————————————>

               nm: CL:BODY: bends the head

    BOY [FALL$_{CL:λ}$]$_{FORWARDS}$.

    '... the boy falls forwards, (as) the deer lowers his head...'

  d. [DET$_{LOC}$]$_F$ WATER$_F$ [FALL$_{CL:λ}$]$_{ON\text{-}F}$

    '... there is the water, (he) falls into it.'

Table 3.24: Expression of figure-ground relations in Simon's file 3 narrative.*

Ground / figure		Reference forms			Context		
		Ground [antecedent]		*Figure*	*R.-Framework*	*Verb/DET*	*[activity]*
jar	frog	h2cl (NP)*		drop	FRF	DET$_{LOC\text{-}IN}$	
jar	frog	h2cl		NP, cl	FRF	spatial	[climb out]
jar	dog	CL:FORM	[NP]	NP, cl	SRF	spatial	[stick-into]
beehive	bee	h2cl	[CL:FORM]	drop	FRF	DET$_{LOC\text{-}IN}$	
stone	boy	DET$_{LOC}$	[NP]	drop	FRF	spatial	[climb up]
branches	boy	h2cl	[NP]	drop	SRF	spatial	[hold on]
deer head	boy	DET$_{LOC}$	[NP]	drop	FRF	spatial	[stand-on]
water	boy	DET$_{LOC}$	[NP]	drop	FRF	spatial	[fall]

* The nature of the location is specified *a posteriori* (cf. (167)).

3.6.2.3 Language contact

Candidates for language contact phenomena include constructions with PAM involving an erroneous word order, as well as utterances involving combinations of a predicate with the auxiliary verb HAS, an LBG sign (cf. (175)) or the combination of the verb MAKE with the verb ASK (cf. (176c)). These expressions do not correspond with German expressions (in German, the equivalent of (175) would involve the auxiliary *sein* ('to be') and the equivalent of (176c) the noun-verb combination *Frage stellen,* 'ask a question', if not the use of the verb *fragen,* 'to ask'). Again, it seems the use of LBG elements results in constructions that are neither DGS nor German.

(175)   THEN+   DET$_{ART}$[?]   BOY   **HAS**   TIRED   (Sim.-file 3)
        'Then the boy is tired.'

(176)   a.   NOT   [DET$_{EXIST}$]$_{B/3}$ (Sim.-file 3)
             (He = the frog) is not there.'
        b.   SAD
             '(He = the boy) is sad.'
        c.   **MAKE** $_{(2)}$ASK$_X$ [DET$_{LOC}$]$_{UPWARDS}$
             '(He) asks there.'

3.7 Developmental profile: Maria

The analysis of Maria's file 1 indicates that she has a command of the target sentence structure, including the functional levels above the VP, the IP and the CP (cf. also Table 3.25). Processes associated with the IP and CP are productive, notably verb inflection, subordination, question formation and referential shift. There is no evidence of language contact phenomena in this or subsequent files, with the exception of one SVO construction involving the auxiliary PAM and the modal verb LIKE-TO. The productive use of linguistic devices necessary for referential establishment and maintenance provides evidence for Maria's skilful use of the sign space and the mechanisms that involve the syntax-discourse interface. Further progress in the mastery of narrative skills is documented in Maria's file 3 narrative, in which she provides a more detailed and sophisticated account of the frog story events.

Table 3.25: Maria's DGS profile.

Syntax-discourse interface	[file 3]	Simultaneous constructions
	[file 1]	Spatial relations
	[file 1]	Referential shift
	[file 1]	Referential establishment / maintenance
	[file 1]	Reference forms / functions

CP	Referential shift [file 1] (POV)	$_{1,2}$<_____> manner: with affection nm:CL:BODY: looking down

[− dom] CL:FORM

a. BOY$_1$ WITH DOG$_2$ LOOK$_X$: [+ dom] CL:FORM
'A boy and a dog are looking down with affection. There is a container.'

b. $_4$<___>
FROG$_4$ LOOK$_{UPWARDS}$
'The frog looks up.'

	Questions	[file 3]	$_1$<_____> WHERE [DET$_{POSS}$]$_1$ FROG : CALL+++ 'Where is my frog, (he) calls.'
		[file 1]	$_1$<_____> DISAPPEAR HOW+++ 'How did (he) disappear?'
	Embedded clauses	[file 1]	SEE : [DET$_{EXIST}$]$_D$ TREE$_D$ '(He) sees there is a tree there.'

IP	PAM -agreement	[file 3]	manner:intensely LIKE PAM$_3$ FROG$_3$ '(He) likes the frog a lot.'
	Complex classifier constructions	[file 1]	[− dom] [CL:FORM (bowl)] GLASS^BOWL$_C$ [+ dom] SIT$_{IN-C}$ '(He) sits in the jar.'
	DET$_{EXIST}$-agreement	[file 1]	[− dom] [CL:FORM (hole)]$_J$ A. CL:FORM (trunk) [+ dom] [INSIDE]$_{IN-J}$ 'In the log, inside the hole there.' b. MAYBE [DET$_{EXIST}$]$_3$ 'Maybe (he = the frog) is there.'
	Verb agreement [file 1]		$_{(1)}$<_____> [− dom] [CL:PALM _____]$_J$ [+ dom] [PUT-UP$_{CL:λ}$]$_{FROM-K}$ [PUT-ON$_{CL:λ}$]$_{ON-J}$ '(He) picks (it = the small frog) up and puts (it) on his hand.'
	IP- headedness [file 1]		CL:FORM$_G$ STONE [GO$_{CL:λ}$]$_{ON-G}$ '(He = the boy) goes up a big stone.'

VP	VP-headedness [file 1]	*- see IP headedness -*

3.7.1 DGS competence at the onset of the study

3.7.1.1 Syntax

Word order. At the onset of this study, Maria's DGS productions reveal her command of the target sentence structure. Her adherence to the target word order constraints becomes apparent in constructions with locative complements, which appear preverbally as is illustrated in examples (177) and (178). Notice that the spatial configuration described in (177) involves a complex classifier construction, in which reference to the location is backgrounded through the h2-classifier. Example (178) involves the directional spatial verb GO following a locative complement specifying the ground of the boy's activity.

(177)   [– dom] [CL:FORM (bowl)]$_C$ (Mar.-file 1)
          GLASS^BOWL$_C$ [+ dom] SIT$_{IN-C}$
          '(He = the frog) sits in a jar.'

(178)   CL:FORM$_G$ STONE   [GO$_{CL:λ}$]$_{ON-G}$ (Mar.-file 1)
          '(He = the boy) goes up a big stone.'

Complex sentential constructions. Not only does Maria adhere to the target word order constraints in simple clauses, she also produces various target-like complex sentential constructions, which indicates that the full target sentence structure is available to her. Apart from complex clauses with the verb SEE (compare example (179a)) Maria produces a complex sentential constructions with the modal verb LIKE-TO (cf. (180)) and one with the verb KNOW (cf. (181b)). Subordinated clauses also appear, at times, in the context of repetitions, in which the signer provides more specific information about the activity described (in (182b) Maria indicates that the boy gets dressed for the purpose of the searching the dog outdoors). As Maria's command of complex sentential constructions with POVs also reflects her mastery of the linguistic means used to establish and maintain reference we will discuss examples of these constructions below.

(179)   a.   SEE: [DET$_{EXIST}$]$_D$ TREE$_D$ (Mar.-file 1)
               '(He) sees there is a tree there.'
          b.   [– dom] [CL:FORM (hole)]$_J$
               CL:FORM (trunk)   [+ dom] [INSIDE]$_{IN-J}$
               'In the log, inside the hole there.'
          c.   MAYBE   [DET$_{EXIST}$]$_3$
               'Maybe (he = the frog) is there.'

(180)   LIKE-TO   SLEEP   (Mar.-file 1)
          '(They = the boy and the dog) want to sleep.'

(181) a. $_2$<_____   (Mar.-file 1)
        AND   DOG$_2$ SPOT$_X$

     b. _____>
       [DET$_{EXIST}$]$_X$ KNOW
       'And the dog spots (it) to the left. (He = the frog) is there, (he) knows that.'

(182) a. CLOTHES   PUT-ON   (Mar.-file 1)

     b. OUTSIDE   SEARCH   PUT-ON
       '(He = the boy) puts on clothes. (In order to) search outside... (he) dresses up.'

Interrogation. File 1 also contains evidence for availability of the mechanisms necessary for question formation as Maria produces two instances of interrogatives with wh-words (compare example (183)).

(183) $_1$<_____>   (Mar.-file 1)
     DISAPPEAR   HOW+++
     'How did (he) disappear?'

3.7.1.2 Morphosyntax

Turning to the grammatical processes associated with functional projections above the VP, the analysis of the data reveals not only that processes associated with the IP and the CP are operative, but also that Maria has a command of the mechanisms necessary to establish and maintain reference.

    Verb inflection and reference maintenance. Maria produces several constructions with agreement verbs in file 1. Typically, the greater part of these constructions involve the verb SEE or LOOK-AT. A remarkable example that documents Maria's linguistic use of the sign space to indicate simultaneity is provided in (184): in this example, Maria expresses the simultaneous gaze of the boy and the dog toward the (empty) jar by producing a two-handed construction with the sign LOOK in (184b), picking up the locus associated with the frog established previously in the centre of the sign space. Further examples documenting Maria's mastery of verb agreement are discussed below, where we expand on her advanced command of the linguistic properties involving the syntax-discourse interface.

(184) a. MORNING   [PRON$_{PERS}$]$_{(1,2)}$ GET-UP$_{CL:\lambda}$ (Mar.-file 1)
       'In the morning, both (= the boy and the dog) get up,...'

     b. [– dom] LOOK$_{(jar)}$
       [+ dom] LOOK$_{(jar)}$
       '(They) look at the jar.'

Spatial verbs. Maria's file 1 narrative also contains several constructions with spatial verbs. Classifier elements are correctly selected to agree with the subject argument encoded, as is illustrated in examples (185) and (186), whereby the former involves the use of the V-handshape for human beings and the latter the F-handshape for a swarm of insects. Both examples also document the appropriate expression of the movement path, that is, the boy's falling backwards in (185) (from a tree, after being surprised by an owl) and the bees' swarming toward the left side in (186).

(185) [FALL_{CL:λ}]_{BACKWARDS}   (Mar.-file 1)
       '(He = the boy) falls back.'

(186) [WHIZ_{CL:π}]_{TO-THE-RIGHT}   (Mar.-file 1)
       '(They = the bees) whiz.'

3.7.1.3 Syntax-discourse interface

Already in file 1, Maria produces a narrative that documents her command of the syntax-discourse interface in a remarkable way.

   Referential establishment and maintenance. Maria skilfully uses non-manual means in a contrastive manner to signal and mark POVs (eye gaze, body shift), which contributes to establish referential identity unambiguously also in those contexts, in which perspective shifts succeed each other. Where referential shifts involve a referent other than the subject of the previous event they are almost always signalled via NPs.

   A remarkable example of Maria's creative use of fixed and shifted referential frameworks is provided in (187) (the sequence contains example (177) repeated here in (187c)). Note that the third shift of the referential framework in (187e), in which the signer takes up the perspective of the boy and the dog, is not signalled via a lexically overt reference to the subjects (as it is the case in (187a) and (187b)), but is marked through a change in eye gaze direction as well as through the modulation of the sign SEE. Referential identity is unambiguous because referents have been associated with contrastive loci on the vertical axis, so that body lean forward and eye gaze directed toward the bottom mark reference to the boy (looking at the frog) and eye gaze directed toward the top of the sign space marks reference to the frog (looking up to the boy and the dog). It is interesting to note, from a narrative perspective, that the rapid change of referential frameworks in (187) combined with the contrastive use of loci on the vertical axis allows Maria to express simultaneity of events in a sophisticated manner. Furthermore, we can see that facial expressions in POVs such as the one in (187a) convey the emotions of the respective subjects, in this case the boy and the dog looking at the jar with affection.

(187) a. $_{1,2}$<_____>   (Mar.-file 1)
                                          <u>manner: with affection</u>
                                          nm: CL:BODY: looking down
                                          [– dom] CL:FORM
       BOY$_1$ WITH DOG$_2$ LOOK$_X$: [+ dom] CL:FORM
       'A boy and a dog are looking down with affection. There is a container.

   b. $_4$<_____>
       FROG$_4$ LOOK$_{UPWARDS}$.
       'The frog looks up.'

   c.   [– dom] [CL:FORM (jar)]$_C$
       GLASS^BOWL$_C$ [+ dom] SIT$_{IN-C}$
       'Sitting in the jar,'

   d. $_4$<_____>
       <u>manner: sweetly looking up</u>
       SIT$_{CL:BODY}$
       '(he) sits and looks sweetly (at them = the boy and the dog).'

   e. $_{1,2}$<_____
       <u>manner: with affection</u>
       nm: CL:BODY: looking down
       [– dom] CL:FORM (jar)
       [+ dom] CL:FORM (jar)
       '(They = the boy and the dog) observe with affection.'

   f. _____>
       <u>manner: with affection</u>
       LOOK$_4$.
       '(They) look at (him = the frog) with affection.'

Maria's consistent and contrastive use of loci to establish and maintain reference is documented in numerous examples in this narrative. The sequence in (188) concerns the narrative passage, in which Maria recounts that the dog looks closer at the beehive. The dog's spotting of the beehive is expressed through a POV signalled via a lexical NP (the dog) and a change in body orientation and eye gaze direction to the left. Notice not only that the loci associated with the object argument of the verb SPOT in (188a) and DET$_{EXIST}$ in (188b) coincide, but also that Maria picks up the same locus to mark agreement with the object argument of the verb LOOK-AT in (188d).

For further illustration of Maria's skilful use of agreement verbs and DET$_{EXIST}$ we might consider the examples in (189), (190) and (191), which are part of the final narrative event of the frog story. In (189) Maria establishes the locus associated with the frog family sitting behind a log (the loci associated with the object argument of SEE, the locative argument of SIT and DET$_{EXIST}$ coincide). Reference is

correctly maintained in (190) and (191) as the verb PICK-UP in (190) and the verb WAVE in (191) agree with the locus established previously to her right. A note is due on the h2-classifier used in (190) and (191), two utterances that are part of a longer discourse stretch, in which this classifier is used as a discourse buoy. By retaining the classifier, the backgrounded information about the frog's location on the palm of the boy's hand is provided simultaneously to the description of the boy's subsequent activities (that is, his waving and subsequent leaving the scene).

(188) a.
$$_2{<}\text{---}$$
AND   DOG$_2$ SPOT$_8$ (Mar.-file 1)
'And the dog spots (it) to the left.'

b.
$$\underline{\qquad\qquad\qquad\qquad\qquad}{>}$$
[DET$_{\text{EXIST}}$]$_8$,   KNOW
'(He) is there, (he) knows that.'

c.   [– dom][CL:FORM (beehive)]$_F$ SWARM$_{\text{CL:BEE}}$
BEE   [+ dom][CL:FORM (beehive)]$_F$ SWARM$_{\text{CL:BEE}}$
'The bees swarm all around the beehive.'

d. $_2{<}\underline{\qquad}{>}$
<u>nm: CL:BODY: looking at it closer</u>
LOOK-AT$_8$
'(He = the dog) looks closer at (it).'

(189) a. $_1{<}\underline{\qquad\qquad\qquad\qquad\qquad\qquad\qquad}{>}$
SEE$_X$:   MANY   FROG   (Mar.-file 1)
'(He) sees (there are) many frogs.'

b. BABY$_{13}$ MOTHER$_{14}$ FATHER$_{15}$
'(There are) a baby, mother, father.'

c. [SIT$_{\text{CL:IN A ROW}}$]$_K$
'(They) sit in a row.'

d. [DET$_{\text{EXIST}}$]$_{13,14,15}$
'(They) are there.'

(190) $_{(1)}{<}\underline{\qquad\qquad\qquad}{>}$ (Mar.-file 1)
[– dom]   CL:PALM-------------------------------------]$_J$
[+ dom]   [PUT-UP$_{\text{CL:}\lambda}$]$_{\text{FROM-K}}$ [PUT-ON$_{\text{CL:}\lambda}$]$_{\text{ON-J}}$
'(He) picks (it = the small frog) up and puts (it) on his hand.'

(191) $_{(1)}{<}\underline{\qquad}{>}$ (Mar.-file 1)
[– dom]   CL:PALM
[+ dom]   WAVE$_{13,14,15}$
'(He) waves to (them = the frog family), while holding (it = the small frog) on his hand.'

We have seen previously that Maria associated referential loci on the vertical axis (bottom-top) in a contrastive manner to signal and mark POVs involving the boy with his dog and the frog respectively. Regarding the distribution of referential loci in the sign space, the preceding sequences in (188) vs. (189)–(191) illustrate Maria's contrastive choice of loci associated with locations to the left vs. the right side, to refer to the dog and the boy respectively. Referential shifts are marked accordingly through body orientation and eye gaze direction toward the respective side. The consistent use of referential loci to maintain reference not only contributes significantly to the comprehension of the narrative; the contrastive distribution of referential loci allows Maria to creatively shift reference for narrative purposes. The result is a lively narrative, in which we learn not only about the characters' emotions (recall the passage in (187) in which the protagonists look at each other with affection) but also about their interaction. Consider in this respect he sequence in (192), in which the boy tells the dog to be quiet (cf. (192a)), the dog, in turn, asks the boy about the reason why (cf. (192b)), and the boy insists that he be quiet (cf. (192c-d)). Notice that the interaction between the two characters affects (a) the choice of non-manual means used to mark the respective POVs, and (b) the choice of loci associated with the respective addressees in the reported dialogue: the POV with the boy as a subject in (192a) is marked through a change of body orientation to the left and eye gaze in this direction, toward the bottom of the sign space (which corresponds with the locus associated with the dog as the addressee). The POV involving the dog as a subject in (192b), in turn, is marked through a change of body orientation to the right and eye gaze in this direction, toward the top of the sign space (which corresponds with the locus associated with the boy as the addressee).

(192) a. $_1$<_____>   (Mar.-file 1)
       [– dom] PAY-ATTENTION$_2$
       [+ dom] BE-QUIET$_2$
       'Pay attention, be quiet.'

    b. $_2$<___>
       DOG$_2$ WHAT
       'The dog, 'what('s the matter?)''

    c. $_1$<___
       QUIET
       'Be quiet.'

    d. _____>
       KEEP-CALM
       'Keep calm.'

Reference forms and functions. In file 1, Maria uses determiners only occasionally. The use of pronouns for the reintroduction of referents is illustrated in example

(184a) above, a sequence in which two referents, the boy and the dog, are rein-
troduced after a description of the frogs' activities. Later in the narrative, the DGS
pronoun $[\text{PRON}_{\text{PERS}}]_{1,2}$ ('both') is also used to refer to the boy and the dog, and the two
frog parents respectively. In (193) the boy is reintroduced as a protagonist via DET_{SELF}.

(193) $_{1}$<_____>   (Mar.-file 1)

               nm: CL:BODY: look over something

     $[\text{DET}_{\text{SELF}}]_1$ $\text{HOLD}_{\text{CL:}\lambda}$

     '(He = the boy) holds on something looking into something.'

The rare use of DET_{ART} and DET_{LOC} to establish loci contrasts with the frequent
use of $\text{DET}_{\text{EXIST}}$ serving this function, as we could see in numerous examples dis-
cussed previously (consider, for example (179) and (189) above). Crucially, as we
remarked upon above, this determiner is part of a sophisticated use of referential
loci in the sign space to establish and maintain reference.

     Maria uses an NP to refer to the boy only once, when he is introduced as a
protagonist at the beginning of the story. By contrast, referents other than the boy
are reintroduced via NPs. The distribution of reference forms and functions used
to refer to the boy as a protagonist patterns with the distribution of reference forms
in the narratives of other participants in this study (compare, for example, the
data obtained for Simon); however, although the relative frequency of subject drop
in reintroduction contexts is relatively high (35.7%) it is lower than that of NPs
serving the same function (50%) (subject drop makes up 6.9% out of a total of
19.4% of forms serving the function of reintroduction, cf. Table 3.26 and Figure 3.5).
However, subject drop does not lead to the type of referential ambiguity remarked
upon previously. Crucially, as Maria makes a consistent use of referential loci in
the sign space, and also marks referential shifts in accordance with the loci of the
arguments encoded, there is no room for referential ambiguities in her narrative.

Table 3.26: Reference forms and functions in Maria' file 1.*

Reference form	% of all forms	Functions served					
		Introduction		Reintroduction		Maintenance	
NP	20.8	9.7	(100)	9.7	(50.0)	1.4	(2.0)
$\text{DET}_{\text{ART}}/\text{PRON}_{\text{PERS}}$	4.2	0	(0)	2.8	(14.3)	1.4	(2.0)
Subject drop	75.0	0	(0)	6.9	(35.7)	68.1	(96.1)
All	100	9.7		19.4		70.8	

*Expressed as a percentage of the total number of reference forms (proportions of forms used
for respective function in brackets). Absolute numbers are provided in the Appendix Table C-5.
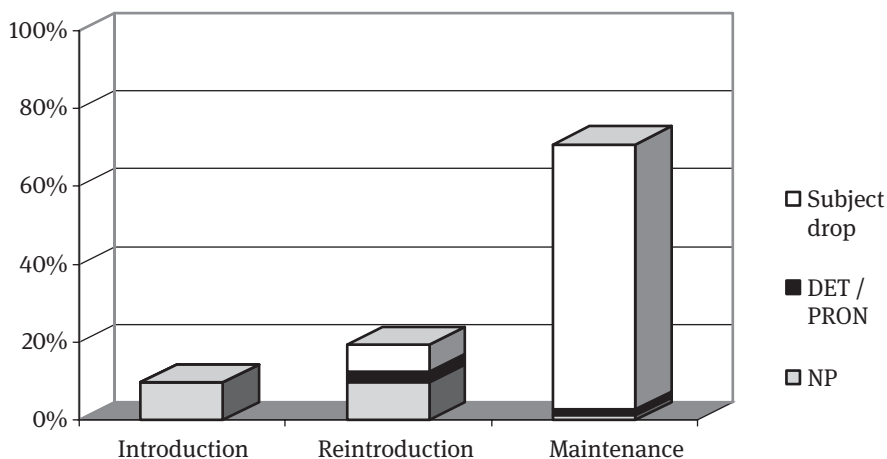
Figure 3.5: Proportion of reference forms and functions in Maria's file 1.

Expression of spatial relations. Maria expresses spatial relations in a clear manner from the onset of the study, which contributes significantly to the coherence of the story produced. Complex classifier constructions in her file 1 narrative not only document Maria's productive use of h2-classifiers to background information (for example, about the location in which the frog is sitting in example (187d) above, or a location inside a tree hole in example (179c) above); they also reflect Maria's advanced narrative level as is illustrated in example (194), a remarkable construction in which Maria describes the frog's moving around in the oppressively small jar. Notice that the location (a jar), specified at the beginning of the story (cf. (177) above), is specified once again prior to the complex classifier construction, by remarking additionally on the oppressively small size of the object. Clearly, Maria's detailed narration stands out against other recounts of the frog story, in which descriptions remain generic and activities are described in a successive manner, without information on their relation.

(194) a. FROG   BE-BORED   (Mar.-file 1)
      b.   [– dom] [CL:FORM (bowl)]$_C$
        OPRESSIVE$_{CL:BOWL}$ [+ dom] GO-AROUND$_{IN-C}$
        'The frog is bored. (He) goes around in the oppressively narrow jar.'

As we can glean from Table 3.1 information on the ground is always specified first via lexical antecedents (full NPs). Where information is later backgrounded, Maria uses either h2-classifiers (in FRFs) or classifier-elements (in SRFs).

Table 3.27: Expression of figure-ground relations in Maria's file 1.*

Ground / figure		Reference forms			Context		
		Ground [antecedent]		Figure	R-framework	Verb / DET	[activity]
jar	frog	h2cl	[NP]	drop	FRF	spatial	[sit]
jar	frog	h2cl	[NP]	drop	FRF	spatial	[go around]
jar (rim)	frog	CL:FORM		drop	SRF	spatial	[pull up]
jar	frog	h2cl		drop	FRF	spatial	[jump-out]
tree hole	(frog)	NP		drop	FRF	DET$_{LOC-IN}$	[be inside]
tree trunk	boy	h2cl	[NP]	drop	SRF	spatial	[climb up]
stone	boy	NP		drop	FRF	spatial	[go up]
stone	boy	drop		drop	SRF	agreement	[hold on]
antlers	boy	drop	[NP]	drop	SRF	agreement	[hold]

Summarising, the analysis of file 1 reveals that Maria produces a remarkable narrative with all narrative events described in an appropriate manner, using the linguistic devices available in a competent way, to create cohesion and coherence.

3.7.2 Further development: increasing narrative complexity

In file 3, Maria also provides a detailed and sophisticated account of the frog story events. This narrative, like the one produced in the first recording, documents her remarkable competence of the target linguistic devices. Compared with file 1, more details are provided in the retelling of the individual narrative events and their connections, revealing not only a creative use of the linguistic devices available to her, but also a balanced use of top-down and bottom-up narrative organisation strategies. We shall briefly summarise both dimensions in the following.

3.7.2.1 Orchestration of linguistic devices for narrative purposes
Local events. In file 3, Maria retells several narrative events in a more detailed manner than it was the case in file 1. Consider, for example, the recount of the frog's escape in example (195). In this sequence, we learn not only that the frog escapes, but are also informed about why he decides to do so (because he is bored, cf. (195b)) and how he does so, namely, by climbing up the container (cf. (195d)), climbing out of it (cf. (195e)), jumping then toward the left side (cf. (195f)) and

eventually leaving into that direction (cf. (195g)). Fixed and shifted referential frameworks are used alternatively to provide a detailed description of the narrative episode.

(195) a.
$_3$<‾‾‾
THEN   FROG$_3$ LOOK$_X$ (Mar.-file 3)
'Then the frog looks up.'

    b. ‾‾‾‾‾‾‾‾
BE-BORED
'(He) is bored.'

    c. ‾‾‾‾>
IDEA
'(He) has an idea.'

    d. $_3$<‾‾‾‾‾‾‾>
GLASS^BOWL$_A$ CLIMB-UP$_A$
'(He) climbs up (the jar).'

    e. JUMPS$_{OUT\text{-}OF\text{-}A}$
'(He) jumps out of (it).'

    f. SKIP$_{CL:\theta}$
'(He) skips on the ground.'

    g. GO-AWAY
'(He) goes away.'

At times, Maria uses mixed perspectives to achieve the most explicit description possible. The narrative passage in (196) is an illustrative example. We can see that she starts to recount the narrative episode within a fixed referential framework, shifting then the perspective through a POV with the dog as a subject. While this perspective is kept, Maria uses a complex classifier construction to recount in detail what happens next, as the dog sticks his head into the jar. Notice that the referent is introduced in (196d) (the dog's head) so that the argument of the classifier construction is clear, while the location into which the dog puts his head (the jar), backgrounded first through an h2-classifier, is mentioned *a posteriori* in (196g). Note also that the classifier element used in the spatial verb form STICK-INTO corresponds with the target classifier for a head. Through the simultaneous use of non-manual elements (e.g. facial expression, body orientation), expressing the activities from the perspective of the dog, and the use of classifier constructions to describe these from the perspective of the narrator, the signer provides a detailed account of a complex but key activity of one of the main story protagonists. Crucially, none of the other narratives collected in this study contains a similarly sophisticated report of this narrative episode.

(196) a.
            $_2$<‗‗‗‗‗
  THEN DOG$_2$ HEAD SEARCH   (Mar.-file 3)
  'Then the dog (head) searches.'

  b. ‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗
    manner: inquisitively
    WHERE FROG
    'Where the frog is,...'

  c. ‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗
    manner: inquisitively
    SEARCH
    '...(he) searches inquisitively.'

  d. ‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗
       [– dom] [CL:FORM (jar)]$_A$
    HEAD [+ dom] [INTRODUCE$_{CL:HEAD}$]$_{IN-A}$
    '(He) introduces his head into a container.'

  e. ‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗
    nm: CL:BODY: toppling
    THEN TOPPLE-BACKWARDS$_{CL:HEAD}$
    'Then (he) topples...'

  f. ‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗‗>
    GLASS PUT-ON$_{ON-HEAD}$
    '... with the glass (bowl) over his head...'

  g. [– dom] [CL:FORM (jar)]$_A$
    [+ dom] [INTRODUCE$_{CL:HEAD}$]$_{IN-A}$
    '... (the glass bowl,) in which (he) has introduced his head...'

Among other narrative episodes recount in a skilful way there is the boy's falling on the deer's head (cf. (197)). Notice that the spatial verb FALL is directed toward a location in the centre of the sign space in (197a), to describe the boy's falling forward, whereas it is directed to a location behind the back of the signer's head in (197b), in which we learn that the boy has fallen on the back of the deer.

(197) a. [FALL$_{CL:λ}$]$_{FORWARD}$ (Mar.-file 3)
    '(He) falls.'

  b. DEER^ANTLERS$_F$ FALL$_{ON-BEHIND-F}$
    '(He) falls on the head of the deer, behind his antlers.'

As in file 1, Maria produces several constructions with agreement verbs. These verbs correctly agree with the loci established previously. A remarkable sequence documenting Maria's command of the linguistic use of sign space to convey complex meanings is provided in (198). Notice that in this sequence the signer adopts

the perspective of the boy while recounting the activity of another protagonist (the dog). To indicate the reference of the agent of the activity Maria uses a pronoun that refers to the dog. Information on the dog's location viz. the boy's holding the dog in his arms is provided through the non-dominant hand. Note that the verb LICK is correctly inflected to agree with the object (the boy's cheek) in the context of the shifted referential framework, in which the signer uses his body as a classifier.

(198) $_1$<_____>   (Mar.-file 3)
[– dom] [[HOLD$_{CL:BODY\ PART}$]$_{ON-ARM}$ ----------]
[+ dom] [PRON$_{PERS}$]$_2$ $_2$LICK$_1$
'(He = the dog) is licking his cheeks, while on (his = the boy's) arms.'

A note is due in this context on the only instance of PAM in this narrative, used to mark the verb-complement relation in a construction with the plain verb LIKE in (199). As we can see in (199), however, the word order of the sequence with PAM is not target-like, as the object and the agreement marker appear after the verb LIKE (as discussed in section 3.1.3.2 they appear preverbally in target DGS). By assumption, word order, in this case, is borrowed from LBG.

(199)   <u>manner: intensely</u>   (Mar.-file 3)
LIKE   PAM$_3$ FROG$_3$
'(He) likes the frog a lot.'

Event connections. Apart from detailed accounts of individual narrative episodes, Maria's recount of the frog story also contains information on temporal and causal relations between events. We have seen previously that Maria provides information on the motives of some of the characters' actions (in (195b), for example, the frog's boredom). In other cases, relations between narrative events are made explicit by using connecting devices, such as the temporal adverbial THEN or the coordinating conjunction BUT. In (200) we can see that the cause-effect relation between the dog's activity and the beehive falling on the ground is marked through the adverbial THEN, a typical phenomenon observed also in spoken language recounts of the frog story. Complex sentential constructions represent another linguistic means used to express links between narrative events. These include coordinated constructions, such as the one provided in (201b) introduced by the conjunction BUT. Note that the example also documents the target-like preposition of the constituent clause (FROG CALL).

(200)   (Mar.-file 3)
a. $_2$<__>
THEN   BO#Y#   DOG$_2$ TREE$_\delta$ JOLT$_{CL:\delta}$
'Then the dog jolts the tree with his paws.'

b. THEN   BEEHIVE_ß   WOBBLE_{CL:ß}
'Then the beehive wobbles.'

c. FALL_{CL:λ}
'(It) falls down.'

d. HIT_{CL:λ}
'(It) hits the ground.'

(201) a. THEN   BOY   SICK   BE-IN-PAIN
'Then the boy feels sick, has pains.'

    b. BUT: FROG   CALL,   HEAR   (Mar.-file 3)
'But (he) hears the frog calling.

As we can see in (202) referential shift is used to express emotions and thoughts of the protagonist. The sequence also documents that evaluations on narrative events are not only expressed from a narrator perspective, but are also made explicit via reported dialogue (in (202), we learn from the boy's comment that the runaway frog is not among the frogs spotted first). In this case, too, agreement and possession are appropriately expressed in the shifted referential framework in which the signer adopts the perspective of the boy. The spatial directional verb in (203b) is modulated in a direction towards the signer, picking up the locus established for the small frog protagonist. The agreement verb in (203d) is correctly inflected to encode subject-object agreement (boy, frog).

(202) a.   ₁<__   (Mar.-file 3)
        SEE₅:
        '(He = the boy) sees…'

    b. _____
        SWEET
        'Sweet…'

    c. _____
        TWO   FROG₅
        'Two frogs.'

    d. _____>
        NOT   [DET_{POSS}]₁   FROG
        'Not my frog.'

(203) a.   ₁<_____
        SEE₁₀: [DET_{EXIST}]₁₀   BABY₁₀   (Mar.-file 3)
        '(He) sees there is a baby."

    b. ____
        COME_{TO-1}
        '(It) comes to (him = the boy).'

c. _____
[DET_POSS]₁   FROG_{μ/3}   [DET_EXIST]₃
'My frog is there.'

d. _____>
nm: with delight
[TAKE_{CL:μ}]_{LOC:ON-HAND}
'(He) takes (it) in his hand, delighted.'

Only on a few occasions, relations between events are not expressed in an unambiguous way. This is the case of (204), in which Maria recounts that the boy is surprised by a hamster while checking out a hole in the ground. Maria does not recount that the hamster comes out of this hole (neither does she assign this referent a locus), but focuses directly on the hamster's biting of the boy's nose, which takes the boy by surprise. Notice that the object of the hamster's activity is marked in the context of a POV in (204a) signalled through a body lean backward and a change of eye gaze direction (from the left to the centre). Furthermore, the POV involves a reassignment of the locus established for the boy, which is probably an effect of Maria's choice to sign the noun HAMSTER with a body orientation to the left (note that (204a) is preceded by a sequence of POVs involving the boy as a subject, marked by a body orientation to the left, leaning forward).[26]

(204) a.   ₁<_____   (Mar.-file 3)
THEN   HAMSTER₅   ₅[BITE_{CL:BODY-PART(nose)}]₁
'Then the hamster bites (his = the boy's) nose.'

b. ____
HURT
'(It) hurts.'

c. _____>
RUB-ONESELF_{CL:BODY PART(nose)}
'(He) rubs his nose.'

In a similar manner, the change of the thematic role associated with the boy (agent vs. patient) is not expressed lexically in (205). In this case, the shift between the boy's and the owl's perspective in (205b,c) and (205d) respectively, is marked through the NP referent OWL, whereas the shift to the boy's perspective between (205d) and (205e) is not marked explicitly (in fact, body orientation and

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26 Unfortunately, we cannot establish with certainty whether the meaning expressed would require the use of a serial verb construction in DGS as it has been documented for ASL or BSL (cf. section 3.1.4.6) because, to our knowledge, this type of construction remains unexplored for DGS.

eye gaze direction do not change, but facial expression does). Referential ambiguity in the hamster and the owl examples is explained in part by the choice of the boy as a thematic perspective with the effect that he is seldom referred to via lexical means. Where non-manual means are not used in a contrastive manner, the change of the thematic role associated with the boy is not easy to discern.

(205) a. BOY₁   SEARCH   (Mar.-file 3)
       'The boy searches.'

 b. ₁<‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
     TREE_G   [CLIMB UP_CL:BODY PART]_G
     '(He) climbs up a tree.'

 c. ‾‾>
     [– dom] CL:FORM (hole)_H
     [+ dom] CL:FORM (hole)_H   INSIDE_H   LOOK_G
     '(He) looks inside (it).'

 d.   ₇<‾‾‾‾‾‾‾‾‾‾‾‾‾>
                           manner: frightening
     THEN   OWL₇   SPREAD-OUT_CL:BODY PART(wings)
     'Then the owl spreads out its wings in a frightening manner.'

 e. ₁<‾‾‾‾>
     FRIGHT
     '(He = the boy) is frightened.'

 f. [FALL_CL:λ]_BACKWARD
     '(He) falls down.'

Simultaneous constructions. Finally, we turn to another phenomenon that reflects Maria's advanced narrative level in DGS, namely, the use of two manual articulators to express simultaneous events. In (206), for example, the sign SEARCH is produced with the right hand during the repetition of the verb GO produced with the left hand. In (207) the dog's fright, his running away and the bees' flying after him are expressed simultaneously, which allows Maria to express a cause-effect relationship in quite an efficient manner.

(206) [– dom] GO-AROUND ++   (Mar.-file 3)
      [+ dom]   SEARCH
      'He goes around and searches.'

(207) a.   ₂<‾‾‾‾‾‾‾‾>
                              manner: quickly
         DOG₂   TOO   RUN_CL:BODY PART   (Mar.-file 3)
         'The dog runs quickly too.'

b. [− dom]   [GO$_{\text{TO-THE-RIGHT}}$ FLY$_{\text{CL:BEE}}$]
   [+ dom]   [FRIGHT----------------------   ]
   '(He) is running, frightened by the bees.'

Referential establishment and maintenance. The frequency of reintroduction of referents via NP has increased in file 3, in particular, where the boy is reintroduced as a protagonist, although subject-drop is also used with the same frequency as NPs (recall that no instance of an NP as a means to reintroduce the boy was acknowledged for file 1). This distribution contrasts markedly with the use of NPs in reintroductory contexts involving the dog as a protagonist. The relative proportion of NPs chosen for reference in reintroduction contexts vis-à-vis other reference forms (cf. Table 3.28 and Figure 3.6) amounts to 65.2%. Out of a total of 25.8% of reference forms serving this function NPs make up 16.9%.

It must be mentioned in this context that Maria's distribution of loci in this narrative is less fixed than in file 1. After the initial episodes involving the boy and the dog together as protagonists, the two characters are associated with a locus to the right and the left side respectively in various narrative passages. However, there are several reassignments of loci throughout the narration. Various factors seem to play a part in the more flexible use of referential loci. For one, as Maria goes on to describe individual events in more detail, often with indications on related activities of other characters, reference needs to be reassigned more frequently than in a narrative description consisting of a succession of events (without indications on their connections). We mentioned before that Maria uses full NPs to refer to the boy more frequently than she did in file 1, but continues to use subject drop in many occasions which leads to the type of ambiguity described previously. Turning to other linguistic means used to establish and maintain reference in this narrative, we note that Maria does not use DET$_{\text{ART}}$ to establish referents in this narrative (there is only one exception). DET$_{\text{EXIST}}$, by contrast, is frequently used (compare examples (203), discussed previously, and (208)–(209)).

Table 3.28: Reference forms and functions in Maria's file 3.*

Reference form	% of all forms	Introduction		Reintroduction		Maintenance	
				Function served			
NP	24.7	7.9	(100)	16.9	(65.2)	0	(0)
DET$_{\text{ART}}$/PRON$_{\text{PERS}}$	2.2	0	(0)	1.1	(4.3)	1.1	(1.7)
Subject drop	73.0	0	(0)	7.9	(30.4)	65.2	(98.3)
All forms		7.9		25.8		66.3	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-6.
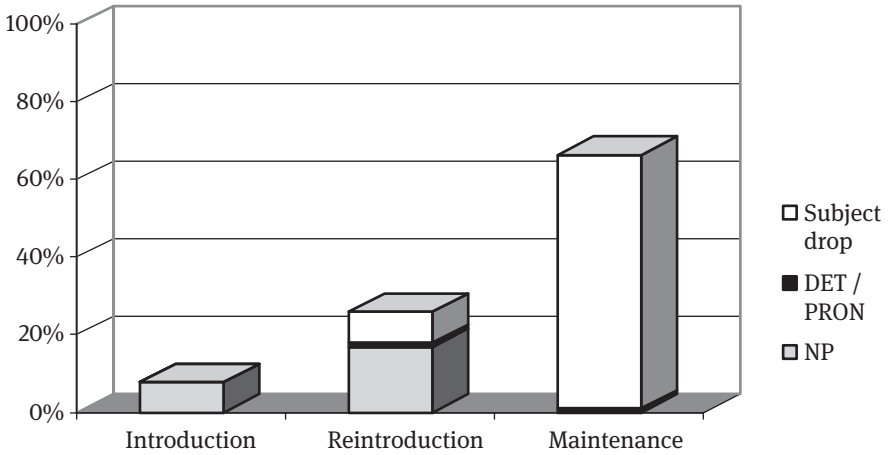
Figure 3.6: Proportion of reference forms and functions in Maria's file 3.

(208) a.

$_1$<‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾

THEN   SEE :   [DET$_{EXIST}$]$_E$ TREE   (Mar.-file 3)

'Then (he) sees there is a tree there.'

   b. $_{SIGNER}$<‾‾‾‾‾‾‾>

NO++

'No, no, …'

   c. $_1$<‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾>

SEE :   [DET$_{EXIST}$]$_T$ INSIDE

'(He) sees there is inside…'

(209) a.

$_2$<‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾

THEN   DOG$_2$ SEE$_1$:   [DET$_{EXIST}$]$_1$ (Mar.-file 3)

'Then the dog sees (he is) there…'

   b. ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾>

BOY$_1$ [DET$_{EXIST}$]$_1$

'… the boy is there…'

At closer inspection, the analysis of Maria's use of DET$_{EXIST}$ to establish loci and her choice of loci to indicate reference maintenance (coindexation) reveals a sophisticated use of the linguistic space to mark agreement and create cohesion. In (210) DET$_{EXIST}$ is used to establish the location of the jar, taken up in the next proposition, in which Maria reports that there is no frog in this location anymore. The loci associated with DET$_{EXIST}$ in example (211) (see also (203) above) correspond with the loci for the object or the subject of the respective subsequent clauses containing agreement verbs.

(210) a.

$_2$<_____

THEN DOG$_2$ SEE$_C$: [DET$_{EXIST}$]$_C$ GLASS (Mar.-file 3)

'Then the dog sees there is the glass.'

_____

b. DISAPPEAR

'(It = the frog) has disappeared.'

c. _____

WHERE

'Where (is it)?'

d. _____>

NO FROG [DET$_{EXIST}$]$_C$

'There is no frog there.'

(211) a.

$_1$<_____>

manner: with affection

THEN BOY$_1$ SEE$_X$

'Then the boy lovingly sees there.'

b.

$_1$<_____

BOY$_1$ SEE: [DET$_{EXIST}$]$_2$

'The boy sees (the dog) is there.'

c. _____>

[TAKE$_{CL:\theta}$]$_{IN-HIS-ARMS}$

'(He) takes (him) in his arms.'

Expression of spatial relations. Table 3.29 provides an overview of the linguistic forms used in the expression of spatial relations. As we can see, while reference to the background occurs overtly, either through NPs or h2-classifiers, reference to the figures involved remains unexpressed overtly. Because the relevant sequences occur in the context of narrative passages involving the same protagonist, reference is clear.

Table 3.29: Expression of figure-ground relations in Maria 3.

Ground	Figure	Reference forms		Context		
		Ground [antecedent]	*Figure*	*R.-Framework*	*Verb/DET*	*[activity]*
jar	frog	NP	drop	SRF	spatial	[climb out]
jar	frog	h2cl	drop	FRF	spatial	[jumps out]
jar	dog (head)	h2cl	drop	FRF	spatial	[stick into]

Table 3.29: continued

Ground	Figure	Reference forms		Context		
		Ground [antecedent]	*Figure*	*R.-Framework*	*Verb/DET*	*[activity]*
jar	dog (head)	h2cl	drop	FRF	spatial	[sticks into]
boy (nose)	dog	CL:BODY	NP	SRF*	agreement	[lick]
tree	boy	NP	drop	SRF	spatial	[climb up]
stone	boy	NP	drop	SRF	spatial	[climb on]
deer (antlers)	boy	NP	drop	FRF	spatial	[fall on]
log	boy	NP	drop	SRF	spatial	[support]

*SRF expresses the boy's perspective.

3.8 Developmental profile: Fuad

Fuad's file 1 narrative is characterised by short descriptions of the main events of the frog story. His hesitations throughout the narration might be related to several factors. For one, it seems he is concerned with the retelling as such and the succession of activities that are part of the story. Further, he is also thoughtful of the linguistic devices he chooses. Yet, he does not always succeed in producing fully comprehensible utterances, which might be taken as an indication of remaining gaps in his competence of DGS (cf. Table 3.30). On the one hand, at the level of linguistic devices, the story provides evidence for a command of the main properties of DGS, such verb agreement, complex classifier constructions, figure-ground and referential shifts. On the other hand, it seems mechanisms involving the syntax-discourse interface are not fully mastered. Candidates for language contact phenomena include borrowings at the level of word order. The analysis of file 3 reveals that these deficits have disappeared by the time of production of this narrative. Fuad skilfully orchestrates the information from different levels of linguistic analysis to create a coherent narrative.

Table 3.30: Fuad's DGS profile.

Syntax-discourse interface		[file 3]	Referential shift
		[file 3]	Referential establishment / maintenance
		[file 3]	Reference forms / functions
		[file 1]	Spatial relations
CP	Referential shift (POV)	[file 3]	a. $_1$<_____> CALL+++ '(He =the boy) calls…' b. $_4$<___> DOG$_4$ TOO CALL+++ 'The dog calls, too.'
		[file 1]	[Variation in the marking of RS]
	Questions	[file 3]	$_1$<_____> WHERE [DET$_{POSS}$]$_1$ FROG 'Where is my frog.'
			[No evidence in file 1]
	Embedded clauses	[file 1]	$_2$<_____> THEN HEAR : PRON$_{PERS}$ CALL 'The (he = the boy) hears that (he = the frog) is calling.'
IP	PAM -agreement	[file 3]	[– dom] SWARM THEN CLEAR: WHEN BEE MANY [+ dom] SWARM ALMOST PAM$_4$ DOG$_4$ 'Then it is clear that the bees swarm close to the dog.'
	Complex classifier constructions	[file 3]	a. THEN GO$_{AROUND}$ 'Then (he) goes around…' [– dom] CL:FORM (tree trunk)$_G$ b. LOG CL:FORM(trunk)$_G$ [+ dom] CLIMB$_{ON-G}$ '(He) climbs on the log.'
	DET$_{EXIST}$-agreement and Verb agreement	[file 1]	a. $_2$<_____ [...][DET$_{EXIST}$]$_9$ FROG$_9$ +++ 'Down there, there is the frog.' _____> b. [– dom] [CL:PALM]$_I$ [PICK-UP$_{CL:\mu}$] [+ dom] [PUT-ON$_{CL:\mu}$]$_{ON-I}$ '(He) picks (him) up and puts (him) on his hand.'
	IP headedness	[file 3]	THEN BEE DISTURB+++ 'Then (he = the dog) disturbs them (= the bees).'
		[file 1]	Variation: IP-final [DET$_{LOC}$]$_E$ WATER [FALL$_{CL:\lambda}$]$_{INTO-E}$ 'There, into the water, (they) fall.' IP-initial THEN BOY SEARCH+++ [DET$_{LOC}$]$_{IN}$ FOREST 'Then the boy searches in the woods.'
VP	VP headedness		*- see IP headedness -*

3.8.1 DGS competence at the onset of the study

3.8.1.1 Syntax
Word order variation. The analysis of Fuad's file 1 narrative regarding word order reveals that many of his utterances only consist of a verb. Though limited in number, sequences with overtly expressed locative complements provide evidence for variation at the level of word order. Consider, for example, verb placement in examples (212) and (213). In (212), the locative complement providing information on the location of the search appears after the plain verb SEARCH. Word order in this clause is not target-like but is rather reminiscent of how elements would be arranged in an equivalent German (or LBG) utterance. Hence this sequence is a potential candidate for borrowing. It must be noted, however, that we also find utterances in this narrative with a target-like verb placement in sentence-final position, as it is the case in (213), part of a sequence we will discuss in more detail below.

(212) THEN   BOY   SEARCH+++ $[DET_{LOC}]_{IN}$ FOREST   (Fua.-file 1)
'Then the boy searches in the forest.'

(213) $[DET_{LOC}]_E$ WATER $[FALL_{CL:λ}]_{INTO-E}$ (Fua.-file 1)
'There, into the water, (they) fall.'

Additional indications of word order variation in Fuad's file 1 become apparent in sequences such as the one provided in (214), in which the boy and the dog are reported to see that the frog is gone. Interestingly, several repairs succeed each other in (214), after the first production of the verb DISAPPEAR in (214b). We might speculate that what appears to be a referential repair (for the purpose of specifying further who disappeared) winds up in a sequence that is deviant at the level of word order because, in the end, the subject appears after the verb – as if postponed (note, in addition, that the editing expression in (214d) might be taken as an indication of Fuad's monitoring of the utterance).

(214) a. $_{1,2}$<__>
            SEE   (Fua.-file 1)
            '(They) see...'
        b. DISAPPEAR DET_{SELF} #unclear#
            '... gone, (he)...'
        c. THEN   #FROG#   DISAPPEAR
            'Then... gone...'
        d. WRONG
            'wrong...'
        e. DISAPPEAR   #TH(EN)# $FROG_3$+++
            '... gone ... frog...'

Furthermore, it also becomes apparent that, in some cases, sentence boundaries are difficult to establish in Fuad's file 1, which is a particularly critical issue in an analysis where adherence to the target word order is at stake. In our view, this imposes caution on the interpretation of potentially ambiguous sequences. For further illustration, we might consider the sequence in (215) containing a series of elements which, depending on the analysis, would be appear to be arranged in a target-like or a target-deviant manner. Notice that reference to the protagonists involved in the two activities mentioned occurs overtly between the two verb forms. There is no apparent pause in the production of the signs, and there are neither lexical elements that would help establish a sentence boundary (notice that THEN connects this sequence with the previous event, but is not used to establish a temporal relation between the activity of the protagonists' sleeping and their waking up). Now, if we interpreted "BOY AND DOG" as the subject of the first predicate, SLEEP, a target-deviant VS order would obtain; by contrast, if we assumed that "BOY AND DOG" is the subject of the second predicate, WAKE-UP, we would conclude that (215) consists of two target-like clauses. The problem with this interpretation is that the sequence is somewhat infelicitous from a narrative perspective because the identity of the agents of the first activity remains unspecified at first and can only be recovered cataphorically (that is, by assuming identical reference in (215a-b)).[27] What could tilt a decision between the two options in favour of the latter is the observation that additional information on subjects or complements often occurs *a posteriori*, in the context of repetitions. So, while the verb in (215b) is not the same as in (215a), the provision of an overt subject patterns with the recurrent phenomenon of providing further specifications in a second proposition in other instances of repetitions.

(215)   a. THEN   SLEEP   (Fua.-file 1)
            'Then, (they = ?) sleep...'
        b. BOY   AND   DOG   WAKE-UP
            'The boy and the dog wake-up.'

What the previous observations make apparent is that there is some evidence in Fuad's file 1 for variation regarding the arrangement of constituents in a clause. The coexistence of alternative structural patterns, as we explained in section 2.2.3.1 can be taken as an indication of the dynamics that underlie the organisation of multilingual knowledge.

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27 In a previous paper, we interpreted this sequence as an instance of XVS. Here we call into question our earlier analysis while pointing out the ambiguity of the sequence and the problematic status from a discourse perspective.

Complex sentential constructions. Fuad produces several complex sentences in file 1. Example (216), in which we learn that the frog wants to get out of the jar, documents the use of a complex sentential construction with the modal verb LIKE-TO. In (217a) Fuad produces a complex sentence with a constituent clause selected by the verb HEAR. Notice that this sequence and the utterances that follow in the description of the narrative episode, in which the boy finally finds the frogs sitting behind a log, involve a shift of the referential framework as the signer adopts the perspective of the boy.

The POVs in (217a-c) are signalled through a change in body orientation and eye gaze direction (to the right). In (217d-f) the boy addresses the dog, requesting him to be quiet. Fuad marks agreement with this referent non-manually, through a change in body orientation and eye gaze (to the left, leaning forward) (note that the dog is referred to explicitly in (217f)). We provide only the first clause of the subsequent event (about the boy's spotting of the frogs) in (217g) to indicate that Fuad changes body orientation and eye gaze direction yet another time (to the right), to narrate the boy's discovery of the frogs behind the log.

Clearly, these complex constructions not only reveal Fuad's use of non-manual means to signal and mark referential shifts, we can also see that agreement is marked appropriately and referential loci are established in a contrastive manner. We will see below, when we discuss the gaps that remain in the use of referential shifts from a narrative perspective that referential identity is not always clear. For present purposes, however, we might conclude that the complex clauses produced, including those that involve referential shift, reflect Fuad's command of the full sentential structure. POVs are chosen where this is required by the selective properties of the verbs involved, for example in (221c) below where the boy pushes the tree, or in constructions with the verb SEE (cf. (214a) above).

(216)   (Fua.-file 1)
                                          [– dom] CL:FORM (container)
        [DET$_{ART}$]$_3$ FROG$_3$ LIKE-TO :   [+ dom] JUMP-OUT
        'The frog wants to get out.'

(217)   a. $_2$<_____>
                THEN   HEAR :   PRON$_{PERS}$ CALL   (Fua.-file 1)
                'The (he = the boy) hears that (he = the frog) is calling.'

         b. $_2$<___
                THEN   SAY:
                '(He) says ...'

         c.   _____
                                [– dom] CL:FORM (log)$_G$
                THINK :   [+ dom] CL:FORM (log)$_G$ WOOD

'... (he) thinks there behind the log ...'

———————————————————————>
[DET$_{LOK}$]$_{BEHIND-G}$ MANY   [DET$_{EXIST}$]$_9$
'(there are) many ...'

d. $_2$<————————————
PLEASE   BE-QUIET$_{(X)}$
'Please be quiet.'

e. ————————————————
LISTEN$_{(X)}$ MUST
'Please listen...'

f. ———————————————————————>
PLEASE   DOG   PLEASE   BE-QUIET
'Please dog, please be quiet.'

g. $_2$<————>
SUPPORT-ON$_{CL:BODY\ PART}$
'(He) supports himself (on something).'

Interrogation. Unfortunately, the narrative produced in file 1 does not contain any evidence concerning question formation.

3.8.1.2 Morphosyntax

Agreement verbs. The analysis of Fuad's file 1 narrative reveals that the processes related to a functional projection above the VP are operative. In particular, agreement and spatial verbs are correctly inflected. Example (218) documents the correct use of the agreement verb LOOK-AT in a narrative sequence that informs about the boy spotting the frogs that are sitting behind the log, which is expressed explicitly in the subsequent clause through the use of DET$_{EXIST}$, associated with the same locus. The sequence also illustrates referential maintenance as the agreement verb TAKE in (218e) also agrees with the locus established previously for the frogs. Notice, additionally, that (218e) involves the use of a complex classifier construction with an h2-classifier backgrounding information about the location upon which the boy puts the frog (his hand).

(218) a. $_2$<————   (Fua.-file 1)
       nm: CL:BODY: looking behind something
       LEAN-ON$_{CL:BODY}$
       '(He = the boy) leans on something.'

       b. ————
       LOOK$_X$
       '(He) looks down.'

c. _____

[STAND-ON$_{CL:\lambda}$]$_{ON-G}$

'(He) stands on something.'

d. _____

[DET$_{EXIST}$]$_9$ FROG$_{\mu/9}$ +++

'Down there, there is the frog.'

e. _____

[– dom] [CL:PALM]$_I$

[PICK-UP $_{CL:\mu}$]   [+ dom] [PUT-ON$_{CL:\mu}$]$_{ON-I}$

'(He) picks (him) up and puts (him) on his hand.'

f. _____>

[– dom] HOLD$_{CL:\mu}$

[+ dom] WAVE$_X$

'(He) waves good-bye, while holding (it = the frog) in his hand.'

Spatial verbs. Fuad produces several constructions with spatial verbs of motion or location. Example (216) above involves the spatial verb CLIMB-OUT in a sequence that describes the frog getting out of the jar. Notice that the ground in this sequence is expressed through an h2-classifier. Also the verb FALL is used several times in this narrative, for example in (220g), discussed below, to recount the boy's falling into the water, whereby FALL correctly agrees with the location established previously via DET$_{LOC}$ (the meaning of the sequence, as we will discuss below, remains unclear, however). FALL is used in (221d) below to describe the falling of an object from the tree (possibly the beehive, although this is not specified).

Example (219) documents Fuad's use of the correct classifier to describe the bees' swarming. Because the subject of THINK is not referred to explicitly (for example, through a pronoun), the reader is left to infer that it is the dog that previously hit the beehive who speculates that the bees are bored and therefore swarm about (we will take up this issue below in the evaluation of the story from a narrative perspective).

(219) a. THINK :   BEE   SWARM$_{TO-THE-RIGHT}$ (Fua.-file 1)

'(He = the dog?) thinks that the bees are swarming about…'

b. A-LOT   BE-BORED

'(They = the bees) are very bored.'

3.8.1.3 Syntax-discourse interface

We have seen previously that Fuad uses several linguistic devices to establish and maintain reference. Nevertheless, Fuad's file 1 is also characterised by referential

ambiguities which, as we will see next, are related to gaps in the mastery of the syntax-discourse interface.

Referential ambiguities. At closer inspection, the analysis reveals that reference remains unclear or even ambiguous in some instances either because not all referents involved in a sequence of events are explicitly mentioned (e.g. (221) below) or because simultaneously occurring events are narrated without a clear marking of referential shifts as it occurs in example (220). In the latter example Fuad describes the scene where the deer, with the boy on its head, and the dog are running toward the precipice. This is a simultaneous event involving three different characters, which imposes a challenge on the signer as simultaneity and perspective shift need to be expressed. Not all perspective changes are clearly marked: the body orientation is kept toward the locus of the addressee in front of the signer. Fuad leans backwards to express how the boy supports himself on the deer in (220a), adopts a neutral upright position to sign ANTLERS before he switches again to an SRF to narrate that the boy holds onto the antlers in (220b). To express the deer's rise, he leans forward, again towards the same direction indicated previously even though this locus has been associated with the boy. By assumption (because reference is not established unambiguously in this narrative passage), he switches back to the perspective of the boy to narrate that he falls forward (on the deer, although this is not mentioned explicitly) in (220d), and continues with an SRF in (220e), in which he adopts the perspective of the running deer. It remains unclear why Fuad mentions the dog in this context. Neither is the meaning of signs following the sign DOG in (220f) clear: does DET$_{LOC}$ refer to the location of the dog? Or does it refer to the location of the boy? Why does he produce the sign BACK-OF-THE-HEAD in this context? By assumption the scene described is the one in which the deer runs toward the precipice with the boy on his neck, and the dog runs parallel to the deer. Yet the meanings expressed in (220) do not fully coincide with the picture story event. Not only does the passage contain some sequences which are ambiguous concerning the subject of the activity described, some parts, notably (220h), are incomprehensible.

(220) a. $_2$<_____>   (Fua.-file 1)
         THEN   BOY$_2$ DEER   BOY$_2$ LEAN-ON$_{CL:BODY}$
         'Then the boy supports himself on the deer.'

       b. $_2$<_____>
         WITH   ANTLERS$_{CL:\delta}$ HOLD-ON$_{CL:\delta}$
         '(He) holds onto the deer's antlers.'

       c. $_6$<___>
         THEN   DEER$_6$ GET-UP$_{CL:BODY \& BODY PART (antlers)}$
         '(He = the deer) rises.'

d. $_{(2)}$<_____>
    FALL-FORWARD$_{CL:BODY}$
    '(He = the boy?) falls forward.'

e. $_{(6)}$<___>
    [– dom] RUN$_{CL:\ BODY\ PART}$
    [+ dom] RUN$_{CL:\ BODY\ PART}$
    '(He, or: they?) run ...'[28]

f. WITH   DOG $[DET_{LOC}]_F$ BACK-OF-HIS-HEAD$_F$
    '... with the dog there, on the back of his head.'

g. RUN$_{CL:PAWS}$
    '... run ...'

h. WATER   LIKE   BOY   DEER   FALL
    '? ... water like boy the deer fall.'

Based on these observations, we may conclude that Fuad does not yet fully master the use of referential shift at this stage, in particular those aspects that are relevant at the discourse level. For further illustration we might consider the sequence in (221), in which the dog is reported to hit the tree (compare (221a)). In the story booklet, we can see that the consequence of this activity is the falling down of the beehive. Fuad, however, does not specify the object argument of the verb in (221b). Because the verb form FALL is produced with the classifier handshape for human beings in (221c), the sequence is ambiguous as to the subject referred to. Only the audience acquainted with the frog story might infer that it is the beehive that fell as Fuad goes on to describe the bees' behaviour (they are angry and frighten the dog). Yet if we follow this interpretation we must note that the classifier element of FALL is not target-like.

(221) $_1$<___>   (Fua.-file 1)

a. THEN   DOG$_1$ SEE : TREE$_\theta$
    'Then the dog sees (there is) a tree...'

b. $_1$<___>
    HIT-IT $_{CL:\theta}$
    '(He) hits it.'

c. THEN   FALL$_{CL:\lambda}$
    'Then (it) falls.'

Reference forms and functions. Fuad uses NPs to introduce the story characters. Reintroduction of referents at this stage occurs predominantly via NPs (with a

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28 The sign RUN is modulated in a way that the two hands appear one behind the other.

relative percentage of 46.7 of a total of 37.5% of reference forms serving this function). Subject drop in reintroductory contexts occurs with a relative proportion of 33.3% (see Table 3.31 and Figure 3.7). Pronouns, by contrast are only used twice with this function. Typically, where protagonists are involved in a series of events, subjects are dropped (the relative proportion of subject drop in this case being of 95.0% of a total of 50.0% of forms serving reference maintenance).

Interestingly, two main protagonists, the dog and the frog, are introduced through as combination of the numeral ONE and an NP (compare (222)). Note, however, that Fuad uses this combination only for the introduction of these two characters (in example (216) above he uses DET_{ART} with an NP to reintroduce the frog, which documents his knowledge of this determiner). Furthermore, example (217) above documents the use of a pronoun, probably to refer to the frog, but this is not mentioned explicitly. Based on these observations we may conclude that the use of the numeral with the NP, a phenomenon that we also observe in narratives of other participants in this study, though possibly an instance of language mixing, does not reflect a deficit in Fuad's DGS grammar. Because the numeral ONE seems to serve the function of an indefinite determiner as it would be used in German at the beginning of a narration, we might speculate that this is a pragmatically determined phenomenon.

(222) $_{1,2}$<____>   (Fua.-file 1)

     ONE   DOG$_1$ AND   BOY$_2$ SEE: ONE   FROG
     'A dog and a boy see (there is) a frog.'

Table 3.31: Reference forms and functions in Fuad's file 1.*

Reference forms	% of all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	32.5	12.5	(100)	17.5	(46.7)	2.5	(5.0)
DET_{ART}/$PRON_{PERS}$	7.5	0	(0)	7.5	(20.0)	0	(0)
Subject drop	60.0	0	(0)	12.5	(33.3)	47.5	(95.0)
All	100	12.5		37.5		50.0	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-7.
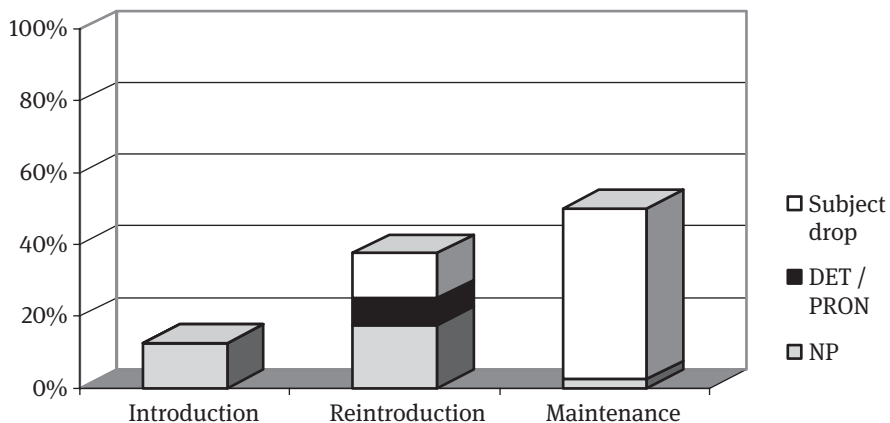
Figure 3.7: Proportion of reference forms and functions in Fuad's file 1.

Expression of spatial relations. Turning to the expression of spatial relations, we can glean from the overview provided in Table 3.32 that Fuad includes information on the ground for the main story events he describes. He chooses NPs to refer to the ground, with only two exceptions, namely, when he narrates the frog's escape out of the jar and when he recounts that the boy puts the frog on his hand. Notice that locations are backgrounded via h2-classifiers in utterances that involve complex classifier predicates. As for reference to the respective subjects we can see that it is not expressed overtly in three cases, all of them produced in the context of event descriptions that involve the same protagonist.

As we can see in example (216) discussed above and repeated here in (223) Fuad relates that the frog wants to get out. However, as the frog's location has not been specified before it remains unclear where he escapes from. Note that the sign GET-OUT is produced with a default h2-classifier hand form for a container. In general, however, more specific information on the ground is provided. In (217) above, for example, we learned that the boy spots the frogs behind the log. The location of the frog is expressed through a complex classifier construction: the h2-classifier refers to the log and DET$_{\text{LOC}}$ is used to determine the actual locus of the frogs. Notice that the ground (the log) is introduced previously via a full NP.

(223)   (Fua.-file 1)

[− dom] CL:FORM (container)

[DET$_{\text{ART}}$]$_3$ FROG$_3$ LIKE-TO   [+ dom] JUMP-OUT
'The frog wants to get out.'

Table 3.32: Expression of figure-ground relations in Fuad's file 1.

Ground / figure		Reference forms		Context		
		Ground [antecedent]	Figure	*R.-Frame-work*	*Verb/DET*	*[activity]*
jar	frog	h2cl	NP	FRF	spatial	[climb out]
tree	dog	NP	drop	SRF	agreement	[hits]
deer	boy	NP	drop	SRF	spatial	[support oneself]
water	boy	NP (DET$_{LOC}$)	drop	FRF	spatial	[fall]
log	boy	h2cl [NP]	pronoun	FRF	DET$_{LOC}$	
boy's hand	frog	h2cl	drop	SRF	agreement	[put]

3.8.2 Further development

Compared with the first narrative in file 1, the narrative flow of the narration in file 3 is smooth, without the hesitations that characterised the first story, which might be taken as an indication of progress in Fuad's command of DGS.

3.8.2.1 Structural complexity
SOV and repetitions. At the level of word order, the analysis reveals that Fuad adheres to the target SOV order with the exception of a few instances, in which additional information is added after the predicate, and one utterance involving a target-deviant word order with the auxiliary PAM (cf. (224)). Examples (225) and (226) illustrate the target-like preverbal placement of the object complement and the locative complement respectively.

(224)   [– dom] SWARM
      THEN   CLEAR :   WHEN   BEE   MANY   [+ dom] SWARM
      ALMOST   PAM$_4$ DOG$_4$
      'Then it is clear that the bees swarm close to the dog.'   (Fua.-file 3)

(225)   THEN   BEE   DISTURB+++   (Fua.-file 3)
      'Then (he = the dog) disturbs (them = the bees).'

(226)   WINDOW$_D$ LOOK$_D$ (Fua.-file 3)
      'There is a window, (he = the boy) looks out of it.'

In this narrative we also find several examples of repetitions. Such repetitions often occur for the purpose of providing further specification. In (227), for example, Fuad provides additional information about the referent(s) involved in the event described. From a narrative perspective, the choice of a subject NP in (227b) contributes to an unambiguous identification (notice that the boy is reintroduced as a protagonist of this narrative episode). Furthermore, in (227d) the original structure of the utterance in (227c)) is expanded in accordance with the target constraints (the modifying expression is correctly placed before the main verb appearing in the sentence-final position).

(227) a. THEN   TIRED   (Fua.-file 3)
          'Then (he) is tired.'
      b. BOY   TIRED
          'The boy is tired.'
      c. SLEEP
          '(He) sleeps.'
      d. WITH   DOG   TOGETHER   SLEEP
          '(He) sleeps together with the dog.'

Notice, however, that the verb does not appear in sentence-final position in example (228), a sequence that also includes a modifying expression involving the preposition WITH. If we contrast (227) with (228) we might speculate on the possibility that (228), too, involves a repetition, but that for some reason the verb was not repeated again. Alternatively, we might assume there is variation regarding the order of the verb and its modifying complements.

(228) AND $[DET_{POSS}]_X$ ROOM   SIT   WITH   FROG   (Fua.-file 3)
      'And (they) sit in his (the boy's?) room with the frog.'

Additional indications for a potential variation at the level of word order can be observed in examples (229) and (230). Notice that in (229), too, we find a post-position of the goal of the boy's aim (to go back home); a similar sequence is repeated shortly after, before the end of the narration (compare (230)). Two interpretations of these seemingly problematic examples are possible: either GO-BACK and AT-HOME in (229) represent a sequence of two separate propositions (the boy wants to go back, and he wants to be at home) or both expressions are combined in a manner that is target-deviant in DGS. As the sequence neither corresponds to a target equivalent in German (recall that the non-finite verb in that language would appear in sentence-final position), language mixing as an option would be ruled out in this case. Interestingly, however, Fuad produces similar sequences in his written German productions at the time, as we can see in (231) and (232), which do not contain the expression *zurück* ('back') but the expression *nach Hause* ('to

home'), appearing sentence-finally in (231) (the verb *gehen* can be dropped in this case), and in (232), in which the adverbial would appear before the non-finite verb in a target-like equivalent.

(229)   BOY   WANT   GO-BACK   HOME   (Fua.-file 3)
        'The boy wants to go back, home.'

(230)   GO   HOME   (Fua.-file 3)
        '(He) goes home.'

(231)   *Paul   mocht   mit   Frosch   nach   Hause*
        Paul   want   with   frog   to   home (Fua.-German, file 3)
        'Paul wants to go home with the frog.'

(232)   *Tom   mochten   jetzt   nehmen   nach Hause*
        Tom   want   now   take   to   home (Fua.- German, file 3)
        'Tom wants to take it home now.'

Complex sentential constructions. Fuad's file 3 documents the use of a broader scope of complex sentential constructions with embedded clauses, which also reflects an increasing complexity at the narrative level. In (233), for example, which involves a constituent clause selected by the verb BELIEVE, we learn about the boy's assumptions about the whereabouts of the frog. Several complex structures with modal verbs are used to narrate characters' intentions or their requests (cf., for example, (239) below, involving the verb MUST).

(233)   BOY   BELIEVE :   PERHAPS   [DET$_{LOC}$]$_{IN}$ FOREST   (Fua.-file 3)
        'The boy thinks perhaps (he = the frog) is in the woods.'

Worthy of mention is the frequent use of coordinated sentential constructions in this narrative. (234) is an example of a complex sentential construction with the coordinating conjunction AND. Note that Fuad uses such coordinated sentences not only to express two activities of one story character as in (234); he also uses coordination as a means to express the simultaneity of events involving two different characters as is illustrated in example (235), in which we learn what the second protagonist (the dog) is doing at the same time as the boy. Note that the expression of simultaneity also occurs through the use of the adverb ALSO (compare example (242) discussed below).

(234) $_1$<_____>   (Fua.-file 3)
                    [– dom] CL:FORM (jar)
        LOOK: [+ dom] CL:FORM (jar)   AND   WAIT
        '(He) looks down, there is the container, and waits.'

(235)   ₄<_____>
          AND   DOG₄   LOOK: WHERE   (Fua.-file 3)
          '... and the dog, too, looks, where is (he)?'

Interrogation. Finally, in this narrative Fuad produces one interrogative clause
with an overt subject (cf. (236)) apart from another one containing only the
wh-word WHERE.

(236)   ₁<_____>   (Fua.-file 3)
          WHERE   [DET$_{POSS}$]₁   FROG
          'Where is my frog?'

3.8.2.2 Syntax-discourse interface
The narration of the frog story produced by Fuad in file 3 reveals a more skilful
use of the linguistic devices necessary for the creation of cohesion and coherence.

Reference establishment and maintenance. In his file 3 narrative, Fuad's
demonstrates an advanced command of linguistic means used to establish
and maintain reference. Consider, for example, the sequence in (237), in which
DET$_{EXIST}$ establishes the locus for the group of frogs sitting behind a log. Notice
that the locus associated with the frog family in (237a) is picked up in (238), in
which we learn that the boy waves good-bye to the frog family. Note that Fuad
signals the POV through a performative verb (SAY) and a change in body orienta-
tion and eye gaze direction to the right.

(237)   ₁<__>
         a. SEE :   [DET$_{EXIST}$]₁₃   MANY   FROG₁₃+++   (Fua.-file 3)
             '(He = the boy) sees there are many frogs...'
         b. WITH   TOGETHER   KIDS   AND   OTHER
             'together with kids and other...'

(238)   ₁<_____>
          SAY :   GOOD-BYE₁₃   (Fua.-file 3)
          '(He) says good-bye (to the frog family).'

The use of determiners and pronouns in this narrative marks a difference to Fuad's
narration in file 1. For example, we can see in (239b) that Fuad uses a pronoun
to address the dog in the context of a POV, in which he adopts the perspective of
the boy. Notice that the locus associated with the pronoun corresponds with the
end point of the sign STAND-UP produced in the utterance immediately preceding
(239b) (that is, (239a)), in which the boy asks the dog to stand up.

(239) a.   ₁<⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯>
        THEN   MUST   GET-UP   (Fua.-file 3)
        'Then (he) (says) (you) must get up.'

     b.   ₁<⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯>
                 manner: with emphasis⎯⎯⎯⎯⎯
        THEN   ORDER :   PRON$_{PERS}$ BE-CAREFUL
        'Then (he) orders: "you be careful".'

In this context we must also note that, in some cases, the referential identity of the pronouns used is not unambiguous. For further illustration we might consider example (240), in which Fuad uses a pronoun in a reintroductory context, after his recount of the frog's escape. This pronoun, produced with emphasis, as it would be the case in the production of a demonstrative pronoun in DGS, is associated with a location in front of the signer, slightly to his left. Now, reference in this case is ambiguous because Fuad has not associated the locus with a referent, so that only the story context might help to infer the identity of the referent associated with the pronoun (Fuad has just recounted that the frog wants to escape from the jar, which, as he explains in this sequence, is not perceived or heard by the boy or the dog because they are sleeping). Although the choice of this locus might seem uncommon at first sight, it must be noted that Fuad also associates a possessive determiner at the beginning of the narrative with this locus in front of him to refer to the room ("the boy's room") the story characters are sitting in. We can only speculate on the possibility that the choice is guided by the use of a contrastive criterion (opposite to the signer), although, as we remarked upon in section 3.1.4.2 signers usually choose a location right or left in the sign space for this purpose.

(240) a.   <u>neg</u>   (Fua.-file 3)
         PRON$_{PERS}$ HEAR
         'He doesn't hear…'

     b.   PRON$_{PERS}$ CAN$_{NEG}$ SEE$_X$
         'He cannot see…'

     c.   CAN$_{NEG}$
         '…(he) cannot…'

     d.   SLEEP
         '…(he) sleeps…'
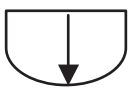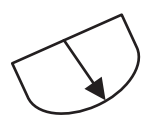
Further, the analysis reveals that DET$_{LOC}$ is productively used to establish loci for locations referred to in descriptions of spatial relations. For example in (241) Fuad specifies the position of the owl (in the tree hole) by modulating DET$_{LOC}$ toward the h2-classifier that backgrounds the information about the hole in a tree, introduced through a lexical antecedent in a previous utterance.

(241)   [– dom] [CL:FORM (tree-hole)]$_H$
     THEN   OWL   [+ dom] [DET$_{LOC}$]$_H$
     'Then the owl, there in the tree hole it is.'

Taken on the whole, the analysis of the data reveals that the distribution of loci in the sign space is such that they contrast with respect to the vertical axis (top-down) and horizontal axis (left-centre), in narrative episodes that involve two characters. Consider, for example (242a) and (242b), the former involving the boy, the latter the dog as an agent. Fuad uses POVs to express the calling for the frog by either character, signalling the respective referential shift through a change in body orientation and eye gaze direction (the POV involving the boy is marked through body orientation to the right, eye gaze direction toward the top; whereas the dog's perspective is marked through body orientation to the left, eye gaze directed toward the bottom of the sign space).

(242)   a. $_1$<_____>   (Fua.-file 3)
             CALL+++
             'He calls.'

        b. $_4$<_____>
             DOG$_4$ TOO   CALL+++
             'The dog calls, too.'

Non-manual means are also skilfully used in quotation environments introduced through a performative verb, as is illustrated in example (243), in which the shift to the perspective of the boy is signalled and marked by a change in body orientation and eye gaze direction: notice that object agreement (picking up the locus associated with the dog) in this case is marked non-manually via body lean forward to the left, eye gaze toward the same direction.

(243) $_1$<_____> (Fua.-file 3)
          THEN   BOY$_1$ SAY :   PST (QUIET)   DOG   PST (QUIET)

          'Then the boy says, be quiet, dog, be quiet.'

The only narrative sequence that continues to be difficult to interpret is the one in which we learn that the boy falls upon the deer's back, the deer starts running and later throws the boy into the water. Referential shifts occur rapidly, and only the deer is referred to lexically via an NP.

Reference forms and functions. With respect to the reference forms used by Fuad to refer to the story characters, one remarkable aspect is that NPs are not only used for the introduction of referents, but also in nearly all instances of their reintroduction. As we can glean from Table 3.33, reintroduction of referents occurs primarily via NPs (77.8% out of a total of 20.7% of reference forms serving this function). If we consider this figure against the backdrop of the relative proportion obtained for file 1 (the relative proportion in that file amounted to 46.7%, cf. Table 3.31 above) the increase in the relative frequency of this form-function combination is certainly remarkable, as is the decrease of the relative frequency of subject drop in reintroductory contexts (from 33.3% to 16.7%). Repetitions of propositions, such as the one provided in example (244), involving the addition of an overt referential expression to unambiguously identify a character in a reintroductory context, might be taken as an indication of an advanced command of narrative constraints on referencing at this stage.

(244) THEN   HEAR.   BOY   HEAR   (Fua.-file 3)
          'The (he) hears. The boy hears.'

Clearly, the use of NPs in contexts other than introduction or reintroduction serves the purpose of making clear who is the agent of the activity described. This occurs particularly in the context of sequences involving referential shifts (see example (243) above).

Finally, it is interesting to note, if we compare the total distribution of reference forms in this file with that of file 1, that it is very similar (compare Table 3.31 above and Table 3.33). Yet considering the functions these reference forms serve, it becomes apparent that these change overt time.

Table 3.33: Reference forms and functions in Fuad's file 3.*

Reference forms	% of all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	28.7	6.9	(100)	16.1	(77.8)	5.7	(7.9)
DET$_{ART}$/PRON$_{PERS}$	4.6	0	(0)	1.1	(5.6)	3.4	(4.8)
Subject drop	66.7	0	(0)	3.4	(16.7)	63.2	(87.3)
All	100	6.9		20.7		72.4	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-8.
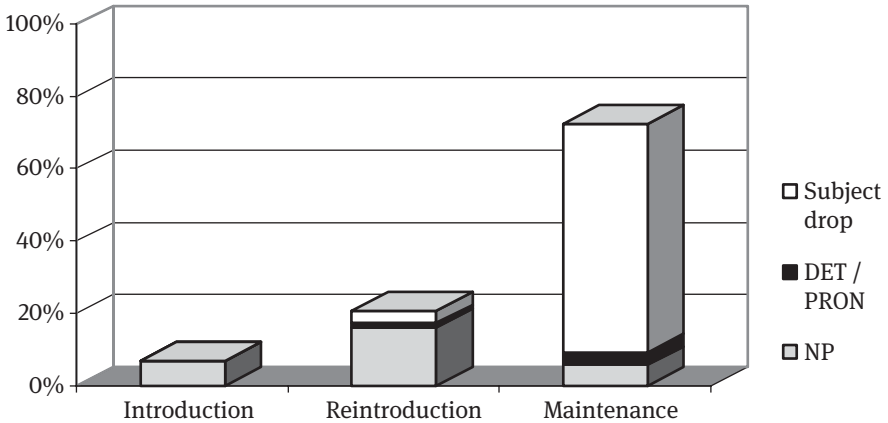
Figure 3.8: Proportion of reference forms and functions in Fuad's file 3.

Expression of spatial relations. We noted previously that Fuad adheres to the (S)XV format in constructions with locative complements. This is also the case in sequences involving a referential shift to describe the protagonist's activity. In (245), for example, we learn that the dog looks into the jar. The ground (the jar) is expressed first, followed by the dog's activity. Similarly, the ground is expressed first in the description of the dog sticking his head into the jar in (246) below. Finally, in (247) we can see that further details about the activities narrated appear in the context of repetitions, in which he provides additional information on the ground (compare (247c)).

(245)

$_4$<_____>
nm: looking inside
$[-\text{dom}]$ HOLD$_{\text{CL:}\xi}$

GLASS$_\xi$ [DET$_{\text{LOC}}$]$_{\text{INSIDE}}$ $[+\text{dom}]$ HOLD$_{\text{CL:}\xi}$ (Fua.-file 3)
'The jar, (he) holds it close, looking inside.'

(246) a. $[-\text{dom}]$ LIFT$_{\text{CL:}\xi}$
THEN   DOG$_4$ $[+\text{dom}]$ LIFT$_{\text{CL:}\xi}$
'Then the dog lifts the jar.'

  b. $_4$<_____>
GLASS   [PUT-ON$_{\text{CL:}\xi}$]$_{\text{ON-HEAD}}$
'(He) sticks his head into the jar.'

(247) a. THEN   CLIMB$_{\text{UP}}$ (Fua.-file 3)
'Then (he) climbs up.'

  b. BOY   LOOK$_{\text{X}}$
'The boy sees...'

    c.   STONE   CL:FORM$_K$ [CLIMB$_{ON}$]$_K$
        'There is a stone (he) climbs on.'

Reference to the ground, as we can glean from Table 3.34, occurs via NPs or h2 classifiers. Also, lexical antecedents introduce information about the ground that is later backgrounded in complex classifier constructions, which contributes to the overall coherence of the narrative. For further illustration of the previous observations consider examples (248) and (249). In (248a) an h2-classifier is used to express that the boy looks into a boot, which is then described in more detail by shifting the referential framework and adopting the perspective of the boy. In (249) the h2-classifier backgrounds information on the location (the log) upon which the boy gets before he discovers the frogs.

(248) a.   [– dom] CL:FORM (boot)   (Fua.-file 3)
        BOOT   [+ dom] LOOK
        '(He) looks into a boot.'

      b. ₁<_____>
        nm: CL:BODY: looking inside
        [– dom] CL:FORM (boot)
        [+ dom] CL:FORM (boot)
        '(He) holds it up and looks inside.'

(249) a. THEN   GO$_{AROUND}$ (Fua.-file 3)
        'Then (he = the boy) goes around...'
      b.   [– dom] [CL:FORM (tree trunk)]$_G$
        WOOD   CL:FORM (trunk)$_G$ [+ dom] CLIMB$_{ON-G}$
        '(He) climbs on the log.'

Table 3.34: Expression of figure-ground relations in Fuad's file 3.

Ground	Figure	Reference forms		Figure	Context		
		Ground [antecedent]		Figure	R.-Framework	Verb/DET	[activity]
window	boy	NP		drop	FRF	agreement	[look out]
glass	dog	cl	[NP]	NP	SRF	agreement	[put on]
mound-hole	boy	NP		drop	SRF	agreement	[look inside]
tree hole	boy	NP		drop	FRF	agreement	[look inside]
stone	boy	NP		drop	FRF	spatial	[climb up]
deer (antlers)	boy	cl	[NP]	drop	SRF	agreement	[hold on]
log	boy	h2cl	[NP]	drop	FRF	spatial	[climb up on]

3.9 Developmental profile: Hamida

Hamida's DGS productions at the onset of the study reveal that she has a command of the target grammatical properties (cf. Table 3.35). Word order adheres to the target constraints, revealing the appropriate fixation of the VP and IP-headedness parameters. While the full CP structure is available to Hamida in file 1, she exploits this expanded structure mainly for the expression of complex constructions with POVs, which she uses abundantly to describe the protagonists' activities. Another characteristic of the file 1 narrative is the sparing provision of background information. Deficits become apparent in the mastery of the syntax-discourse interface as Hamida does not choose referential loci contrastively or consistently.

In contrast to file 1, Hamida's narrative in file 3 is characterised by a more consistent recounting of the frog story. Her narration is coherent, reflecting also her skilful use of the target linguistic devices to establish cohesion. All in all, the structures produced are remarkably complex, providing evidence for the availability of the full sentential structure. Typically, sketches of the characters' activities are followed by more detailed accounts of the story events, their temporal and causal relations. Information about figure-ground relations is provided in the majority of cases. Also, changes between FRFs and SRFs in file 3 are easier to follow because Hamida often uses full NPs to reintroduce referents.

3.9.1 DGS competence at the onset of the study

3.9.1.1 Syntax

Word order. The analysis of Hamida's DGS productions at the onset of the study reveals that she adheres to the target grammatical constraints. Although file 1 does not contain SOV constructions, in which all elements would be expressed overtly, XV sequences with modifying complements appearing before the verb, such as the ones provided in (250), can be taken as an indication of her adherence to the target OV order. Notice that (250) involves a semi-repetition of propositions, a phenomenon remarked upon previously in the discussion of the narratives of other participants in this study.

(250) a. THEN   FOREST(2X)   SEARCH++   (Ham.-file 1)
       b. LONG-TIME   SEARCH
           'Then (they) search in the forest. (They) search for a long while.'

Complex sentential constructions. Evidence of complex sentential constructions other than those involving referential shifts (POVs) is rare in Hamida's file 1. Notice that the subordinated clause in (251), in which we learn that the boy has

Table 3.35: Hamida's DGS profile.

Syntax-discourse interface		[file 3]	Spatial relations
		[file 3]	Referential shift
		[file 3]	Reference forms / functions
		[file 3]	Referential establishment / maintenance
		[file 1]	Simultaneous constructions
CP	Questions	[file 3]	₁<_____> BOY₁ EXCITED : FROG DISAPPEAR HOW 'The boy (asks) excited: How has the frog disappeared?'
		[file 1]	[single wh-word interrogatives]
	Referential shift (POV)	[file 1]	₂<___> ₃<___> FROG₂ LOOK_X AND DOG₃ LOOK_Y 'The frog looks up and the dog looks in front of him.'

	Embedded clauses	[file 3]	Relative clause
			        [– dom] [CL:FORM (container)]_A(HEAD)
			 a. SUDDENLY ONE DOG₂ [+ dom] [CL:FORM (container)]_A(HEAD)
			     _____ rel
			 [DET_REL]_A GLASS
			 b. ₂<_____>
			 [– dom] PUT-ON_ON-A
			 [+ dom] PUT-ON_ON-A
			 'Suddenly a dog puts a container made of glass on his head.'

		[file 1]	_X<___> SEE : SLEEP '(He = the frog?) sees that (?) is sleeping.'
IP	PAM -agreement-		- no evidence -

	Complex classifier constructions	[file 3]	[– dom] [TREE ----------------------------------]
			 a. TREE_B [+ dom] [DET_EXIST]_B (signer thinks) HONEY
			    'There is a tree, there is ...honey...
			    [– dom] [CL:FORM (round container) --------]
			 b. [+ dom] CL:FORM (round container) [DET_LOC]_IN-C
			    '... inside a container...'

	DET_EXIST -agreement	[file 1]	a. [DET_EXIST]₂ b. FROG₂ SEARCH , [DET_EXIST]₂ 'There (he) is. There (he) is, the frog searched.'
	Verb agreement	[file 1]	_{1,3}<___> BOY₁ DOG₃ WAVE₇ 'The boy and the dog wave to (them = the frog family).'
	IP headedness	[file 1]	a. THEN FOREST(2x) SEARCH++ b. LONG SEARCH 'Then (they) search in the forest, for a long while.'
VP	VP headedness		*- see IP headedness -*

located the frog he has been searching, is preposed to the existential determiner establishing the location of the frog. Incidentally, in (252) the frog is reported to see that the boy and the dog are sleeping. Note, though, that Hamida does not provide any information on the subject of the main and the embedded clauses in this sequence, which marks the beginning of the restart of her narration of the frog story[29]. We will come back to this deficit at the narrative level later on.

(251) a. $[\text{DET}_{\text{EXIST}}]_2$
　　　b. FROG$_2$　SEARCH ,　$[\text{DET}_{\text{EXIST}}]_2$ 　　　　　　　　　(Ham.-file 1)
　　　　　 'There (he) is. There (he) is, the frog searched.'

(252) $_x$<_>
　　　SEE :　SLEEP 　　　　　　　　　　　　　　　　　　　(Ham.-file 1)
　　　'He (the frog?) sees that (?) is sleeping.'

Referential shifts occur frequently in file 1. Hamida signals and marks POVs non-manually, via changes in body orientation, eye gaze direction, and facial expression. We will discuss several examples in the course of the following sections, where we will also pay attention to several grammatical phenomena in these constructions. The analysis of these constructions makes apparent that POVs are used where this is grammatically required (subcategorisation, reported dialogue). Hamida not only describes activities and emotions of the story characters, but also expresses their remarks and requests. In (253), for example, we learn that the boy seems to be in full command of the situation as he tells the dog that he should not be worried because they are close to the frog's location.

(253) a. 　　　　　　　　　　$_1$<_____
　　　　　 THEN　BOY$_1$:　NONSENSE 　　　　　　　　　　　　(Ham.-file 1)
　　　　　 'Then the boy... (says to the dog) ...nonsense...'
　　　b. _____
　　　　　 LAUGH
　　　　　 '...(he) laughs...'
　　　c. _____>
　　　　　 NEARLY　SOON　$[\text{DET}_{\text{EXIST}}]_2$　FROG$_2$
　　　　　 'It is nearly there, the frog.'

---

29 In previous utterances she introduces the three main characters, that is, the boy, the dog, and the frog but does so without any explicit reference to the initial episode of the frog story.

Interrogation. Finally, we note that Hamida produces several single word interrogative clauses in this narrative containing the wh-words WHERE or WHAT (only in (263d) below she produces the sequence FROG WHERE).

3.9.1.2 Morphosyntax

Verb agreement. Turning to the grammatical processes associated with the availability of a functional projection above the VP, the IP, the analysis reveals that verb inflection is productive in file 1. Hamida produces several agreement verbs in this narrative. These include the verb LOOK-AT, as in examples (254a,b). Notice that the verbs are modulated differently, that is, in (254a) the tips of the fingers are directed toward the top (to express the frog's looking upwards), whereas in (254b) the sign is directed toward a location in front of the signer. No object is specified in these sequences, nor do the verbs pick up loci established before. Hence, the activities described remain generic, although the audience familiarised with the book might infer that the sequences refer to the episode in which the frog and the dog look at each other. Referential ambiguity, as we will see below in the section dedicated to the syntax-discourse interface, represents a recurrent phenomenon in this file. There are, however, examples of unambiguous referential identity such as (255): the locus associated with the frog family, picked up at a location toward the centre of the sign space, at the bottom (slightly to the right), is also picked up by the verb WAVE to agree with the object.

(254) a. $_2$<____>   (Ham.-file 1)
              FROG$_2$ LOOK$_X$
                                 $_3$<_____>
        b. AND   DOG$_3$ LOOK$_Y$
              'The frog looks up... and the dog looks in front of him.'

(255) $_{1,3}$<__>
              BOY$_1$ DOG$_3$ WAVE$_7$ (Ham.-file 1)
              'The boy and the dog wave to (them = frog family).'

Spatial verbs. Hamida produces several constructions with the verb FALL (compare example (256c)). Owing to her preferred use of shifted referential frameworks to describe the character's activities, their motion, too, is often described in the context of POVs, whereby the body is used as a classifier. Notice that in (256) Hamida uses fixed and shifted perspectives to provide a detailed description of the narrative episode concerning the boy and the dog's falling (no location is specified). This combination of FRFs and SRFs is typical of this narrative, as we can also see in (257). In this sequence, Hamida recounts that the deer is nervous and cross (recall that the boy has fallen on his neck), jumps up and runs away.

(256) a. $_{1,3}$<_____   (Ham.-file 1)

BOY$_1$ DOG$_3$ FALL-DOWN$_{CL:BODY}$

'The boy and the dog fall down.'

   b. _____>

BALANCE-LOOSE

'(They) loose their balance.'

   c. manner: with full force

FALL

'(They) fall down, with full force.'

(257) a. $_6$<_____   (Ham.-file 1)

NERVOUS

'(He = the deer) is nervous.'

   b. _____

manner: wild, excited

BE-CROSS

'(He) is cross.'

   c. ____

JUMP

'(He) jumps, excited.'

   d. _____>

RUN$_{CL:BODYPART}$

'(He) runs away.'

3.9.1.3 Syntax-discourse interface

Referential establishment and maintenance. In file 1, Hamida uses several linguistic means to establish and maintain reference. Worthy of mention is Hamida's use of DET$_{EXIST}$ in those sequences in which she reports about the frog and his purported location (compare examples (251) and (253) above, and (258)). Referential loci established via this determiner are correctly picked up in subsequent sequences containing related agreement verb forms (recall the example recounting the boy's waving at the frog family in (255)).

(258) FROG$_3$ CROAK.   [DET$_{EXIST}$]$_{B/3}$ (Ham.-file 1)

'The frog croaks. (He) is there.'

In this narrative, Hamida produces two constructions with determiners that are associated with a locus at a location toward her right, where the story pictures are displayed. In one of these utterances (cf. (259)), produced at the beginning of the narration, the main protagonist (the boy) is associated with this locus. Later

in the narrative, the boy is reintroduced through a pronoun associated with the same locus (compare (260)).

It is important to note that throughout the narrative Hamida looks to the pictures at her right several times. Part of the omissions of specifications concerning referents or ground elements may result from her strategy of describing the events represented on the pictures in a manner that presupposes the audience' acquaintance with these pictures. This might be one aspect to take into consideration in the interpretation of the propositions in (261) which involve the verb STOP and the verb BARK. By assumption, in (261) the dog is addressing the deer, urging him to stop running (with the boy on his neck). Hamida uses a shifted referential framework to recount the dog's activity. However, the referential shift follows the narration of the boy's falling from the deer. So, once again, the addressee of the dog's urge is not expressed overtly. Neither can it be retrieved from the immediate narrative context. Consequently, the audience is left to infer it from the picture book.

(259) THEN+ $[DET_{ART}]_1$ BOY$_1$ SLEEP (Ham.-file 1)
‘Then the boy sleeps.’

(260) $[PRON_{PERS}]_1$ SEARCH (Ham.-file 1)
‘He searches.’

(261) $_3$<_____> (Ham.-file 1)
DOG$_3$ STOP . BARK-AT$_6$
‘The dog (begs him) ‘stop’. ‘(He) barks at (him = the deer).’

From a more global, narrative perspective, it becomes apparent that referential ambiguity results from the circumstance that Hamida does not always establish loci contrastively in the sign space. Because she typically marks referential shift through a body lean forward or backward, without a distinguished use of either locus on the vertical axis, referential ambiguity arises where no lexically overt reference form is used as an additional means to indicate the identity of the agent of the action.

For further illustration consider examples (262) and (263), succeeding each other in Hamida's recount of the frog's escape and the boy's realisation of his disappearance. In (262)) she adopts the perspective of the frog to narrate his escape (no specification of the location the frog is leaving from is provided, though). In addition to a body lean forward the subject NP (FROG) is used to signal the POV, with the effect that referential identity of the subject in this case is clear. Now, in example (263), Hamida uses the same non-manual markings to signal POVs

involving the boy as a subject. No lexically overt reference form is used in this case, so that referential identity remains potentially ambiguous.

(262) a. $_2$<‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾   (Ham.-file 1)
           <u>nm: CL:BODY: drawing-up</u>
       THEN   FROG$_2$
       'Then the frog draws up.'

       b.   ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾>
                  <u>manner: fast</u>
       [– dom]   JUMP-OUT
       [+ dom]   JUMP-OUT
       '(He) jumps out quickly.'

       c.   GO-AWAY
       '(He) goes away.'

(263) a.   THEN   DISAPP...   (Ham.-file 1)
       'Then, disapp(eared)...'

       b. $_1$<‾‾‾‾‾‾‾‾‾‾‾‾
       WHERE   PLEASE?
       'Where please?'

       c.   ‾‾‾‾‾‾
       BE-GONE
       '(It) is gone.'

       d.   ‾‾‾‾‾‾‾‾‾‾‾‾‾‾
       FROG   WHERE
       'Where is the frog?'

       e.   ‾‾‾‾‾‾‾>
       NOT-ANY
       'There is no (frog).'

***Reference forms and functions**.* We have remarked previously, that referential identity remains ambiguous at times in Hamida's file 1 narrative, in particular, where referential shifts involving different protagonists succeed each other. Hamida chooses NPs not only to introduce new referents. NPs are also predominantly chosen in reintroduction contexts (with a relative percentage of 53.8 out of the total of 17.3% of reference forms serving this function, cf. Table 3.36). Subject drop in narrative episodes involving the reintroduction of the boy or the frog is also a frequent option, which is reflected in the referential ambiguity remarked upon previously. With a relative percentage of 96.4 subject drop clearly is the option of choice in those narrative passages that involve the same protagonist.

Table 3.36: Reference forms and functions in Hamida's file 1.*

Reference forms	% of all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	20.0	8.0	(100)	9.3	(53.8)	2.7	(3.57)
DET$_{ART}$/PRON$_{PERS}$	2.7	0	(0)	2.7	(15.4)	0	(0)
Subject drop	77.3	0	(0)	5.3	(30.8)	72.0	(96.4)
All	100	8.0		17.3		74.7	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-9.
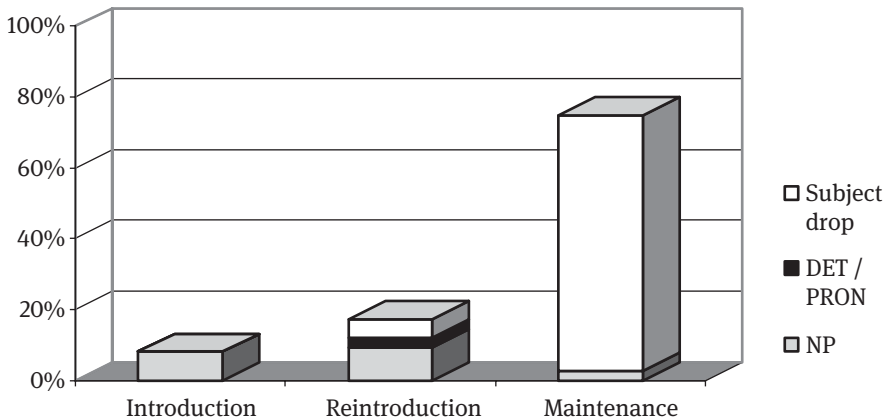
Figure 3.9: Proportion of reference forms and functions in Hamida's file 1.

Expression of spatial relations. We have remarked previously that Hamida is sparing in her provision of background information. As a consequence, cause-effect relations or the temporal relation of narrative events remain implicit and can only be inferred by those in the audience who are acquainted with the plot of the story. Also, scrutinising the narrative for spatial relations reveals that Hamida does not provide specific information on the ground in her description of narrative events, either in terms of locative complements or information backgrounded through h2-classifiers. Rather, spatial relations remain largely unexpressed (compare the overview provided in Table 3.37). Hence, for example, it remains unclear where the frog escapes from (compare example (262) above), although we get to know that he climbs out of something. Also, Hamida does not mention that the owl suddenly appears out of the hole in the tree the boy has been looking

into, because the nature and the location of this opening (or hole) were never specified in the first place. Finally, the falling of the boy caused by the deer's motion remains unclear because the signer has not mentioned that the boy has fallen onto its neck.

Table 3.37: Expression of figure-ground relations in Hamida's file 1.

Ground / figure		Reference forms		Context		
		Ground [antecedent]	Figure	R.-framework	Verb/DET	[activity]
(container)	frog	CL:FORM	drop	SRF	spatial	[jump out]
(jar?)	dog	CL:FORM	drop	SRF	agreement	[look into]
(tree hole?)	boy	CL:FORM	drop	SRF	agreement	[look into]
(log?)	boy	CL:FORM	drop	SRF	agreement	[hold on]

Hamida's sparing use of background information might be due, in part, to her preference, at this stage, for a narration of the story events via SRFs. The body as a classifier is used for the description of protagonists' activities, and information on spatial relations, where it is provided, is expressed via generic classifier elements. From a narrative perspective, the effect is that Hamida's narration remains "impressionistic", as the characters' activities are recounted in a sketchy way and temporal and causal relations remain to be inferred by the audience. For further illustration, consider example (264). In this sequence, Hamida recounts that the dog looks into some type of opening (a hole?). Notice that the POV contains no specific information on the location; we might only infer that there is an opening of some sort because the two-handed CL:FORM produced indicates the shape of a container (non-manual means, that is, body lean forward, are used to inform about the boy looking closely into the location).

(264) a. $_3$<_____>
         DOG$_3$ STRETCH   (Ham.-file 1)
         'The dog has a stretch.'

      b. $_3$<_____>
                    nm: CL:BODY: leaning forward, looking inside
                    [– dom] CL:FORM (opening)
         CURIOUS   [+ dom] CL:FORM (opening)
         '(He) looks into some hole with curiosity.'

Mixed perspectives. Some narrative passages document the use of a mixed perspective, that is, protagonists' activities are described from both the narrator and

the character's perspective. This is the case in (265b,c), for example, in which additional information on the original activity (the boy's looking into an opening, probably a tree hole, but this is not mentioned explicitly), expressed previously in the context of an SRF, is provided from a narrator perspective via signs produced with the dominant hand while non-manual markers and the discourse buoy produced by the non-dominant hand are used to express the boy's continued looking into the hole.

(265) a. $_1$<_____   (Ham.-file 1)
         nm: CL:BODY: leaning forward, looking deep inside
         [– dom] CL:FORM (opening)
   BOY$_1$ [+ dom] CL:FORM (opening)
   'The boy leans forward, looking into a hole.'

    b.   _____
         [– dom]   [CL:FORM (opening) --------
         [+ dom]   WAIT
         '(He) waits, looking into the opening.'

    c. _____
         [– dom]   -----------------]
         [+ dom]   ENDURE]
         '(He) endures.'

    d.   _____>
         nm: CL:BODY: lean forward, looking deep inside
         [– dom]   CL:FORM (opening)
         [+ dom]   CL:FORM (opening)
         '(He) looks deeply inside the opening.'

Our preceding observations allow for the conclusion that Hamida is a very creative narrator. Her narrative is full of recounts of the characters' remarks, emotions and activities. Notice, in addition, that her narration also includes comments from a narrator's perspective, such as her comment on the deer's antlers' similarity with a tree (rather, the branches) (compare (266)). However, while she indicates this way that she fully understands the boy's misperception, the boy's misperception as such is not picked out as a theme. From a narrative perspective, this mismatch is characteristic of Hamida's narration in file 1.

(266) SIGNER<_____> (Ham.-file 1)
   BE TRUE .   LOOK-LIKE   LIKE   TREE .   THAT-S-RIGHT
   'It's true. It looks like a tree. That's right.'

3.9.2 Further development: mastery of the syntax-discourse interface

Compared with file 1, Hamida's narrative in file 3 is characterised by a more consistent recounting of the frog story. Her narration is coherent, reflecting also her skilful use of the target linguistic devices to establish cohesion.

3.9.2.1 Syntax

Structural complexity. All in all, the structures produced in file 3 are remarkably complex. Typically, sketches of the characters' activities are followed by more detailed accounts of the story events, their temporal and causal relations. Intricate narrative events are expressed via complex sentential constructions and simultaneously expressed propositions. For further illustration we might consider example (267). Notice that (267) involves a relative clause modifying the object the dog sticks his head into. This sequence is not only remarkable from a structural perspective, it also highlights Hamida's progress at the narrative level (recall that few details were provided in file 1). It is important to note also that relative clauses were not observed in the productions of the other participants in this study, with the exception of Muhammed.

(267)   (Ham.-file 3)

    a.   [– dom] [CL:FORM (container)]$_{A(HEAD)}$

       SUDDENLY   ONE   DOG$_2$ [+ dom] [CL:FORM (container)]$_{A(HEAD)}$

                            rel
       ———————————
       [DET$_{REL}$]$_A$ GLASS

    b. $_2$<————>

       [– dom]   PUT-ON$_{A(HEAD)}$

       [+ dom]   PUT-ON$_{A(HEAD)}$

       'Suddenly a dog puts a container made of glass on his head.'

While Hamida produces several single wh-word interrogative clauses, we also find several examples of fully expressed interrogations, such as the one provided in example (268). Again, the sequence is remarkable from a narrative perspective also, as the signer informs about the emotions of the protagonist who is excited about how the frog might have escaped.

(268) $_1$<————————————————————> (Ham.-file 3)

      BOY$_1$ EXCITED   :   FROG   DISAPPEAR   HOW

      'The boy (asks) excited: How has the frog disappeared?'

Hamida's skilful shifting of referential frameworks in file 3 includes the use of mixed perspectives, as is illustrated in (269). Notice that Hamida signs the verb

WAKE-UP first in combination with a sleepy facial expression; while the verb sign is kept on hold she changes her facial expression to one full of curiosity, and, after leaning slightly to the side and forward (as if spotting the empty jar) she changes the facial expression to one of surprise.

(269) ₁<_____>
     [manner: sleepy   eagerly/delighted   surprised]   (Ham.-file 3)
     [WAKE-UP --   ]
     '(He = the boy) wakes up, looks in front of him sleepy, eagerly, with surprise.'

Another remarkable phenomenon concerns the production of semi-repetitions, which typically involve the provision of more specific information about the activity described in the first place. In (270), for example, the location of the boy's search is further specified. In other cases, as in (271), the proposition is repeated to provide information about the agent of the activity (in (271) the relevance of this information results from the circumstance that the boy is reintroduced as a protagonist after the description of the frog's escape).

Because this "delayed" provision of information in the context of repetitions is a recurrent phenomenon in the narratives collected, caution is required in the interpretation of some sequences, in particular where sentence boundaries are difficult to establish. This is the case in example (272). Notice that the overt reference to the frog in (272) occurs between the first and the second proposition which leaves us with the question of where to establish sentence boundaries in this sequence, which is a critical question given that VS orders are not target-like in DGS. The choice of the verb THINK in (272) might strike us as unusual at first sight (because Hamida goes on to describe that the frog climbs out of the jar), yet we have also seen in other narratives collected in this study that participants often recount this episode by pointing out first that the frog has the idea of leaving, before narrating then that he actually escapes. Finally, worthy of mention is Hamida's use of adverbials (for example, LATER in example (271), THEN in example (272), or SUDDENLY in (267) above) to mark temporal relations between the events narrated.

(270) a. SEARCH++   (Ham.-file 3)
      b. [DET_{LOC}]_{IN-A}   HOUSE   SEARCH
         'He searches. (He) searches in the house.'

(271) a. LATER   SLEEP   (Ham.-file 3)
      b. BOY   SLEEP
         'Later (?) sleeps.   The boy is sleeping.'

(272) THEN   EVENING   THINK: FROG   JUMP-OUT   (Ham.-file 3)
     'Then, in the evening, (he = ?) thinks, the frog climbs out.'

Simultaneous constructions. Hamida's advanced narrative competence is also reflected in the use of several simultaneous constructions. In (273), for example, we can see that the determiner DET$_{\text{EXIST}}$ is produced simultaneously with FROG. The sequence in (274) illustrates the use of a mixed perspective to express that the dog sits on the head of the boy, frightened (because he doesn't like the water they have fallen into). While the non-dominant hand retains the perspective of the dog, the dominant hand is used to express his fright.

(273) a. $_1$<__>   (Ham.-file 3)
            SEE: [DET$_{\text{EXIST}}$]$_{3/B}$ FROG$_3$
            '(He) sees that the frog is there.'

       b. [– dom] FROG$_3$
           [+ dom] [DET$_{\text{EXIST}}$]$_{3/B}$
           'The frog is there.'

(274) a. THEN   [SIT$_{\text{LOC}}$]$_{\text{A:ON HEAD}}$ (Ham.-file 3)
            'Then (he = the dog) sits (on the boy's head),'

       b. $_2$<_____
           nm: frightened

           SIT$_{\text{CL:BODY PART}}$
           '(He) sits there frightened.'

       c. _____>
           nm: frightened
           [– dom] SIT
           [+ dom] FRIGHT
           '(He) sits there frightened.'

3.9.2.2 Syntax-discourse interface

Verb inflection and the syntax-discourse interface. While we found grammatical processes related to functional projections above the VP to be operative already in file 1, it becomes apparent in file 3 that this knowledge is used so as to comply with discourse requirements. In other words, we observe the mastery of the mechanisms that determine the interface between syntax and discourse. For further illustration of how spatial verbs and agreement verbs are used in complex descriptions of the story events, we might consider the sequence provided in (275). We can see that Hamida recounts first the bee's approaching by using a spatial verb within a fixed referential framework; she then shifts reference and adopts the perspective of the bee to recount how it flaps its wings, frightening the dog, before she switches back to an FRF to recount that the dog is nearly stung by

the bee using the agreement verb STING. Notice that Hamida uses the body as a classifier to indicate the location of the stinging (the dog's neck).

(275) a. BEE$_6$ COME   (Ham.-file 3)
           'The bee comes.'

    b. $_6$<_____>
           FLY$_{CL:BODY\ PART}$ #unclear sign#
           '(It) flies.'

    c. DOG$_2$ NEARLY   DOG$_2$ $_6$[STING$_{LOC:NECK}$]$_2$
           'It nearly stings the dog on the neck.'

Reference forms and functions. Changes between FRFs and SRFs in file 3 are easier to follow because Hamida often uses full NPs to reintroduce referents other than the boy. For further illustration consider example (276), the sequence in which Hamida recounts how the dog looks at a beehive with the belief that the frog might be in it. The sequence also documents Hamida's skilful use of complex classifier constructions at this stage, which marks a difference to her narrative in file 1 (recall that in that narrative this type of construction was not documented).

(276) a. $_2$<_____>   (Ham.-file 3)
           <u>nm: CL:BODY: stretching upward</u>
           THEN   DOG$_2$ HOLD-ON$_{CL:\pi}$
           'Then the dog stretches, holding on (something), looking upward.'

    b.   [– dom] [TREE ---]
           TREE$_B$ [+ dom] [DET$_{EXIST}$]$_B$ (signer thinks)   HONEY
           'There is a tree, there is ...honey...'

    c. [– dom] [CL:FORM (round container) -------------------------]
           [+ dom] CL:FORM (round container)   [DET$_{LOC}$]$_{IN-C}$
           '... inside a container...'

    d. [DET$_{EXIST}$]$_C$
           'there is...'

    e. $_2$<_____>
           <u>nm: CL:BODY: stretching p, looking inside</u>
           HOLD-ON$_{CL:\pi}$
           '... (he) holds on to the rim (of the beehive), looking inside.'

Subject-drop continues to predominate as the option of choice where the boy is reintroduced as a protagonist, which is reflected in turn in the relatively high frequency of subject-drop (46.2% out of a total of 22.4% of reference forms serving this function, the same percentage obtained for NPs, cf. Table 3.38 and Figure 3.10).

The analysis of the data also reveals that there are still some complex events that represent a challenge for the signer, such as the one involving the boy's falling on the deer after his misperception of the deer's antlers (cf. examples (277) and (278)). Note though that the attribution of the thematic perspective to the boy renders it easier to discern which activities are to be assigned to the deer and the dog respectively. Hamida first produces the sequence in (277), which is followed by a sketch of other events occurring simultaneously to this one (such as the owl's watching at the top of a tree, not included in the example). She then recounts the boy's calling for help in (278a), before she finally describes the boy's misperception, as he holds himself on the antlers of a deer without knowing it.

(277) a. SUDDENLY   DEER   (Ham.-file 3)
           'Suddenly the deer.'
       b. SUDDENLY   FALL
           'Suddenly (he = the boy) falls.'

(278) a. THEN   SUDDENLY   QUIET   CALL   (Ham.-file 3)
           'Then suddenly (he) calls, "be quiet".'
       b. $_{(1)}$<_____>
           HOLD ON
           '(He) holds on to something…'
       c. DEER$_6$ [DET$_{LOC}$]$_B$ [DET$_{EXIST}$]$_6$
           '… the deer (down) there…'
       d. $_6$<_____>
           DEER$_6$ THEN   CRANE-FORWARD
           'Then the deer cranes his neck…'
       e. $_1$<_____
           nm: CL:BODY: startles
           [HOLD$_{CL:\pi}$]
           'He holds on to the antlers.'
       f. _____
           BE-FRIGHTENED
           '(He) is frightened.'
       g. _____
           SWAY
           '(He) sways.'
       h. _____>
           FALL
           '(He) falls.'

Table 3.38: Reference forms and functions in Hamida's file 3.*

Reference forms	% all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	20.7	6.9	(100)	10.3	(46.2)	3.4	(4.9)
DET$_{ART}$/PRON$_{PERS}$	3.4	0	(0)	1.7	(7.7)	1.7	(2.4)
Subject drop	75.9	0	(0)	10.3	(46.2)	65.5	(92.7)
All		6.9		22.4		70.7	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-10.
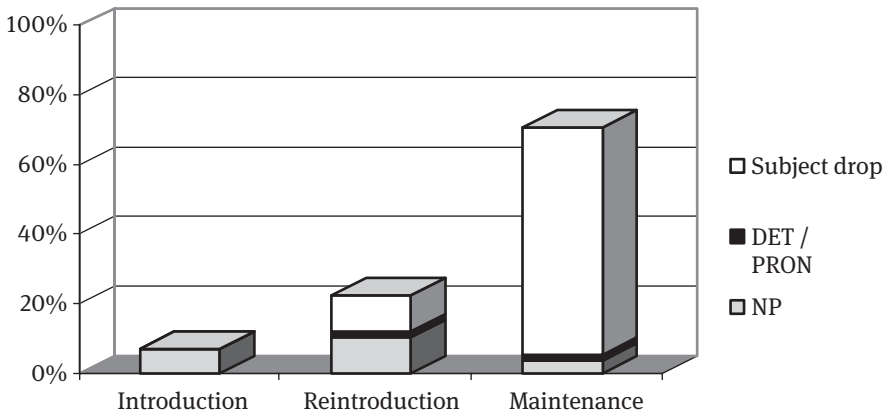
Figure 3.10: Proportion of reference forms and functions in Hamida's file 3.

Language contact. It must be noted in this context that one recurrent phenomenon in file 3 is the use of the numeral ONE in combination with the subject NP (compare (267) above). Example (279) is remarkable because it contains an indication of the cross-linguistic dimension of the use of this determiner: the production of the letter E might be taken as evidence for her aim to spell the determiner *ein* ('a') as it would be spelt in written German. In fact, what might be attributed the status of a slip of the hand provides a clue about language mixing given that the determiner is not fully spelt, as Hamida interrupts the spelling and continues to produce the numeral ONE instead. Because ONE seems to fulfil the function of an indefinite determiner, that is, the determiner the participants commonly use in combination with nouns in their written German narratives, it seems we are dealing here with a potential candidate for language mixing.

(279) a. THEN   HELPLESS   SEARCH   (Ham.-file 3)
           'Then (he) searches helplessly.'
       b. TOILSOME
           'With difficulty.'
       c. E   ONE   DOG   FALL-DOWN
           'A dog falls down.'

Expression of spatial relations. In contrast to file 1, in which spatial relations remained largely unexpressed, information on figure-ground configurations is provided in the majority of cases in file 3. As we can glean from the summary provided in Table 3.39 Hamida often uses NPs to designate the objects or locations in question (cf., for example, (280)).

(280) THEN   CL:FORM (heap)   EARTH   COME$_{OUT}$ (Ham.-file 3)
           'Then (he = the hamster) comes out of the mound of earth.'

Only the location of the frog's escape remains unaccounted for in this narrative, as Hamida uses a complex classifier construction with a generic h2-classifier, but does not recount before that the frog was sitting in a jar. While the scene as such is clear, we must note that the relation between this object and the jar the dog puts on his head, remains unexpressed.

Table 3.39: Expression of figure-ground relations in Hamida's file 3.

Ground / figure		Reference forms		Context		
		Ground [antecedent]	*Figure*	*R.-Framework*	*Verb/DET*	*[activity]*
(jar)	frog	h2cl	NP	FRF	spatial	[jump out]
(jar)	frog	drop	drop	SRF	spatial	[get out]
(jar)	frog	h2cl	drop	FRF	spatial	[jump out]
jar	dog	DET NP	NP	FRF	agreement	[puts on]
(sill)	boy	drop	NP	SRF	spatial	[support on]
soil mount	hamster	h2cl [CL:FORM]	drop	FRF	spatial	[come out]
beehive	frog	NP	NP	FRF	pred	[DET$_{LOC-IN}$]
beehive	boy	CL:FORM	drop	SRF	spatial	[hold on]
tree	boy	NP	drop	FRF	spatial	[climbs on]
stone	boy	NP	drop	SRF	spatial	[climb on]
stone	boy	drop	drop	FRF	spatial	[stands on]

Table 3.39: continued

Ground / figure		Reference forms		Context		
		Ground [antecedent]	Figure	R.-Framework	Verb/DET	[activity]
deer	boy	NP	drop	FRF	spatial	[falls on]
deer (antlers)	boy	NP	drop	SRF	agreement	[holds on]
dog	boy's head	drop	body cl	FRF	spatial	[sit on]
(log)	boy	drop	drop	SRF	spatial	[hold on]

3.10 Developmental profile: Christa

Christa's file 1 documents her mastery of the target grammatical constraints on word order and verb inflection at the onset of the study (cf. also Table 3.40). Christa makes an extensive use of referential shifts in this narrative, but does not always mark changes in perspective explicitly or fails to reintroduce characters unambiguously which leads to referential ambiguities. Also, backgrounded information remains generic, at times, which makes it difficult to follow some of the narrative episodes unless acquainted with the picture story. Language mixing occurs occasionally only, affecting only specific sentential patterns (interrogatives in file 1, constructions with PAM in file 3) or specific lexical expressions (combinations with the verb BE in file 1 or HAVE in file 3). Christa's progress in her development of DGS is reflected in her file 3 narrative, a cohesive and coherent narrative, in which figure-ground relations are expressed in a concise manner, reference forms are chosen appropriately in accordance with the narrative function they fulfil, and temporal and causal relations are made explicit.

3.10.1 DGS competence at the onset of the study

3.10.1.1 Syntax
Word order. At the onset of this study, Christa's word order in DGS adheres to the target constraints with the exception of a few sequences that are potential candidates for language borrowing. Constructions with object and locative complements provide evidence of target-like sentence-final verb placement (we will come across several examples in the course of the following discussion). In her

Table 3.40: Christa's DGS profile.

Syntax-discourse interface		[file 3]	Reference forms / functions
		[file 1]	Spatial relations
		[file 1]	Referential shift
		[file 1]	Referential establishment / maintenance
CP	Referential shift (POV)	[file 1]	$\qquad\qquad$ [– dom] CL:PALM a. $\quad$ [PRON$_{PERS}$]$_1$ $\quad$ [+ dom] [PUT$_{CL:\mu}$]$_{ON\text{-}HAND}$ $\quad$ '(He = the boy) puts (him) on his hand' b. $\quad _1$<_____> $\quad$ [– dom] [HOLD$_{CL:\mu}$]$_{IN\ HAND}$ $\quad$ [+ dom] WAVE$_{11}$ $\quad$ '(He = the boy) waves, holding (him) in his hand'
	Questions	[file 3]	a. $\quad$ DOG WAKE-UP $\quad$ 'The dog wakes up.' $\quad _2$<_____> b. $\quad$ GONE FROG HOW+ $\quad$ 'How has the frog gone away?'
		[file 1]	$\qquad _1$<_____> CALL: $\quad$ WHERE IS FROG '(He = the boy) calls, „where is the frog?"'
	Embedded clauses	[file 1]	THEN WANT : OUTSIDE GO 'Then (he) wants to go outside.'
IP	HAVE	[file 3]	a. $\quad$ SUDDENLY FROG$_2$ HAVE $\quad$ IDEA $\quad$ 'Suddenly the frog has an idea.' $\quad _2$<_____ nm: CL:BODY sits-and-looks-up-enthusiastically $\quad$ 'He looks up, enthusiastically.' $\quad$ _____> b. $\quad$ IDEA $\quad$ [PRON$_{PERS}$]$_1$ HAVE $\quad$ 'I have an idea.'
	PAM-agreement	[file 3]	$_6$STING$_3$ PAM$_3$ $\quad$ DOG$_3$ '(It = the bee) is cross and stings the dog.'
	Complex classifier constructions	[file 1]	$\qquad\qquad$ [– dom] CL:FORM (container) IDEA , CL:FORM (container) [+ dom] JUMP-OUT '(He) has an idea, (he) gets out of the container'
	DET$_{EXIST}$-agreement	[file 1]	[DET$_{EXIST}$]$_{11}$ ANOTHER FROG$_{11}$ 'There is another frog.'
	Verb inflection	[file 1]	$\qquad\qquad _1$<_____> $\qquad$ [– dom] CL:FORM (container)$_2$ BOY$_1$ [DET$_{SELF}$]$_1$ SEE$_2$: $\quad$ [+ dom] CL:FORM (container)$_2$ 'The boy sees there is a container.'
	IP headedness		*- see verb inflection -*
VP	VP headedness		*- see verb inflection -*

file 1, Christa relates the main narrative episodes in a concise manner. The temporal succession of events is expressed through the adverbial THEN, as is illustrated in (281), produced after the recount of the boy's looking at the frog (cf. also (282) and (283) among other examples discussed in the following).

(281) a. THEN   SLEEP   (Chri.-file 1)
            'Then (he = the boy) sleeps.'
       b. FROG   BE-BORED
            'The frog is bored.'

Complex sentential constructions. Christa produces several complex constructions, such as the one provided in example (282) with the modal verb LIKE-TO (note also the target-like preverbal placement of the adverbial OUTSIDE, or the sequence with the verb BELIEVE in (283). Complex clauses involving POVs also appear frequently in this file. Referential shifts are marked through non-manual means (change in body orientation, eye gaze direction), but referential identity of the subjects involved is not always clear, which reveals remaining deficits at the syntax-discourse interface. We will take up this issue below.

(282) THEN   LIKE-TO :   OUTSIDE   GO.   (Chri.-file 1)
        'Then (he = the boy) wants to go outside.'

(283) constitutes an example of a repetition involving a complex clause, whereby (283b) includes additional information about where the boy believes the deer is going to accompany the boy. The use of the LBG sign IS (not a sign in DGS) renders the sequence a potential candidate for language mixing. Two observations indicate that Christa uses the pattern "WHERE IS" as a formula. First, there is no evidence of a generalised use of IS serving the function the copula would fulfil in German. IS appears only in only in (283) and in the interrogatives mentioned (compare (284)). Secondly, as we will see below (in (287), for example) Christa correctly uses DET_{EXIST} in existential predicates to inform about the location of a protagonist.

(283) a. THEN   BELIEVE   ACCOMPANY   (Chri.-file 1)
            'Then (he = the boy) believes that (he = the deer) accompanies him.'
       b. WHERE   IS   FROG,   ACCOMPANY
            '(He) accompanies (him) where the frog is.'

(284)   ₁<_____>
        CALL: WHERE   IS   FROG   (Chri.-file 1)
        '(He = the boy) calls, where is the frog?'

3.10.1.2 Morphosyntax

Agreement verbs. Regarding grammatical processes associated with the availability of functional projections above the VP, the analysis reveals that Christa correctly inflects spatial and agreement verbs in fixed and shifted referential frameworks. Agreement verbs such as LOOK-AT are marked appropriately (cf. example (285)) to encode their arguments, as are classifier verbs such as HOLD).

(285) a. $_1$<_____

BOY$_1$ [DET$_{SELF}$]$_1$ LOOK$_2$ (Chri.-file 1)

_____>

[– dom] [CL:FORM (container)]$_2$
[+ dom] [CL:FORM (container)]$_2$
'The boy sees there is a container.'

b. _____>
nm: CL:BODY: looking inside
[HOLD$_{CL:\theta\ (container)}$]$_2$
'(He) holds it, looking into (it).'

Spatial verbs. Classifier elements in spatial verbs of motion are appropriately selected to agree with the arguments encoded. This is the case in example (286) involving the verb FALL, and also in complex spatial predicates, such as the one discussed below (compare (293)) in which we learn about the frog's escape out of a container. Notice, in addition, that DET$_{EXIST}$ is used to mark the locus of the location into which the boy falls, whereby the sign FALL is modulated appropriately, to agree with this location.

(286) [DET$_{EXIST}$]$_C$ WATER.   [FALL$_{CL:\lambda}$]$_{INTO·C}$ (Chri.-file 1)
'There is water. (He) falls (into it).'

3.10.1.3 Syntax-discourse interface

Christa's file 1 narrative documents her command of the linguistic devices used to establish and maintain reference. Nevertheless, referential identity of the agents involved remains ambiguous at times, which can be taken as an indication that the syntax-discourse interface is not fully mastered yet.

Referential establishment and maintenance. Example (287) is illustrative of how reference is maintained throughout the recounting of a narrative passage, in which referential frameworks are skilfully shifted to describe how the characters find the runaway frog behind a log: first, the location at which the boy is going to find the frog is established in (287a) via DET$_{EXIST}$ and DET$_{LOC}$, within a fixed referential framework. Subsequently, Christa switches to a shifted referential framework to provide further details about how the boy and the frog come

together. Notice that object agreement is marked through manual and non-manual means as body orientation and eye gaze direction correspond with the locus established via DET$_{EXIST}$ in (287a).

(287) a. [DET$_{EXIST}$]$_{11}$ [DET$_{LOC}$]$_{BEHIND-D}$ (Chri.-file 1)
      'There (he) is, behind...'

   b. $_1$<_____>
      nm: CL:BODY: looking over D

      CL:FORM (surface)$_D$ [SUPPORT-ON$_{CL:BODY PART}$]$_{ON-D}$
      '... on that log (he) supports himself looking beyond it...'

   c. [– dom] [SUPPORT-ON$_{CL:BODY PART}$]$_{ON-D}$
      [+ dom] FIND
      '... (he) finds (him) down there.'

   d. [DET$_{LOC}$]$_{DOWN-D}$ [DET$_{EXIST}$]$_{11}$
      'down there he is...'

   e. [DET$_{EXIST}$]$_{11}$ ANOTHER FROG$_{11}$
      '... there is another frog.'

Another phenomenon that deserves to be mentioned in this context concerns Christa use of pronouns picking up a locus associated with the location of the story book pictures (to her right) to refer to the boy. Notice that the use of PRON$_{PERS}$ in (288a) is followed by the use of a full NP in (288b) to indicate that it is the boy's activities she is describing now. This way, the potential ambiguity of the pronoun in (288a) is cleared up. The pronoun referring to the boy who picks up the baby frog in (289) is associated with the same locus.

(288) a. THEN [PRON$_{PERS}$]$_1$ HEAR (Chri.-file 1)
   b. $_1$<_____>
      BOY$_1$ LOOK-AROUND
      'Then he hears. The boy looks around.'

(289) a. [– dom] CL:PALM (Chri.-file 1)
      [PRON$_{PERS}$]$_1$ [+ dom] [PUT$_{CL:\mu}$]$_{ON-HAND}$
      '(He = the boy) puts (him) on his hand.'

   b. $_1$<_____>
      [– dom] [HOLD$_{CL:\mu}$]$_{IN HAND}$
      [+ dom] WAVE$_{11}$
      '(He = the boy) waves, holding (him) in his hand.'

It must be noted in this context that Christa frequently checks the elicitation material (the story pictures) while she continues to recount the story. Hence, body orientation and eye gaze direction need to be understood not only in rela-

tion to her shifting of referential frameworks but also in relation her turning to the side where the pictures are displayed. By assumption, this way of recounting the story (rather than from memory) affects Christa's choice of referential loci and non-manual means to mark referential identity, as she pays less attention to an accurate choice of the loci she picks up. Indeed, both the beginning point of the sign PUT and the orientation of the sign WAVE in (289) are associated with a locus slightly to the right, at eye level, which differs from the locus established previously for the frogs, when Christa recounted that the boy found the frog behind the log (locus slightly to the right, at the bottom). Though referential maintenance is not affected by Christa's choice, because no other referents have been associated with loci on the right side of the signer, the discrepancy observed reveals a rather sloppy narrative style, particularly toward the end of the narrative.

Referential ambiguities. Christa makes extensive use of referential shifts in this narrative. However, changes in perspective are not always marked explicitly. And there is one narrative episode (see (290)), for which it is difficult to establish the agent of the activities described. By assumption, this is the dog, but it must be noted that the dog is explicitly introduced as a character only relatively late in the narrative – after the problematic sequence described next. Notice that in (290), which follows the recounting of the boy's looking into a tree hole, we learn that somebody climbs up an object. What makes it difficult to understand the subsequent sequences is that the object described next, with a round shape is not specified any further. We can only speculate on it being a beehive because Christa reports that a bee gets out of it (admittedly, this conclusion is a bit at odds with the idea that somebody would "go" or "climb up" a beehive, as it seems to the case in (290a), but Christa might rather have aimed at recounting that somebody put his paws on this object, as it is depicted on the story book picture). The subject of the sequence, the one climbing up the round shaped object and being followed by the bee is not specified, which might erroneously lead to the interpretation that it is the boy. Only because Christa finally recounts that the dog's backside is aching, we might infer that it has been the dog who bothered the bee.

(290) a.   [– dom] CL:FORM (container)$_\pi$ (Chri.-file 1)
             THEN   [+ dom] CL:FORM (container)$_\pi$ CLIMB-UP
             'Then (he = ?) climbs up a container.'

        b. $_4$<‾‾‾‾‾‾‾>
                          nm: CL:BODY: looking inside
             [– dom]   HOLD$_{CL:\pi}$
             [+ dom]   HOLD$_{CL:\pi}$
             '...(he) holds it, looking inside...'

c.   [– dom] [CL:FORM (container) ---
    BEE$_\beta$ [+dom] GET-OUT
    'The bee gets out…'

d. [– dom   ] ---------------------]
    [+ dom   ] THEN   [FLY$_{CL:\beta}$]$_{ABOUT}$ PAM$_X$
    '…then (it) flies about…'

e. (?)<__
    RUN
    '(He = ?) runs…'

f. _____
    FRIGHT
    '(He = ?) is frightened.'

g.   _____>
            manner: frightened
    [– dom]   [HOLD$_{CL:BODY\ PART}$]$_{AT\text{-}THE\text{-}HEAD}$
    [+ dom]   [HOLD$_{CL:BODY\ PART}$]$_{AT\text{-}THE\text{-}HEAD}$
    '(He = ?) holds the hands proctectively at the head.'

h. FALL
    '(He = ?) falls.'

i.   (?)<_____>
            manner: frightened
    [– dom]   [HOLD$_{CL:BODY\ PART}$]$_{AT\text{-}THE\text{-}HEAD}$
    [+ dom]   [HOLD$_{CL:BODY\ PART}$]$_{AT\text{-}THE\text{-}HEAD}$
    '(He = ?) holds his head, frightened.'

j. $_9$<_____>
                [– dom]   DET$_{LOC}$ (backside)
    [DET$_{ART}$]   DOG$_9$ [+ dom]   PAIN
    'The dog's backside aches.'

Finally, it must be noted that some sequences are difficult to interpret because Christa does not specify the objects of the activity (recall that we remarked upon Christa's use of generic terms before). One of the boy's activities that remains opaque from a narrative perspective is his looking into his boots to see whether the frog might have hid in them. After recounting the boy's waking up and subsequent surprise about the frog's escape, Christa produces the sequences in (291). Notice that we can only infer from her recount that the boy first takes up the container the frog used to be in and looks into it, because the locus of this first container coincides with the locus of the container the frog escaped from. However, for the two other containers associated with loci at the bottom slightly to the right we cannot establish their kind, because Christa does not specify them

any further. Only the audience acquainted with the frog story might conclude that it is the boy's boots what he is looking into.

(291)   a.   ₁<_____>   (Chri.-file 1)

nm: CL:BODY: lean forward, looking inside

HOLD_{CL:ẟ (CONTAINER-RIM)}

'(He) holds (it) in his hands, looking into (it).'

b.   _____

nm: CL:BODY: lean forward, looking inside amazed

HOLD-UP_{CL:ẟ (CONTAINER)}

'(He) holds it up.'

c.   _____

nm: CL:BODY: lean forward, looking inside amazed

HOLD_{CL:ẟ (CONTAINER)}

'(He) holds it, looking at it with surprise.'

d.   _____

LOWER_{CL:ẟ (CONTAINER)}

'(He) lowers it.'

e.   _____

TAKE-UP_{CL:θ (OBJECT)}

'(He) takes (it) up.'

f.   _____

nm: CL:BODY: looking inside

HOLD-UP_{CL:θ}

'(He) holds (it) up, looking at it.'

g.   _____

PUT-DOWN_{CL:θ}

'(He) puts it down.'

h.   _____

TAKE-UP_{CL:θ}

'(He) lifts it up.'

i.   _____

nm: CL:BODY: looking inside

HOLD-UP_{CL:θ}

'(He) holds (it) up, looking at it.'

j.   _____>

PUT-DOWN_{CL:θ}

'(He) puts (it) down.'

Reference forms and functions. As we can glean from Table 3.41, the overall frequency of subject drop in Christa's file 1 narrative is relatively high (82.1). Indeed,

the proportion of subject NPs (14.3%) is among the lowest measured in this corpus (in fact, a lower percentage [8.2%] was only obtained for Muhammed's file 3).

At closer inspection, the analysis reveals that Christa uses full NPs to introduce the story characters, but does not always make use of full NPs when it comes to the reintroduction of a character as a protagonist. Note that NPs occur in reintroduction contexts with a frequency of 18.2% out of the total percentage of 19.6 of reference forms serving this function (cf. Table 3.41). The relatively high proportion of subject drop in such reintroduction sequences (63.6) contrasts with the percentages obtained for subject drop in more advanced narratives, in which signers use subject NPs to avoid referential ambiguity when they reintroduce a character (in particular, when it is not the one chosen as the thematic subject), contributing this way to the overall coherence of the story. By contrast, the proportion of subject drop in those narrative passages of Christa's file 1 that recount series of events involving the same character is well in line with the target requirements, on the one hand, and the proportions observed in the narratives of the other participants in this study, on the other hand. We can also see in Table 3.41 that the relative frequency of determiners amounts to 3.6% in this narrative. Recall, in addition, Christa's use of pronouns associated with a locus corresponding with the location of the book to refer to the boy.

Expression of spatial relations. Christa's file 1 narrative includes information on spatial relations. As we can glean from the overview provided in Table 3.42 background information expressed via the h2-classifier is introduced previously through a lexical antecedent. In (292), for example, we learn that the boy believes the frog might be in the forest and decides to go there. Notice that in the two-handed construction the determiner DET$_{\text{LOC-IN}}$ indicates the location the boy is thinking of, that is, inside the forest. The non-dominant hand, in turn, is used to produce an h2-classifier that backgrounds the information about the location specified previously. In the subsequent sequence recounting the boy's decision to go there the verb GO is modulated so as to agree with the locus for the forest established via DET$_{\text{LOC}}$. Further, we can see that more specific information of the ground is provided in the context of a repetition via a locative complement preceding the complex classifier construction in (293b) (the h2-classifier in (293a) indicates only that the frog climbs out of some generic location). However, the forms used often have a generic meaning because Christa does not use (more specific) conventional signs to refer to ground objects. This is the case of the description of the scene involving the beehive (see example (290)) (recall also that the log behind which the boy finds the frog family was not specified as such but referred to as a surface the boy leans against in (285)).

Table 3.41: Reference forms and functions in Christa's file 1.*

Reference forms	% all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	14.3	8.9	(100)	3.6	(18.2)	1.8	(2.5)
DET$_{ART}$/PRON$_{PERS}$	3.6	0	(0)	3.6	(18.2)	0	(0)
Subject drop	82.1	0	(0)	12.5	(63.6)	69.6	(97.5)
All	100	8.9		19.6		71.4	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-11.
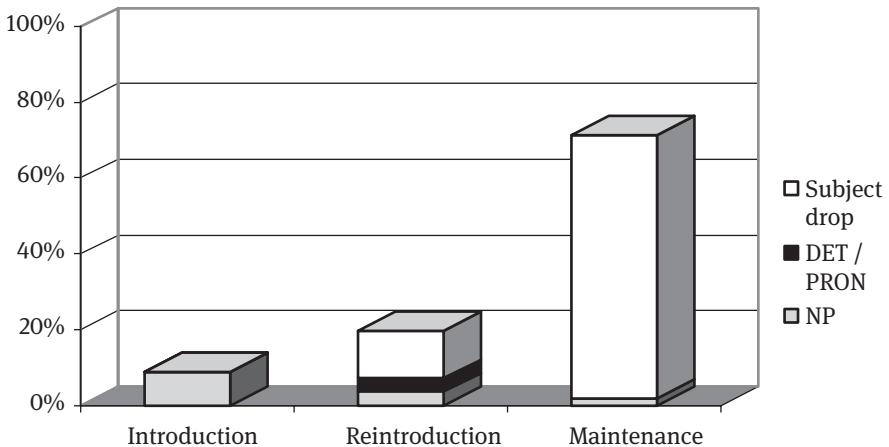
Figure 3.11: Proportion of reference forms and functions in Christa's file 1.

(292) [– dom] TREE$_A$ GO$_{TO-A}$ (Chri.-file 1)
  THEN BELIEVE : WOODS$_A$ [+ dom] [DET$_{LOC}$]$_A$
  'Then (he) believes (he = the frog) is in the woods. (He) goes there.'

(293) a. [– dom] CL:FORM (container) (Chri.-file 1)
  IDEA+ [+ dom] CLIMB-OUT
  '(He = the frog) has an idea, to climb out.'
  b. [– dom] CL:FORM (container)
  IDEA, CL:FORM (container) [+dom] JUMP-OUT
  '(He) has the idea to get out of the container.'

Table 3.42: Expression of figure-ground relations in Christa' file 1.

Ground / figure		Reference forms			Context		
		Ground [antecedent]		*Figure*	*R.-framework*	*Verb/DET*	*[activity]*
container (jar)	frog	h2cl	[CL:FORM]	drop	FRF	spatial	[get out]
forest	boy	h2cl	[NP]	drop	FRF	plain	[DET$_{LOC\text{-}IN}$]
container (beehive)	dog	h2cl	[CL:FORM]	drop	FRF	spatial	[climb up]
container (beehive)	bee	h2cl	[CL:FORM]	NP	FRF	spatial	[get out]
water	boy	DET$_{EXIST}$	[NP]	drop	FRF	spatial	[fall into]
surface (log)	boy	CL:FORM		drop	FRF	plain	[find]

3.10.2 Further development: increasing narrative complexity

Christa's file 3 narrative reveals her progress in the mastery of DGS. Compared with file 1, her narration of the frog story is more complex, both at the grammatical and at the narrative level. However, while some events are narrated in detail, some other remain unaccounted for (the hamster and the owl passages, for example) or are only mentioned *en passant*.

3.10.2.1 Syntactic complexity

Christa produces several complex sentential constructions in this narrative, which document not only her command of complex syntax, but also her progress at the narrative level, as she skilfully uses the linguistic devices available for discourse purposes, namely, (a) to recount the emotions and motives of the story characters, and (b) to make the connections between the story events apparent.

In (294b), which documents the use of target-like XV order in an embedded clause selected by the verb WISH, we learn that the boy and the dog wish to go to bed because they are tired. The adverbial SUDDENLY appearing at the beginning of this sequence in (294a) represents a stylistic means to highlight the temporal relation between this and previous narrative events. Example (295) is another interesting example, which is not only structurally sophisticated, as it involves a complex construction with the modal verb CAN, which is in turn selected by the verb REALISE; (295) is also remarkable because it provides information on the dog's reflection about his situation after having stuck his head into the jar. Example (296), in turn, documents the choice of complex constructions with psychological verbs to recount the protagonists' beliefs.

(294) a. SUDDENLY   BOTH   TIRED   (Chri.-file 3)
          'Suddenly (they) are both tired.'
      b. WISH   :   BED   SLEEP
          '(They) wish to go to bed, sleep.'

(295) DOG   REALISE: CAN$_{NEG}$ WELL   SEE   (Chri.-file 3)
      'The dog realises he can't see well.'

(296) FROG   BELIEVES :   [– dom] CL:FORM (container)   (Chri.-file 3)
                          [+ dom] DET$_{INSIDE}$
      'As for the frog, (he = the dog) believes that it is inside the jar.'

3.10.2.2 Syntax-discourse interface

Referential establishment and maintenance. Turning to referential establishment and maintenance the analysis reveals a progress concerning the use of linguistic devices to create cohesion. For example, the locus associated with the verb TAKE in (297) to recount that the boy takes the frog back home coincides with the locus established previously for the frog found behind the log. (Incidentally, the sequence is also illustrative of the use of repetitions in file 3).

(297) a. TAKE$_{CL:\mu}$ (Chri.-file 3)
      b. ONE   FROG$_\mu$ TAKE$_{CL:\mu}$
          '(He) takes (it), one frog, (he) takes.'

Referential shifts occur frequently in this narrative. In (298), Christa reports that the boy and the dog wake up, and that the boy sees the frog is gone. This latter proposition is expressed in the context of a shifted referential framework, marked through body shift and eye gaze to the left, toward the location associated with the frog at the beginning of the narration. Note that reference is maintained in (299), in which Christa narrates that the dog wakes up and also sees that the frog is gone.

(298) a. IN-THE-MORNING   BOTH+   BOY$_1$ GET-UP   (Chri.-file 3)
          'In the morning both (= the boy and the dog), the boy gets up.'
      b. $_1$<_____>
          GONE   FROG
          '"The frog is gone!"'

(299) a. DOG$_2$ WAKE-UP
      b. $_2$<_____>
          GONE   FROG   HOW+
          'The dog wakes up. How has the frog gone away?'

Reference forms and functions. With respect to Christa's use of reference forms and the functions they serve (compare Table 3.43) we can see that protagonists are predominantly reintroduced via a full NP. Indeed, the relative proportion of NPs out of the total frequency of the reference forms serving this function amounts to 77.3% (cf. also Figure 3.12), which marks a difference to file 1 (recall that in that file the rate of NPs was much lower [18.2%], with a clear predominance of subject drop (63.6%), cf. Table 3.41). As for the forms used to refer to a protagonist involved in a series of events subject drop clearly predominates (88%). Finally, we can see that at this stage the overall distribution of reference forms (in particular 27.9% NPs vs. 69.4% subject drop) is more in line with the distribution observed in the narratives of the other participants.

Table 3.43: Reference forms and functions in Christa's file 3.*

Reference forms	% all forms	Function served					
		Introduction		Reintroduction		Maintenance	
NP	27.9	5.4	(100)	15.3	(77.3)	7.2	(9.6)
$DET_{ART}/PRON_{PERS}$	2.7	0	(0)	0.9	(4.5)	1.8	(2.4)
Subject drop	69.4	0	(0)	3.6	(18.2)	65.8	(88.0)
All	100	5.4		19.8		74.8	

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets). Absolute numbers are provided in the Appendix Table C-12.
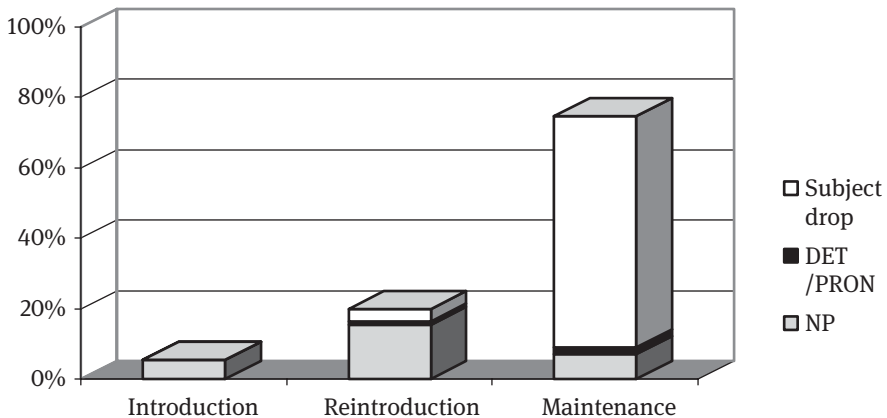

Figure 3.12: Proportion of reference forms and functions in Christa's file 3.

Expression of spatial relations. Another major difference between Christa's narrative in file 1 and her recount in file 3 concerns the expression of figure-ground relations, expressed in a more detailed manner in this file. For example, conventional signs, where they are available, designate the objects in question, backgrounded information is maintained via h2-classifiers, or classifier elements in SRFs. For further illustration consider example (300) which shows that Christa introduces the object (a jar) backgrounded subsequently via the h2-classifier used as a discourse buoy, as she goes on to recount that the dog looks into it before he eventually sticks his head into it. In a similar manner, the h2-classifier used to designate the object the boy is looking at in (301a) is retained as a discourse buoy in (301b), where Christa describes the thoughts of the protagonist.

(300) a. $\qquad$ [– dom] CL:FORM (container)$_C$ (Chri.-file 3)
　　　　　 CL:FORM (container)$_C$ [+ dom] SEE
　　　　　 '(He = the dog) looks into a container.'

　　　 b. $_1$<‾‾‾‾‾‾
　　　　　 nm: CL:BODY: lean forward, looking inside
　　　　　 [– dom]　 HOLD$_{CL:JAR}$
　　　　　 [+ dom]　 HOLD$_{CL:JAR}$
　　　　　 '(He) holds it close, bends forward, looking into it.'

　　　 c.   ‾‾‾‾‾‾‾>
　　　　　 [– dom]　 [STICK$_{CL:JAR}$]$_{ON\text{-}HEAD}$
　　　　　 [+ dom]　 [STICK$_{CL:JAR}$]$_{ON\text{-}HEAD}$
　　　　　 '(He) sticks it on his head.'

　　　 d.   [– dom] CL:FORM (jar)
　　　　　 [+ dom] SEARCH
　　　　　 '(He) searches with the head in it.'

(301) a. $_1$<‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
　　　　　 manner: curiously
　　　　　 [– dom] [CL:FORM (stone)$_E$ ‾‾‾‾‾]
　　　　　 STONE$_7$　 CL:FORM(round)$_E$　 [+ dom] LOOK$_7$
　　　　　 '(He) looks up at stone with curiosity...'

　　　 b.   ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
　　　　　 manner: curiously
　　　　　 [– dom]　 ‾‾‾‾‾‾‾‾]
　　　　　 [+ dom]　 INTERESTING
　　　　　 '...it is interesting...'

　　　 c.   [– dom] FROG
　　　　　 PERHAPS　 FROG　 [+ dom] [DET$_{LOC}$]$_{BEHIND\text{-}E}$
　　　　　 'Maybe the frog is there, behind the stone.'

Example (302) illustrates the complexity of the information expressed via two-handed complex classifier constructions and how the use of the h2-classifier as a discourse buoy throughout this discourse stretch including a description of the beehive (its shape) and its inhabitants contributes to the creation of cohesion.

(302)   [– dom] [CL:FORM (container) -------------]   (Chri.-file 3)
ONE   [+ dom] HONEY   CL:FORM (sphere)
[– dom] ---
[+ dom] WITH   BEE+++   YELLOW   [DET$_{LOC-IN}$]   LIVE
'There is a beehive with yellow bees living inside it.'

Table 3.44: Expression of figure-ground relations in Christa's file 3.

Ground / Figure		Reference forms			Context		
		Ground [antecedent]		*Figure*	*R.-framework*	*Verb/DET*	*[activity]*
container	frog	h2cl		drop	FRF	spatial	[jump out]
container	dog	h2cl	[NP]	drop	FRF	agreement	[look inside]
container	dog	CL:FORM		drop	SRF	spatial	[stick in]
container	dog	h2cl		NP	FRF	DET$_{LOC-IN}$	[pred]
beehive	bee	h2cl	[NP]	NP	FRF	DET$_{LOC-IN}$	[pred]
stone	boy	NP		drop	FRF	agreement	[look]
stone	boy	h2cl		drop	FRF	spatial	[climb up]
stone	boy	h2cl		drop	FRF	spatial	[climb up]
log	boy	h2cl	[NP]	drop	SRF	agreement	[look]

3.10.3 Language contact

It must be noted that Christa does not use the LBG element IS in this narrative (in fact, although the boy is reported to call the frog by using the verb CALL, Christa does not use the interrogation she used earlier in file 1). While this type of borrowing is not apparent in this file, the analysis of the data reveals that Christa's productions contain some other errors that are potential candidates for language borrowing. For example, she uses the sign HAVE, an element of LBG, in combination with the sign IDEA (cf. (303)) which corresponds with the German expression *eine Idee haben* ('to have an idea'). Now, this noun verb combination is not tar-

get-like in DGS which is why we are led to conclude that Christa's use of the verb HAVE represents a case of language borrowing from German via LBG. Indeed, a look into the written German narrative produced by Christa at the time reveals that she uses this expression in German (compare (304)). The use of HAVE in sequence (304) where it seems to serve the function of an auxiliary, however, as it would be the case in German, is more intriguing if regarded against the backdrop of Christa's written productions at the time. Indeed, periphrastic verbs with the auxiliary *haben* ('have') are only produce half a year later, in her file 4 written narrative. The discrepancy leads us, once again, to speculate on the possibility that this usage is an effect from LBG.

(303) a. SUDDENLY   FROG$_2$ **HAVE**   IDEA   (Chri.-file 3)
      'Suddenly the frog has an idea.'

    b. $_2$<——————————————————
      CL:BODY: sit-and-look-up-enthusiastically
      '(He) looks up excited.'

    c. ——————————————————>
      IDEA   [PRON$_{PERS}$]$_1$ **HAVE**
      'I have an idea.'

(304) *Dill hab eine Idee.*   (Chri. -file 3, German)
      'Dill has an idea. '

(305) $_1$<—————————————   (Chri.-file 3)
    a. LONG   **HAVE**   [PRON$_{PERS}$]$_1$
      'For a long time I have.'
    b. LONG   AGAIN   SEARCH   PAM$_2$
      '(I) searched (him = the frog) for a long time.'

Another candidate for language borrowing can be observed at the level of the DP. It is interesting to note that Christa uses the numeral ONE in combination with NPs six times in this narrative (cf. for example (306)), in a way that is reminiscent of determiner-noun combinations in German. However, at closer inspection, we can see that ONE does not fulfil the function *ein* or *eine* would serve in German (namely, that of an indefinite determiner) because it appears only once in an introductory context, whereas it is used 3 times in contexts in which characters are reintroduced and twice in contexts involving a series of events with the same protagonist. At the same time, we must note that the rather generic use of this determiner corresponds with Christa's use of determiners in her written German. Although this phenomenon represents a case of language borrowing at the level of the DP, it occurs occasionally only (for example, in reintroduction contexts in 3

out of 22 constructions), which leads us to conclude that this phenomenon is not developmentally constrained.

(306) a. BOY   AND   ONE   FROG   HAPPY LOOK$_X$ ONE   (Chri.-file 3)
      'A boy and a frog look happily at...'

    b. $_{\text{SIGNER}}$<_____>
      EXCUSE   WRONG
      'Sorry, I am mistaken...'

    c. BOY   AND   ONE   DOG
      'A boy and a dog...'

    d. ONE   BOY   LOOK
      'A boy looks...'

Other candidates for language borrowing involve the use of PAM with a target-deviant word order. In example (307) agreement is marked twice as Christa uses the verb STING to recount the bee's stinging of the dog, which is followed by the use of PAM in combination with a full NP. Because STING is an agreement verb, the use of the auxiliary PAM to express the relation between the verb and its complement is unnecessary (it would only be used in DGS with this type of verb in those cases where there is a need for emphasis or clarification. Now, in (307) PAM and its complement appear after the agreement verb, which is not a target-like order in DGS (the arrangement of the constituents is rather reminiscent of the surface SVO main clause order that is typical of German). From a narrative perspective the provision of this additional information serves the purpose of disambiguating the object reference of STING. Notice that without an overt preverbal expression of the object the final locus of the verb form produced might be associated with a generic referent (i.e. somebody) in (307) given that the dog had not been associated with this locus before (the bottom-up contrast on the vertical axis might serve as a cue, however: Christa narrated previously that the dog looks up to the beehive, whereas the bee stings somebody at the bottom). Finally, a note is due concerning the simultaneous expression of meanings in (307a) as Christa produces the sign CROSS simultaneously with the sign BEE. This phenomenon is recurrent in this narrative reflecting also the increased narrative level of Christa at this stage.

(307) a. [– dom] CROSS   (Chri.-file 3)
      [+ dom] BEE
      'The bee is cross.'

    b. $_6$STING$_3$ PAM$_3$ DOG$_3$
      '(It) stings the dog.'

3.11 Discussion

In the preceding sections, we have been concerned with the analysis of the data with a view to determining the nature of the participants' DGS competence. Because their command of this language needs to be understood also in relation to the organisation of their multilingual knowledge we have also been interested in establishing the scope and status of language contact phenomena in their DGS productions. For this dual purpose, we have used the diagnostic criteria identified in section 3.3 and the descriptive framework of the main properties of DGS and German developed in section 3.1 and section 4.1.

We turn next to a summarising discussion of the main findings. Based on our working hypothesis about the main developmental milestones in the acquisition of DGS we will proceed in a bottom-up fashion, focusing first on those grammatical phenomena that are associated with the IP before we turn to those characteristics that are linked to the CP. We then turn our attention to the mastery of the syntax-discourse interface, considering also more global narrative dimensions of cohesion and coherence. For ease of reference the sketch of the acquisition task presented in section 3.2 is provided here in Table 3.45.

Table 3.45: Acquisition of DGS: linguistic areas and related structures, processes, and properties.

Area	Processes / properties	
Discourse	– fixed and shifted referential frameworks – expression of spatial relations – reference forms and functions – co-reference (referential establishment/maintenance)	
Syntax	– interrogation, subordination, referential shift (POV)	(CP-level)
	– finiteness distinction (verb raising) feature checking, IP headedness	(IP-level)
	– projection of categorial-thematic structure,	(VP-level)
	– VP headedness	
Morphology	– inflection morphology (first/non-first person distinction, classifier selection)	
Lexicon	– distinction of agreement, spatial and plain verbs	

3.11.1 Sentence structure

In their attainment of the target grammar, DGS learners are confronted with the task of expanding their initial elementary structures by additional structural layers. The availability of complex sentential structures and their associated grammatical features is not only reflected at the level of word order; it also becomes apparent in the target-like marking of grammatical relations between constituents in a clause. Technically, this is expressed in terms of the expansion of the categorial-thematic VP structure by the additional functional projections, namely, the IP and CP.

3.11.1.1 IP tracking: syntactic arrangements and morphosyntactic landmarks

In our analysis, we have used the diagnostic criteria established in section 3.3 for the assessment of the availability of the IP. At the level of word order, we were interested to establish whether participants adhere to the SOV pattern. The aim here was to find out whether learners correctly set the VP and IP headedness values. Target-deviant orders were scrutinised for a potential impact of language borrowing from German. In order to determine whether the grammatical processes associated with the IP are operative, the data were analysed with respect to person and spatial agreement.

Verb-final structures. One recurrent observation in our scrutiny of the participants' data with a view to assess their adherence to the target word order constraints is that participants seldom produce SOV structures in which all constituents would be expressed overtly. This finding is in line with previous studies on DGS and other sign languages, in which pro-drop and topic drop were found to occur frequently in spontaneous data (Johnston et al. 2007). While those studies are primarily concerned with the nature (and availability) of the mechanisms necessary to license empty elements (cf. Hänel 2005), the high proportion of subject drop and/or object drop in our data is a critical issue because it reduces the proportion of those utterances that would help us to unambiguously determine whether participants correctly set the VP and IP headedness parameters. Because the participants in this study are acquiring DGS in a bilingual situation in which they also use a manual code of the oral language (that is, LBG) and written German, attention was also paid to potential candidates for language mixing at the level of word order. Recall that DGS and German differ regarding their surface verb placement: while verbs appear clause-finally in DGS across the board, they appear in second position in main clauses and sentence-finally in embedded clauses in German. So, because there is a partial overlap, we decided to pay special attention to the relative position of object complements or other

modifying constituents and verbs in *main* clauses, since OV and XV patterns are target-like in DGS but deviant in German.

The analysis of the data reveals that where verbs and their modifying complements are expressed in a sequential fashion, participants adhere to the target XV format. XV patterns in the data collected often involve the expression of information about locations, whereby information on the ground precedes the verb in final position. This can be a simple verb as in Hamida's utterance in (308) or a spatial verb in a complex classifier construction, used to express spatial configurations, as in Simon's example (147), repeated here in (309). Utterances like (309) not only document the adherence to the target XV order; they also show that processes associated with the IP are operative as the spatial verbs involved appear in their inflected form.

(308) a. THEN   FOREST   SEARCH++.   (Ham.-file 1)
       b. LONG   SEARCH
           'Then (they) search in the forest. (They) search for a long while.'

(309) a. [– dom] [CL:FORM]$_C$ [– dom] [CL:FORM]$_C$ (Sim.-file 1)
           [+ dom] [CL:FORM]$_C$ [+dom] [CLIMB-OUT$_{CL:\mu}$]$_{OUT-OF-C}$
           'There is a container, (he) climbs out of it.'
       b. FALL
           '(He) falls down.'

A note is due in this context regarding the observation that the overt expression of object complements or other verbal modifiers occurs often in the context of what appear to be repetitions or semi-repetitions of propositions (as in (308)). Indeed, in several instances, participants recount first the general activity, before they produce a second proposition with the same verb, in which location, manner, patient or even the subject of the activity are further specified (cf. Table 3.46 below for an overview of the different types of repetitions observed in the narratives of the participants in this study). Typically, these sequences appear in the narratives of the third sample, characterised by a more detailed elaboration of the narrative events described. It is interesting to note in this context that the status of (semi-)repetitions in signed and spoken discourse has been addressed from various perspectives to determine what they might reveal regarding word order, language production, discourse organisation, and narrative development.

Repetition in DGS productions has received some attention in experimental studies on sign language production in adult signers. In a study dedicated to monitoring in DGS and German, Leuninger and Waleschkowski (2009: 23, their translation) remark on sequences such as (310)–(312) which they categorise as *appropriateness repairs* (A-repairs) from a language production perspective. Note

that unlike self-repairs that result from the detection of an error (so-called E-repairs), A-repairs follow utterances that are deemed inappropriate to the context, which indicates that speakers do not only monitor their speech for error but also make repairs "to express the same ideas more appropriately" (Levelt 1983: 53). Such repairs might involve a specification of the timing (cf. (310)), the subject (cf. (311)) or the location (cf. (312)) of the activity described.

(310)   EARLY//   9 O'CLOCK...
        (early// at nine o'clock)

(311)   [discourse topic drop_a   FURNITURE_B   CARRY-IN]_1
        // [TWO   MEN_a   discourse topic drop_b   CARRY-IN]
        ((Two men) carry furniture// two men carry (the furniture))

(312)   Pro   SIT,   SWIMMING   POOL_A   SIT_{AT-A}
        (He/she sits (there), he/she sits at the swimming pool)

Particularly the two latter examples are reminiscent of the repetitions we observed in our data. However, our analysis of the data reveals that repetition does not only occur in repairs to appropriateness in the context of hesitations or other types of disfluency. Rather, it appears to reflect a more generalised phenomenon observed in research on ASL and other sign languages that might be ultimately related to the characteristics of discourse in language communities with an oral tradition, signed or spoken. Indeed, the phenomenon was first remarked upon by Fischer and Janis (1989: 281, their emph.) when they observed constructions in which the same verb (or verbs with similar roots) occurred twice, "separated only by the object and/or sentential adjuncts)" (compare example (313)).

(313)   STUDENT NAME S-A-L-L-Y <u>type her term paper type</u> [asp:cont]   [ASL]

Because the repetitions Fischer and Janis (1989: 292) observed involved verb forms that differed regarding the information encoded (in example (313) the second verb form contains aspectual information not expressed in the first instance) the authors invoke "the notion of 'heaviness', suggesting that when a verb becomes too "heavy" with attachments, it must split off and do double duty." According to the authors (1989: 285) what all repeated verb forms in so-called *verb sandwiches* had in common was that they encoded "d i f f e r e n t information" (ibid., their emphasis). Further, the data obtained in a recent cross-linguistic study on word order in ISL (Irish Sign Language), VGT (Flemish Sign Language), and Auslan (Australian Sign Language) reveals that the phenomenon is quite common across sign languages. Indeed, "verb doubling" was found to occur in 16% of responses in the data collection (Johnston et al. 2007: 192). The few examples mentioned (e.g. BOY HUG WITH OLD^MOTHER HUG (ISL)) are strikingly similar to the ones

observed by Fischer and Janis (1989) and by ourselves in the present study. So is one of the examples provided in a study of word order in Spanish Sign Language (LSE) (cf. (314) from Morales-López et al. 2010: 20, our free translation based on the LSE glosses).

(314)   ___p____   (LSE)
         SABER,   (DEIX.PERS.1)   **ENCANTAR** TORTILLA
         DEIX-LUG.tortilla   COMER-ASP.DUR   **ENCANTAR**
         '¿Sabes?, a mí es que me encanta la tortilla. Es que me encanta.'
         'You know, I really like the tortilla. Eating tortilla I really like it.'

Beyond the descriptive level, Massone and Curiel (2004) also put forward their assumptions about the origin of variation in sign language production, including phenomena such as repetition, which they observed in their study on Argetine Sign Language (LSA). The authors (2004: 87) identify two main factors, namely, modality of expression, and oral tradition when they state that "[s]uch variations are evidence of a syntactic structure determined mainly by conversational factors that imply redundancy, repetition, focus, deletion of constituents, and syntactic elaboration typical of orally transmitted languages, all of which factors depend on the possibility of providing syntactic information by various articulators, both simultaneously and sequentially." The relevance attributed to discourse factors is well in line with discourse oriented studies, in which repetition is regarded as a rhetorical feature that contributes to the organisation of discourse, through the provision of additional information and the establishment of links between different parts of the text produced (Tannen 1987). For further illustration we might consider Bavin's (2004: 20) sketch of the "gradual build-up" style (the description is based on evidence obtained from young Warlpiri users recounting the frog story):

> Information is repeated, maybe in a different form or word order. A "build-up" style is often used: information is repeated with some new added. There can be a gradual build-up of information; for example, in telling the frog story a speaker might give the information that someone fell, then someone fell to the water, then someone fell down to the water, and then specify that it was the child and the dog who fell. So not all is revealed at once, and perhaps this is a way of holding the attention of the listeners. Repetition is noted to some extent even in narratives of five-year-olds.

Against this backdrop, and without loosing sight of discourse characteristics related to the visuo-gestural modality of expression, it seems, assumptions about the impact of iconicity on story-telling in sign language, such as those expressed by Taub and Galvan (2001) need to be regarded with caution. Note that, according to Taub and Galvan (2001: 178), "ASL signers consistently incorporate much more conceptual information into their descriptions of motion events than do English

speakers" which they argue reflects the "deep influence of iconicity on ASL descriptions of motion events". As it turns out, the comparison of Bavin's sketch of the gradual build-up style he observed in oral story-telling and the narrative elaboration documented for some participants in our study makes apparent that there are similarities across modalities that deserve further attention in research on sign language discourse.

From a developmental perspective, what we learn from the literature on narrative skills in spoken language learners is that the functions repetitions serve in narratives change over time. Based on the insights obtained in their broad cross-linguistic investigation, Berman and Slobin (1994: 183) remark that while repetition of nouns in young 3–4 year old children is assumed to reflect problems of lexical retrieval and disfluencies in extended discourse, children aged 5 use repetition as a rhetorical device to express aspectual distinctions, as for example in (315) to express protracted and iterative aspect (examples from Berman & Slobin 1994: 183). Repetition as discourse-based reiteration occurs later in the retelling of the same narrator (cf. (316)). Repetition as a rhetorical device also becomes apparent in (317).

(315) He was playing with the bees. He was playing with the bees again,
he was trying to kid them. [E5b-5;2]

(316) And then the dog was still trying to kid the bees...

(317) And then he called for his frog again. He called in a hole, and the dog called in the beehive. [E5-5;11]

Turning to the evidence obtained in our study we are inclined to interpret examples such as the ones listed in Table 3.46 not only regarding the participants' command of the target head-final VP and IP (cf. (318)–(320)). These sequences also reflect the progress they make in their attainment of narrative skills, as the repetitions contribute to the creation of cohesion and coherence by providing further specifications on referents, (cf. (321)–(323)), goals (cf. (324) or locations (cf. (325)–(328)).

Table 3.46: Repetitions in the participants DGS narratives.

	Example	translation (participant / file)**	no.*
(318)	a. $_x$<___> LOOK$_x$ b. HAPPY c. $_x$<_____> NEW FROG$_2$ LOOK$_2$++	(S-1) '(He = boy?) is looking at ... Happily, (he) is looking at the new frog.'	(146)

Table 3.46: continued

	Example	translation (participant / file)**	no.*
(319)	a. THEN [DET$_{LOC}$]$_{H\ (2)}$ASK$_X$ b. $_2$<_____> HEDGEHOG$_{7\ (2)}$ASK$_7$: WHERE FROG	'Then there, (he = the boy) asks … (S-3) (he) asks the hedgehog: "Where is the frog?'	(165)
(320)	a. TAKE$_{CL:µ}$ b. ONE FROG$_µ$ TAKE$_{CL:µ}$	'(He) takes (it). (C-3) One frog, (he) takes.'	(297)
(321)	a. THEN SLEEP b. BOY AND DOG WAKE-UP	'Then, (?) sleep… (F-1) The boy and the dog wake-up.'	(215)
(322)	a. THEN HEAR. b. BOY HEAR	'The (he) hears. (F-3) The boy hears.'	(244)
(323)	a. LATER SLEEP b. BOY SLEEP	'Later, (?) sleeps. (H-3) 'The boy is sleeping.'	(272)
(324)	a. CLOTHES PUT-ON b. OUTSIDE SEARCH PUT-ON	'(He) puts on clothes. (M-1) To search outside, (he) dresses up.'	(182)
(325)	a. THEN CLIMB b. BOY LOOK$_X$ c. STONE CL:FORM $_K$ [CLIMB]$_{UP-K}$	'Then (he) climbs up.' (F-3) 'The boy looks.' 'There is a stone, (he) climbs up on it.'	(247)
(326)	<u>neg nm: CL:BODY: startles</u> a. SEE STAND-ON$_{CL:λ}$ b. [DET$_{LOC}$]$_E$ HEAD$_E$ STAND-ON$_{CL:λ}$	'(He) doesn't see (S-3) (he) is standing on something, star- tled, on the head, he's standing.'	(164)
(327)	a. SEARCH++ b. [DET$_{LOC}$]$_{IN-A}$ HOUSE SEARCH	'He searches. (H-3) He searches in the house.'	(270)

(328)	[– dom] CL:FORM (container)
	 a. IDEA+ [+ dom] CLIMB-OUT
	 b. IDEA, CL:FORM (container)
	     [– dom] CL:FORM (container)
	     [+dom] JUMP-OUT
		'(He = the frog) has the idea, to climb
		 out.
		 (He) has the idea to get out of the jar.'
		                  (C-1)
			(290)

* Original numbers of examples discussed in previous sections.
** S=Simon, M=Maria, C=Christa, F=Fuad, H=Hamida

Language contact at the level of word order: verb placement variation. We indicated previously that the incidence of target-deviant word orders in our corpus is low. However, there is one participant, Fuad, who occasionally produces sequences that do not comply with the target constraints. Consider, for example, the utterances in (212) and (213) provided here in (329) and (330). As we can see in (329), the PP 'in the forest' appears after the plain verb form SEARCH. Clearly, this sequence is reminiscent of surface SVO constructions in German (and LBG)

and therefore represents a candidate for language mixing at the level of word order. The potential status of this utterance as a language contact phenomenon needs to be assessed in the context of the sentential formats produced at the time. Example (330), in which the locative complement appears in preverbal position, shows that Fuad produces other sequences that clearly adhere to the constraints imposed by DGS. Hence, although Fuad produces target-deviant SVO formats, it seems his DGS learner grammar is not a "German" grammar (in the sense that he would have misset the relevant word order parameters). Rather, it seems various parametric options are coexisting at the time, which is reminiscent of the "mobile IP" phenomenon observed in the productions of L1 and L2 learners of German (cf. section 4.3.2 below for further details). The succession of self-repairs in example (214) repeated here in (331) seems to corroborate our assumption about variation in Fuad's DGS grammar at this stage.

(329) THEN   BOY   SEARCH+++ $[DET_{LOC}]_{IN}$ FOREST   (Fua.-file 1)
       'Then the boy searches in the forest.'

(330) $[DET_{LOC}]_E$ WATER$_E$ $[FALL_{CL:\lambda}]_{INTO\text{-}E}$
       'There, into the water, (they) fall.'

(331) a. $_{1,2}$<__>
            SEE   (Fua.-file 1)
            '(They) see…'
       b.   DISAPPEAR   DET$_{SELF}$ #unclear#
            '…gone, he…'
       c.   THEN   #FROG#   DISAPPEAR
            'Then… gone…'
       d.   WRONG
            'wrong…'
       e.   DISAPPEAR   #TH(EN)#   FROG$_3$+++
            '…gone … frog…'

In our analysis of the data we also remarked upon the participants' target-deviant use of SVO patterns with the auxiliary PAM. We will take up this phenomenon below, after our discussion of the main findings concerning the processes related to the IP.

   Grammatical processes related to the IP. Thus far we have been concerned with word order and the issue of whether elements in a clause are arranged in a target-like manner. We turn next to the question of whether morphosyntactic processes associated with the IP are operative. Recall that the availability of the IP is

reflected in the target-like inflection of verbs as, by assumption, verbs are raised to the INFL position so that their features be checked. Before we look at what the data reveal regarding verb inflection it is important to acknowledge here that the distinction of plain, agreement and spatial verbs is mastered by all participants: there is, indeed, no evidence of a confusion of verb types as it has been found to occur in the early productions of young infants. That said, it must be noted that the narratives collected in this study vary regarding the range of inflected verbs they contain. Particularly in the narratives produced in the first recording, the range of agreement verbs is very limited, typically including the verbs LOOK- AT, WAVE and TAKE. Although other verbs are used at a more advanced narrative stage, the plot of the frog story itself contributes to a rather restricted selection of agreement verbs. Not surprisingly, verbs of spatial motion and location occur frequently in the recounts of a story that revolves around the protagonists' search of the run-away frog (we only have to think of the protagonists' walking around as they search various locations).

Verb inflection: agreement verbs. The analysis reveals that although some participants produce agreement verbs infrequently, in particular in their file 1 narratives, the verbs they use appear in their inflected form without exception. At the same time, we remarked that subject and/or object reference in constructions with these verbs was not always clear, indicating that participants fail to mark referential identity at times. These observations allow for the conclusion that while verb inflection is mastered by all learners at the onset of the study, deficits remain regarding the syntax-discourse interface which models referential maintenance.

For further illustration we might consider the relevant processes as they are sketched in Figure 3.13. In this sketch, utterance (A), produced by Simon in file 1 is represented as an IP structure: by assumption, inflected verb forms are raised to the head-final INFL position, where its features are checked. While the verb form in (A) encodes an object argument by picking out a locus in the sign space (to the right, bottom), referential identity remains generic as the object is neither referred to via an overt lexical element or associated previously with a locus in the sign space. Whether or not the object in (A) and the subject of the previous narrative passage (that is, the dog) are identical cannot be established unambiguously: Simon previously describes the anxiety of the dog running away. He does so in the context of an SRF, with eye gaze directed toward the bottom right, which corresponds with the location of the locus picked up by STING to mark object agreement. However, this type of non-manual marking only represents an optional agreement marker in DGS.

(failure to mark refer-ential maintenance)	← **Discourse–syntax interface** [coindexation] →	
(A) (Sim.-file 1)	**IP structure (> verb inflection)** $_4$STING$_X$ 'They (the bees) sting (him =the dog?).'	

Figure 3.13: Referential ambiguity and the syntax-discourse interface.

From a developmental perspective, the discrepancy observed regarding the morphosyntactic and the discourse level patterns well with previous findings on the acquisition of other sign languages (notably, BSL and ASL), indicating that learners take their time before they fully master the integration of the information from different levels of analysis.

Verb inflection: spatial verbs. Typically, participants produce constructions with spatial verbs that inform about the protagonists' activities as they wonder about the whereabouts of the runaway frog: the boy and the dog walk about several locations, climb up a tree and a stone, or fall down a cliff, which prompts descriptions involving spatial verbs such as FALL, GO, CLIMB-UP. Spatial verbs appear in their target-like inflected form as of the onset of the study (cf. examples (332)–(336)), which corroborates the assumption that processes associated with the IP are operative. However, at times, participants fail to provide specific information on the agent and/or location of the activity, which indicates that deficits remain at the narrative level, in particular at the beginning of this study. For further illustration we might consider Simon's file 1 example (162) repeated in (332), The utterance involving the verb CLIMB-OUT is a sophisticated sequence with a complex classifier construction, in which an h2-classifier backgrounds the information about the location the agent climbs out from. However, only the audience acquainted with the frog story might infer that it is the frog climbing out of the jar, because Simon does not provide any further information on the location and fails to reintroduce the referent of this activity. Fuad's file 1 example (216) repeated in (333), by contrast, is clear because he reintroduces the agent with a full NP and DET$_{ART}$. However, in this case, too, the nature of the location remains unspecified as he only reports previously that the boy and the dog are looking at the frog (he does not mention that the frog is sitting in a jar).

Another spatial verb frequently used in this corpus is the verb GO. This verb appears, at times, without any locative specification, as is the case in Christa's file 1 example in (334), in which we learn that the frog leaves somewhere to the right. Other examples are more sophisticated, with spatial verb forms agreeing with the location established previously. In Christa's file 1 example (292) repeated in (335), for example, the boy speculates about the frog being in the forest. Notice that

the verb GO in the subsequent clause correctly agrees with the locus associated previously with the forest.

Participants' data document the command of the appropriate choice of classifier elements. Constructions with the verb FALL, for example, typically involve the classifier element for human beings. Where referents are not specified, in particular when referential shifts succeed each other, it is not always clear who falls, although the information can often be retrieved from the story context. Fuad's file 1 example (221) provided in (336), marks an exception, as it remains unclear who is actually falling after the dog hits the tree. As it turns out it is likely to be the beehive falling. Yet, because Fuad uses the classifier element for human beings it is not obvious that this interpretation is what he has in mind when he signs the utterance.

(332) #([PRON$_{PERS}$]$_1$S ?)   (DET?)   [– dom] [CL:FORM (narrow object)]$_B$
                                       [+ dom] CLIMB$_{OUT\text{-}OF\text{-}B}$ (Sim.-file 1)
       '(He = the frog) gets out (of a container), over the rim.'

(333)   (Fua.-file 1)
                                       [– dom] CL:FORM (container)
       [DET$_{ART}$]$_3$ FROG$_3$ LIKE-TO: [+ dom] JUMP-OUT
       'Then the frog wants to get out.'

(334) GO$_{TO\ THE\ RIGHT}$ (Chri.-file 1)
       '(He = the frog) goes away.'

(335)   [– dom] TREE$_{A\text{-}}$ GO$_{TO\text{-}A}$ (Chri.-file 1)
       THEN   BELIEVE :   WOODS$_A$ [+ dom] [DET$_{LOC}$]$_A$
       'Then (he) believes (he = the frog) is in the woods. (He) goes there.'

(336) a. $_1$<____>
          THEN   DOG$_1$ SEE :   TREE$_\theta$ (Fua.-file 1)
          'Then the dog sees (that) there is a tree.'

       b. $_1$<____>
          HIT-IT$_{CL:\theta}$
          '(He) hits it.'

       c. THEN   FALL$_{CL:\lambda}$
          'Then (it) falls.'

DET$_{EXIST}$. Participants' use of DET$_{EXIST}$ to mark spatial and referential agreement adds a piece to the puzzle of determining the status of the structure available to the learners. Clearly, the productive and creative use of DET$_{EXIST}$ documented in the narratives can be taken as an indicator of the availability of the IP phrase, and where it is used as one of several means to create cohesion it is an indicator of the

mastery of the syntax-discourse interface. We will expand on the latter dimension in section 3.11.2.1.

Personal agreement marker (PAM) and language contact. In our sketch of the main characteristics of DGS, we noted that PAM is used in constructions with plain verbs to mark object agreement (and case). Hence, constructions with PAM provide an additional cue for the availability of the IP. Participants in the present study, however, used this auxiliary fairly infrequently. Indeed, none of the participants used PAM in the narratives of the first recording. Neither did they use verbs that would require its use such as the verb LIKE. Because information on the emotions of the protagonists is provided sparingly in the narratives collected at the beginning of this study, it comes as no surprise that this expression is not used at the time (the same holds of predicative constructions with the attributive adjective CROSS). As for the constructions with PAM appearing in the third sample, the analysis reveals that they are target-deviant at the level of word order. Rather than being arranged in accordance with DGS constraints, constituents appear in a sequence that is reminiscent of surface main clause SVO order in German. Note that the target-deviant pattern appears with various types of predicates, namely, (a) in predicative constructions with the attributive adjective CROSS (cf. (337)), (b) in constructions with the agreement verb STING (cf. (338)), and (c) in constructions with the plain verb LIKE (cf. (339)).

(337) THEN   FIRST   BOY   CROSS   PAM$_2$ DOG$_2$ (Muh.-file 3)
       'Then firstly the boy is cross with the dog.'

(338) $_7$STING$_2$ PAM$_2$ DOG$_2$ (Muh.-file 3)
       '(They = the bees) sting the dog.'

(339) a. [DET$_{LOC}$]$_A$ DOG$_1$ AND   BOY$_2$ LOOK$_X$ (Sim.-file 3)
           'There, a dog and a boy look at something on the floor.'
       b. LIKE   PAM$_3$ ONE   FROG$_3$
           '(They) like a frog...'

The observation that word order in constructions with PAM is target-deviant across the board, raises the question of why participants would choose a sentential format (that is, SVX) they do not use otherwise. By assumption, the use of PAM in SVX constructions constitutes a hybrid phenomenon borrowed from LBG. Indeed, the use of manual means to represent spoken utterances in LBG results in hybrid sentential patterns that correspond neither to one or the other language. This is the case of LBG constructions in which the sign AUF ('on') that corresponds with the DGS sign PAM is used to mark the verb complement relation (note that the generalised use of AUF to mark object and case agreement has no equivalent in German). Interestingly, there is additional evidence from the written German

samples discussed later in this work indicating that hybrid LBG constructions not only affect the participants' productions in DGS but also their productions in written German. As we will see in section 4.11.2.4, some of the participants' written narratives reveal an erroneous generalised use of the preposition *auf* ('on') as an agreement and case marker at a time when the case and agreement paradigms are not yet available in the German learner grammars.

Occasional combinations of the sign HAVE with a predicative adjective, documented in the productions of Simon in his file 3 (compare (175) repeated here in (340), point into the same direction, that is, the influence of LBG resulting in a type of construction that is neither DGS nor German (in German the equivalent of (340) would involve the use of the auxiliary *sein*, 'to be').

(340)   THEN+   DET$_{ART}$?   BOY   **HAVE**   TIRED   (Sim.-file 3)
        'Then the boy is tired.'

3.11.1.2 CP tracking: sentence types and signers' perspectives

Based on the diagnostic criteria established in section 3.3 for the assessment of the main structural properties of DGS associated with the CP level, including those dimensions that involve the syntax-discourse interface, we examined the samples for complex sentential constructions (including those involving referential shifts, that is, POVs) and interrogative clauses with a view to determining whether the structure available included the CP layer. Simultaneous constructions (two-handed) were considered as additional evidence for syntactic complexity and an advanced narrative level. All in all, the analysis reveals that while the CP is available to participants at the onset of this study not all of them fully exploit the sentential structure at the time. In later recordings, participants produce narratives characterised by the use of a broader range of complex structures serving diverse narrative functions, for example, the expression of characters' thoughts and emotions.

Complex syntax: Interrogation. Because question formation involves mechanisms associated with the full CP structure, it is commonly used as a diagnostic criterion for the availability of the an expanded structure. Unfortunately, however, interrogative clauses not only appear seldom in the data collected in this study, they commonly consist of a single wh-word (cf. (341) an example from Muhammed's file 1). Single wh-word interrogatives represent grammatical and appropriate utterances in DGS, a pro-drop language that knows no copula and allows for subject and object drop in certain contexts. Muhammed's example in (341b) has a meaning that would correspond to the English question "where is the frog?". Nevertheless, in our analysis we adopted a rather strict criterion and regarded the occasional production of this type of question as insufficient evi-

dence. Interrogative clauses containing more than one element were considered as an indication of the availability of the target mechanisms for question formation. Only Maria produces this type of evidence from the onset of the study (cf. example (183) repeated in (342)), whereas other participants produce them in the third sample (compare Simon's example in (343) and Fuad's in (344)).

In the data collected there is no evidence of target-deviant question formation, with the exception of what was considered to represent a candidate for language mixing, namely, Christa's interrogative clause with the LBG sign IST (cf. (345)). Because IST does not occur in other contexts, it seems Christa uses the interrogative clause in a formulaic manner in file 1, an assumption that is corroborated by her production of the same pattern in an embedded context (cf. (346)). By the time of file 3, the pattern has disappeared (Christa rather produces several single wh-word interrogatives, including the one in (347)).

(341) a. $_3$<_____   (Muh.-file 1)

                  nm: surprised

    a. THEN   BOY$_3$ LOOK$_1$:   FROG$_1$ DISAPPEAR

       'Then the boy sees with surprise that the frog has disappeared.'

    b. ___>

       WHERE

       'Where is (he = the frog)?'

(342) $_1$<_____>

    DISAPPEAR   HOW+++   (Mar.-file 1)

    'How did (he) disappear?'

(343) $_2$<_____>

    HEDGEHOG $_{(2)}$ASK$_7$:   WHERE   FROG   (Sim.-file 3)

    'Then (he = the boy) goes and asks (him = the hedgehog):

    Where is the frog?'

(344) $_1$<_____>   (Fua.-file 3)

    WHERE   [DET$_{POSS}$]$_1$ FROG

    'Where is my frog?'

(345) $_1$<_____>

    CALL: WHERE   IS   FROG   (Chri.-file 1)

    '(He = the boy) calls, "where is the frog?"'

(346) a. THEN   BELIEVE: ACCOMPANY   (Chri.-file 1)
           'Then (he = the boy) believes that (he = the deer) accompanies him.'
       b. WHERE   IS   FROG,   ACCOMPANY
           '(He) accompanies (him) where the frog is.'

(347) a. PAINSTAKING   SEARCH   (Chri.-file 3)
           'He searches painstakingly.'
       b. WHERE
           'Where...'

Progress in the use of interrogatives for narrative purposes can be observed in Muhammed's narratives. This participant, who only used a single wh-word in file 1, makes a skilful use of interrogation for narrative purposes in file 3. In his lively narration of the frog story, he frequently addresses the audience, for example, by using yes-no questions (compare (122) repeated in (348)). Muhammed also makes use of single wh-word questions (cf. example (123) repeated here in (349) or (124) repeated in (350)). These often serve a rhetorical function (in the sense of an invitation to "guess what happened next" in (349) or an indication that what follows next represents additional background information).

(348) $_{\text{SIGNER}}$<_____>
           UNDERSTAND   [PRON$_{\text{PERS}}$]$_{\text{AUDIENCE}}$ (Muh.-file 3)
           'Do you (the audience) understand?'

(349) $_{\text{SIGNER}}$<_____>
           THEN   SUDDENLY   WHAT   (Muh.-file 3)
           'Then, suddenly, (guess) what?'

(350) a. $_3$<_____>   (Muh.-file 3)
           FRIGHT   DOG
           'The frog is scared about the dog.'
       b. WHY   BECAUSE   DOG   CANINE-TEETH
           'Why? Because of the dog's canine teeth.'

Complex syntax: subordination and coordination. Participants vary concerning their production of complex sentential constructions at the onset of the study. Simon and Hamida, for example, only produce few other than those involving POVs serving the function of reported action. In general, the analysis reveals an increased range of complex constructions in the narratives of the third sample when compared with the complex sentential constructions produced in the first sample. Typically, the embedded clauses produced belong to the type of constituent clauses and they

are selected by psychological verbs.[30] Commonly, they are placed after the matrix clause, as in Muhammed's file 1 (cf. (351)) and file 3 (cf.(352)) examples. Occasionally, constituent clauses precede the matrix clause. This is the case in Maria's file 1 (181) and file 3 (354) examples (example (181), repeated here in (353), is a construction that involves the determiner DET_{EXIST} correctly appearing before the matrix verb KNOW, a verb that also allows for a postposition of the embedded clause). The narratives of Simon and Hamida, too, now contain complex sentential constructions with embedded clauses selected by psychological or performative verbs. Simon, for example, produces the sequence in (355), with an embedded clause in which the object is expressed overtly prior to the reported action. The sequence in (267) from Hamida's file 3, repeated here in (356), contains a relative clause. Christa's file 3 narrative, too, includes a remarkable range of complex sentential clauses, such as the one in (294) repeated in (357) with the verb WISH.

(351) BOY   THINK: DOG   PERHAPS   GONE   (Muh.-file 1)
'The boy thinks that the dog might be gone.'

(352) a. $_{12}$<____>
       ONE   FROG$_{12}$ LIKE-NEG: WAVE$_{1,2}$ (Muh.-file 3)
       'One of the frogs does not want to wave to (them = boy and the dog).'

       b. $[PRON_{PERS}]_{12}$ WISH :   CALMLY   SLEEP
       'It wishes to sleep calmly.'

(353) a. $_2$<____
       AND   DOG$_2$ SPOT$_X$:   (Mar.-file 1)
       'And the dog spots (it) to the left.'

       b. _____>
       $[DET_{EXIST}]_X$:   KNOW
       '(He = the frog) is there, (he) knows that.'

(354) BUT   FROG   CALL   ,   HEAR   (Mar.-file 3)
'But (he) hears the frog calling.'

(355) $_2$<____>
       THINK :   TREE   BRANCHES$_\theta$ HOLD$_{CL:\theta}$ (Sim.-file 3)
       '(He) thinks (he) is holding the branches of a tree.'

---

30 Studies on frog story productions in spoken language learners have revealed that 9-year olds make overt temporal reference to "next morning" (though not all); interpretative comments (about the emotions, intentions and states of mind) appear scattered in these narratives. To set off high-point events, German children use expressions like "suddenly" (also learners of Hebrew, but not so learners of English).

(356)   (Ham-3)

[– dom] [CL:FORM (container)]$_{\text{LOC-A(HEAD)}}$

SUDDENLY   ONE   DOG$_2$ [+ dom] [CL:FORM (container)]$_{\text{LOC-A(HEAD)}}$

—————————— rel —————————— $_2$<———————————————>

[– dom] PUT-ON$_{\text{A(HEAD)}}$

[DET$_{\text{REL}}$]$_A$ GLASS   [+ dom] PUT-ON$_{\text{A(HEAD)}}$

'Suddenly a dog puts a container made of glass on his head.'

(357)   a.   SUDDENLY   BOTH   TIRED   (Chri.-file 3)
        'Suddenly they are both tired.'
   b.   WISH :   BED   SLEEP
        '(They) wish to go to bed.'

The participants' command of syntactically complex structures also becomes apparent in their production of coordinated constructions. These occur frequently in Fuad's file 3, for example. For further illustration consider the example provided in (358), in which Fuad recounts that the boy is looking at the frog and waits. Examples (234) and (235), repeated here in (359) and (360), illustrate Fuad's use of the coordinating conjunction AND to express the simultaneity of the activities of two different protagonists (the boy and the dog). Note that the expression of this type of simultaneity also occurs through the use of the adverb ALSO (compare example (242), repeated in (361)).

(358)   a. $_1$<———————————————>   (Fua.-file 3)
        LOOK   CL:FORM (glass-bowl)   AND   WAIT
        '(He) looks down the bowl... and waits.'

(359)   a.   [– dom] CL:FORM (boot)   (Fua.-file 3)
        BOOT   [+ dom] LOOK
        '(He) looks into a boot.'
   b. $_1$<—————————>
                nm: CL:BODY: looking inside
        [– dom]   CL:FORM (boot)
        [+ dom]   CL:FORM (boot)
        '(He) holds it up and looks inside.'

(360)   a. $_4$<———————————>
        AND   DOG   LOOK :   WHERE   (Fua.-file 3)
        'And the dog, too, looks, where is (he)?'

(361)   a. $_1$<————————>
        CALL+++.
        '(He) calls.'

b.
$$_4<\underline{\qquad}>$$

DOG$_4$ TOO CALL+++ (Fua.-file 3)

'The dog calls, too.'

Complex syntax: Referential shift. Turning to referential shift, the analysis reveals that participants vary regarding their use of shifted referential frameworks. Again, Muhammed and Maria stand out against the other participants regarding their skilful use of SRFs in file 1, which documents the mastery of non-manual linguistic devices to signal and mark referential shift (body orientation, eye gaze direction, facial expression). SRFs are chosen where they are grammatically required, that is, where POVs are lexically selected by verbs like SEE or REGARD or in constructions with direct quotation (where the performative verb might remain unexpressed). File 1 narratives of other participants also document the use of referential shifts and the signalling and marking of POVs. However, referential ambiguities make apparent that while these participants exploit the CP structure to shift reference at the onset of the study, failure to establish loci contrastively affects referential maintenance in constructions with SRFs. We will expand on this observation in the next section, where we will also learn about the progress achieved in this respect.

3.11.2 The syntax-discourse interface: on the orchestration of linguistic devices for

3.11.2.1 narrative purposes

The orchestration of linguistic devices for narrative purposes, as we learned in section 3.1.4 involves the task of integrating the knowledge attained at different levels of linguistic analysis and using it appropriately for different communicative purposes. Throughout the preceding sections we have learned that participants in this study have a command of the lexical, morphological, and syntactic properties of DGS (cf. Table 3.47 for an overview of the developmental profiles established). The question that imposes itself at this stage is how they exploit their linguistic resources for narrative purposes. In particular, we are interested in the mastery of those linguistic means that contribute to the creation of cohesion and coherence. In previous sections we already remarked on the participants' progress regarding their mastery of several properties that involve the syntax-discourse interface.

In our discussion of repetitions, for example, we remarked that this phenomenon reflects the participants' progressive attainment of narrative skills, as the repetitions they produce contribute to the creation of cohesion and coherence by providing further information on referents, goals or locations. Changes con-

Table 3.47: Overview of participants' DGS profiles.*

Area	Syntax-discourse interface					CP			IP					VP
Participant	Spatial relations	Referential shift	Simultaneous constructions	Referential establishment / maintenance	Reference forms / functions	WH	RF	EC	PAM*	CCI	DET_EX	V-Infl	IP-head	VP-head
Muhammed	X	3	3	1	1	3	1	1	3	1	1	1	1	1
Simon	3	X	--	X	X	3	1	1	3	1	1	1	1	1
Maria	1	1	3	1	1	1	1	1	3	1	1	1	1	1
Fuad	1	3	--	3	3	3	3	1	3	3	1	1	3	3
Hamida	3	3	1	3	3	3	1	1	--	3	1	1	1	1
Christa	1	1	--	1	3	3	1	1	3	1	1	1	1	1

* Timing indicated through file numbers (Wh = Interrogation; RF = Referential shift; EC = embedded clauses; CCI = complex classifier constructions; DET$_{EX}$ = DET$_{EXIST}$ -agreement; V-Infl = Verb inflection; IP-head = IP headedness final; VP-head = VP headedness final). X = partial mastery in file 3 (indicates inter-relation of referential shift, referential establishment and maintenance, reference forms / functions). -- = no evidence. PAM (examples occur with target-deviant word order)

cerning the use of complex constructions, regarding their variety and their frequency, are also reflected at the level of narrative complexity. The expression of temporal relations via complex sentential formats derives more structured narrative accounts of the events described. As participants also start out to relate the emotions and thoughts of the protagonists involved by using psychological verbs, causal relations determining the story plot that remained implicit before are now expressed explicitly. These observations hold equally of the participants' command of shifting referential frameworks and the linguistic means they use for reference maintenance: when mastered, co-reference and the appropriate use of referential shifts represent two linguistic phenomena that contribute significantly to an appropriate understanding of the narration produced.

The following sections are dedicated to the discussion of the main findings obtained in this respect. We will look first at the linguistic use of sign space for referential establishment and maintenance. We will then discuss the participants' choice of reference forms and functions, before we finally turn to the intricate use of this space for the expression of spatial relations.

3.11.2.2 Referential establishment and maintenance

Referential establishment and maintenance, expressed in sign languages through the linguistic use of sign space, is a complex phenomenon. As remarked upon previously (cf. section 3.1.4.2), knowledge from different levels of linguistic analysis needs to be integrated in a skilful manner. In the course of their narrative productions, competent signers use the sign space like a "referential map": they pick out loci to associate them with referents, they might become a part of the map when they adopt the perspective of one of the referents – associating their body with the locus selected for that referent. As they use this map in their narrations they are confronted with the challenge of being consistent. Their narrative account will only be comprehensible if they control for the multiple intersections that make up what can be considered to represent a filigree linguistic network serving the purpose of providing a cohesive narration. So, what do the data reveal about the participants' mastery of these complex tasks? What linguistic means do they use to establish and maintain reference? Do they use these devices in a consistent manner?

Linguistic means used. In general terms, the analysis of the data reveals that participants make use of various linguistic means to establish and maintain reference, including determiners, pronouns, agreement verbs, and referential shifts. Individual variation becomes apparent with respect to range and

frequency of the linguistic devices used. Muhammed's file 1 examples in (113), repeated here in (362), illustrate a consistent use of referential loci to express referential identity, whereby the locus established via DET$_{LOC}$ in (362a) is picked up by the agreement verb SEE and DET$_{EXIST}$ in (362b), and also by the agreement verb TAKE in (362c).

(362) a. PERHAPS   FROG$_1$ [DET$_{LOC}$]$_E$ (Muh.-file 1)
         'Perhaps the frog is there.'
      b. THEN   SEE$_1$:   [DET$_{EXIST}$]$_1$ FROG$_1$
         'Then (he) sees there is a frog.'
      c. THEN   [TAKE$_{CL:\mu}$]$_1$
         'Then (he = the boy) takes the frog.'

As for the means used to establish referents, the analysis reveals that article determiners and pronouns are used fairly infrequently by all participants. Only Muhammed makes a more frequent use of these linguistic devices, not only in file 1, as documented in the previous examples, but also in file 3, that is, in the context of a narration that is remarkably lively in style, including several rhetorical passages, in which he addresses the audience by using a pronominal determiner directed toward the centre of the sign space. The choice of a locus on the sagittal axis corresponds with the canonical location of referents with whom signers interact when they shift reference (Perniss 2007: 1319). In Muhammed's data we also find pronouns in reported dialogue contexts involving POVs, as is illustrated in (363), a passage in which the boy's parents give their consent to his intention of going to bed. Notice that in the sequence preceding (363) Muhammed establishes the locus for the parents to his right, when he recounts that the boy tells his parents that he is tired. In this narrative passage, pronouns, determiners, and referential shifts are skilfully used to create cohesion. The loci are established contrastively, and they are used consistently.

(363) $_4$<⎯⎯⎯⎯⎯⎯⎯⎯>
         PARENTS$_4$ SAY :   [PRON$_{PERS}$]$_1$ CAN   SLEEP   (Muh.-file 3)
         'The parents say you may sleep.'

In contrast to article determiners and pronouns, DET$_{EXIST}$ is used more frequently already in file 1, in particular by Muhammed, Maria, Fuad and Hamida. Maria's systematic use of DET$_{EXIST}$ and agreement verbs for reference establishment and maintenance in file 3 is sketched in Table 3.48 on the basis of examples (202)–(203). (notice that the same pattern is applicable also to Muhammed's examples (362)–(362) above).

Table 3.48: Expression of referential identity via DET$_{EXIST}$ and agreement verbs in Maria's file 3.

Discourse-syntax interface referential maintenance				
(SUBJ$_1$)	VERB$_2$ SEE$_{10}$: 'He sees.'	[DET$_{EXIST}$]$_2$ [DET$_{EXIST}$]$_{10}$ 'There is a baby.'	SUBJ$_2$ BABY$_{10}$	$_2$VERB$_1$ COME$_{TO-1}$ 'It comes to him.'

[DET$_{EXIST}$]$_3$ VERB$_3$

$_1$<_____> $_1$<_____>
[DET$_{POSS}$]$_1$ FROG$_{\mu/3}$ [DET$_{EXIST}$]$_3$ [TAKE$_{CL:\mu}$]$_{LOC:ON-HAND}$
'My frog is there.'   'He takes it on his hand.'

Evidence of a systematic use of referential loci in the narratives of the third sample are indicative of the progress made by those learners whose file 1 narratives documented remaining gaps in this respect (compare Simon's example (166) repeated in (364), in which the use of referential loci also patterns with the sketch provided in Table 3.48).

(364)   a. $_2$<_____>   (Sim.-file 3)
             nm: CL:BODY: looking over something
             SUPPORT-ONESELF-ON$_{CL:\xi}$
             '(He) supports himself (on something), looking over it.'
    b.   [– dom] SUPPORT-ONESELF-ON$_{CL:\xi}$
        [+ dom] SPOT$_3$
        '(He) spots (it = ?), whilst supporting himself of something.'
    c.   [DET$_{EXIST}$]$_3$ FROG$_3$
        'There is the frog.'

Choice of loci. As already remarked upon previously, participants vary regarding a consistent and contrastive use of loci picked up in the sign space. By way of illustration of this variation, we may consider the distribution of referential loci in the narratives of two participants, Muhammed and Hamida. Muhammed's consistent and contrastive use of the sign space for referential establishment and maintenance in file 3 is illustrated in Figure 3.14, which represents a sketch of the distribution of loci along the horizontal, sagittal, and vertical axes. This participant also reassigns loci consistently to avoid referential ambiguity.
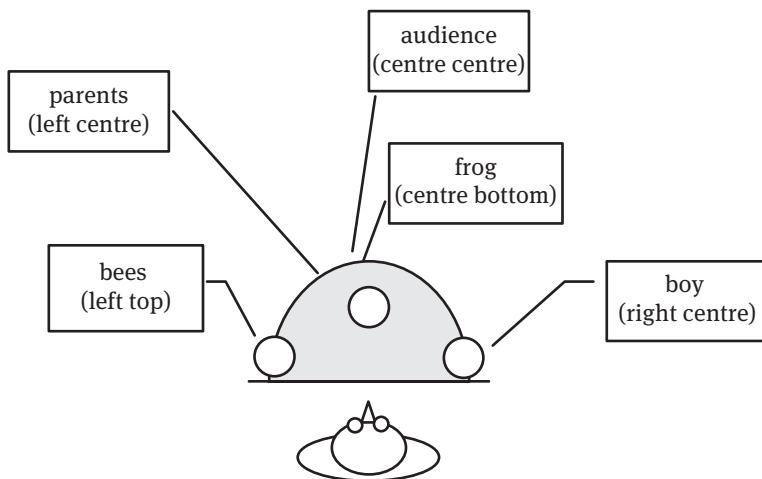
Figure 3.14: Contrastive use of referential loci in Muhammed, file 3.

The filigree network of referential loci used by Muhammed contrasts with Hamida's use of the sign space in her file 1. This participant, as we remarked upon previously u ses SRFs fairly frequently. POVs are marked non-manually, via a change in body orientation and eye gaze direction. While these linguistic means clearly distinguish FRFs from SRFS loci are not picked out contrastively, with the effect that different protagonists are associated with the same locus (for further illustration see Figure 3.15).
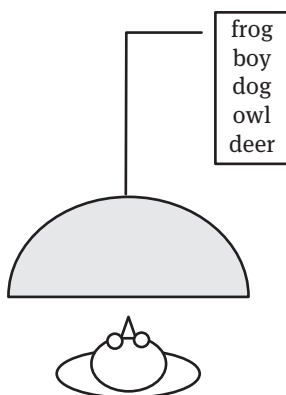
Figure 3.15: Referential loci in Hamida's file 1.

Narrative passages remain difficult to understand, in particular, where protagonists are not introduced or reintroduced via other (lexical) means. It becomes apparent then that Muhammed's and Hamida's use of sign space reflect different strategies regarding the use of the sign space to mark reference in the narration of the frog story, which consists of multiple sub-events involving several characters. Variation in this respect has also been observed in the productions of adult signers. In his study on narrative development in BSL, Morgan (2000), points out that representational space is "cleared" and "reused" several times. Signers are reported to "divide sign space up at several levels, both by assigning different areas of sign space to different events and by overlaying different events in the same sign space" (Morgan 1999: 52). According to Morgan (2000), the reuse of sign space occurs through the signalling of a new perspective by an overt reference form. However, some authors have also remarked that signers do not always use overt linguistic means to mark a change perspective. In a discussion of person deixis in ASL, Meier (1990: 182) (pace Bahan & Petitto 1980; Loew 1984), reports that role-playing is not always marked by body shifts, with the effect that the same locus is used to refer to distinct individuals, whereby the distinction of referential identity occurs on the basis of the discourse context.

It is interesting to note that striking similarities between signed and spoken narratives become apparent where reference is not marked or expressed contrastively. Notice that failure to pick out referential loci in a contrastive (and consistent) manner in sign language discourse has a similar effect as the one observed in spoken language production, when narrators choose to use the same pronoun in events that involve different characters as is illustrated in example (365) (from Berman & Slobin 1994: 56). Consider, in particular, the referential ambiguity of the pronoun "he" in the latter proposition ("he starts running") which we also repeatedly observed in our DGS data.

(365)   And then he stands up on the rock and hangs onto some branches, then it
        turns out they are antler – a deer's antlers, so – and he gets – he lands on
        his head and he starts running.   (E9k – 9:11)

Incidentally, the example also illustrates nicely that we are confronted with a problem at the pragmatic or narrative level, as the utterances are well-formed at the local syntactic level.

Non-manual means. Non-manual means are commonly attributed a secondary role in referential establishment, as they are considered to be optional elements that might appear in addition to linguistic means used to pick out referential loci in space. However, our data analysis reveals that referential loci are established and maintained at times via non-manual means, in particular, in the context of referential shifts. This is illustrated in example (159) repeated here

in (366), a passage, in which Simon recounts that the boy falls on the deer and the deer then runs toward the precipice. Typically, Simon does not reintroduce the boy as a protagonist by using overtly expressed linguistic devices (NPs, pronouns), which reflects his choice of the boy's perspective as the thematic perspective in his narration (we will take up this issue below, section 3.11.2.2). Where the recount of the boy's activities involves referential shifts, the signer signals and marks POVs through a change of eye direction slightly to the right. This is the case also during the production of the POV in (366a), in which the audience is informed about the boy's surprise after falling on the deer. As we remarked upon previously, referential identity in (366a) is problematic because the surprise could represent either the boy's reaction –after falling on the deer– or the deer's –realising that something has fallen on his back (the former interpretation being more likely because the deer is introduced only after this sequence, that is, in (366b)). As Simon goes on to narrate the deer's surprise in (366b) he changes eye gaze direction once again, this time to his left. Notice that in this case, the protagonist (the deer) is introduced via an NP and DET$_{LOC}$. After the FRF in (366d), Simon again takes up the perspective of the deer, and recounts that the deer rears, throwing the boy down from his head. In this case, the POV is marked non-manually by picking out a locus toward the centre space in front of the signer, which coincides with the final locus of the spatial verb GO signed previously. Hence, the locus associated with the deer is re-assigned by the directional verb GO and correctly picked out in the following POV. Finally, the boy's falling is expressed through an FRF.

(366) a. $_1$<_____>   (Sim.-file 1)
        manner: surprised
        SIT$_{CL:BODY\ PART}$
        '(He) sits surprised.'

      b. $_6$<_____
        DEER$_6$ DET$_{LOC}$ FRIGHT
        'The deer is frightened.'

      c.   _____>
        [– dom] RUN$_{CL:\ BODY\ PART}$
        [+ dom] RUN$_{CL:\ BODY\ PART}$
        '(He) runs.'

      d. [RUN$_{CL:δ}$]$_{TO-D}$
        '(He) runs away.'

      e. $_6$<_____
        REAR$_{CL:BODY}$
        '(He) rears.'

f.   _____>
      THROW_{LOC:DOWN FROM THE HEAD}
      '(He) throws something down from his head.'

g.   [– dom] FALL_{CL:λ}
      [+ dom] FALL_{CL:λ}
      '(He = the boy) falls down from his head.'

The preceding observations make apparent that non-manual means (eye gaze direction, body orientation) constitute linguistic devices that are used, at times, as the sole markers to establish and maintain reference. While it goes beyond the scope of this work to discuss the status of these devices in detail, it seems that they might serve this function only where they are used consistently, as it is the case in Simon's file 1.

Choice of story pictures as a substitute. Some participants associate referents with a locus that corresponds roughly with the location of the elicitation material (that is, the story book pictures). In Muhammed's file 1, for example, the boy as a referent is associated with a locus to his left, that is, toward the location of the pictures. This is the case in example (109) discussed above, and repeated here in (367), in which PRON_{PERS} refers to the boy.

(367)   ₃<_____>   (Muh.-file 1)
       [PRON_{PERS}]₃   WAVE₈
       'He (= the boy) waves to (them = the frogs).'

The example is illustrative of the relevance of considering the presence of elicitation material as a factor in the analysis of narrative data. Indeed, the presence of this material might not only influence the distribution of referential loci in the sign space, it might also have the effect that narrators choose not to provide some information explicitly. Moreover, we also observed that several participants do not recount the story (or extended narrative episodes) from memory but rather set out to describe the events in a picture-by-picture fashion. Not surprisingly, the constant checking of the elicitation material by the latter type of narrator affects the recounting of the story, the consistency in the establishment and maintenance of reference via referential loci and the use of non-manual means to mark reference.[31]

Interestingly, a high frequency of deictic forms used to refer to protagonists (such as "this one") and to pictures and locations (such as "here") was also observed in studies using the frog story picture book to elicit spoken language

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31 Johnston et al. (2007), too, remark on the impact of stimulus drawings in sign language data collection, in that participants look at this material during their productions, which "interfered with natural phrasing, such as pauses, head movements and eye gaze, and made the task of establishing clause boundaries difficult."

narratives. Berman remarks on the "excessive reliance on deixis and other inappropriate means of referring to characters and situations" in this type of picture-based study (Berman 2004: 269). According to Berman and Slobin (1994: 24), the choice of such deictic forms was found to differ in relation to whether or not the interlocutor of the children could see the picture book during the participants' narration, as in the latter context such forms reduced to about 1.5%. No difference was observed with respect to the narrative abilities reflected in the data.

All in all, however, the effect of the elicitation material on the narratives collected in this study along the dimensions outlined remains minimal. Instead, what we can glean from the data is that the mastery of referential establishment and maintenance in narrative production involves an array of linguistic devices that are used to build up and control what can be conceived of as a filigree network of referential loci.

3.11.2.3 Reference forms and functions

The command of the skills involved in discourse organisation, including the appropriate choice of form-function combinations to designate referents, has been found to be the result of a protracted development (cf. Hickmann 2003, Karmiloff-Smith 1983, Wigglesworth 1990, Morgan 2000). As we remarked in section 3.1.4.8 choice of appropriate reference forms involves not only syntactic knowledge but also pragmatic skills needed to determine the information status forms fulfil in a particular discourse context. As outlined above the functions served by reference forms correspond with a distinction of narrative contexts involving the same agent (maintenance), an agent that has been referred to before but who was not the agent of the event previously described (reintroduction), and reference of a new agent (introduction). The analysis of form-function relations in the data collected allows for the following observations.

Linguistic forms used. Our analysis of the reference forms used and the functions they serve from a narrative perspective reveals that the relative frequency of reference forms is strikingly similar across participants and files (cf. Table 3.49): subject drop occurs most frequently (between 49.1 and 82.1%), followed by NPs (with a frequency between 14.3 to 37.7%), with the use of article determiners (DET_{ART}) or PRON typically making up the lowest rate (between 1.8 and 13.2%).

Table 3.49: Relative frequency of reference forms in the participants' narratives.

Participant	File	NP	$DET_{ART}/PRON_{PERS}$	Subject drop
Muhammed	1	37.7	13.2	49.1
	3	35.8	11.2	53.0

Table 3.49: continued

Participant	File	NP	DET$_{ART}$/PRON$_{PERS}$	Subject drop
Simon	1	17.5	9.5	73.0
	3	26.8	1.8	71.4
Maria	1	20.8	4.2	75.0
	3	24.7	2.2	73.0
Fuad	1	32.5	7.5	60.0
	3	28.7	4.6	66.7
Hamida	1	20.0	2.7	77.3
	3	20.7	3.4	75.9
Christa	1	14.3	3.6	82.1
	3	27.9	2.7	69.4

However, the functions served by NPs, determiners and subject drop differ. While the distribution of forms corresponds roughly with the functions of introduction, reintroduction and maintenance respectively, participants' usage differs markedly, and it changes over time (for an overview of the results obtained for each participant cf. Table 3.50 [first recording], Table 3.51 [third recording], Figure 3.16 and Figure 3.17).

Muhammed, for example, demonstrates a clear preference for overt reference forms in contexts that require an unambiguous identification, as it is the case in the reintroduction of protagonists (with the relative proportion of NPs serving this function amounting to 66.7% in file 1 and 78.9% in file 3). The other participants, by contrast, make a rather frequent use of subject drop in reintroduction contexts. As we can glean from Table 3.50, at the onset of the recording the proportion of subject-drop in reintroduction contexts ranges between 30.8% and 35.7% in the narratives of Maria, Fuad and Hamida, amounting to about 60% in the recounts of Simon and Christa. Interestingly, Table 3.51 makes apparent that the frequency of subject drop serving this function drops to 18.2% in Christa's file 3 (with a percentage of NPs serving this function rising to 77.3). By contrast, the percentage of subject drop in Simon's file 3 narrative remains relatively high (46.2%) (with the same relative percentage of NPs serving this function).

As indicated previously, the choice of subject-drop in reintroduction contexts is problematic where referential loci have not been established previously. It has to be noted in this context that the greater part of the problematic sequences identified in the data pertain to those that involve the main protagonist of the story (the boy),

which we might take as an indication that choice of reference form is also bound to choice of thematic perspective. We will take up this issue in the next sub-section.

Table 3.50: Reference forms and their referential functions in the participants' file 1.*

Reference form	Participant	Introduction		Reintroduction		Maintenance		Total %
NP	Muhammed	11.3	(100)	18.9	(66.7)	7.5	(12.5)	37.7
	Simon	11.1	(100)	4.8	(20)	1.6	(2.4)	17.5
	Maria	9.7	(100)	9.7	(50)	1.4	(2)	20.8
	Fuad	12.5	(100)	17.5	(46.7)	2.5	(5)	32.5
	Hamida	8.0	(100)	9.3	(53.8)	2.7	(3.57)	20.0
	Christa	8.9	(100)	3.6	(18.2)	1.8	(2.5)	14.3
DET$_{ART}$ / PRON$_{PERS}$	Muhammed	0	(0)	7.5	(26.7)	5.7	(9.4)	13.2
	Simon	0	(0)	4.8	(20)	4.8	(7.3)	9.5
	Maria	0	(0)	2.8	(14.3)	1.4	(2)	4.2
	Fuad	0	(0)	7.5	(20)	0	(0)	7.5
	Hamida	0	(0)	2.7	(15.4)	0	(0)	2.7
	Christa	0	(0)	3.6	(18.2)	0	(0)	3.6
Subject drop	Muhammed	0	(0)	1.9	(6.7)	47.2	(78.1)	49.1
	Simon	0	(0)	14.3	(60)	58.7	(90.2)	73.0
	Maria	0	(0)	6.9	(35.7)	68.1	(96.1)	75.0
	Fuad	0	(0)	12.5	(33.3)	47.5	(95)	60.0
	Hamida	0	(0)	5.3	(30.8)	72.0	(96.4)	77.3
	Christa	0	(0)	12.5	(63.6)	69.6	(97.5)	82.1

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets).

Table 3.51: Reference forms and their referential functions in the participants' file 3.*

Reference form	Participant	Introduction		Reintroduction		Maintenance		Total %
NP	Muhammed	8.2	(100)	22.4	(78.9)	5.2	(8.2)	35.8
	Simon	10.7	(100)	10.7	(46.2)	5.4	(8.1)	26.8
	Maria	7.9	(100)	16.9	(65.2)	0	(0)	24.7
	Fuad	6.9	(100)	16.1	(77.8)	5.7	(7.9)	28.7
	Hamida	6.9	(100)	10,3	(46,2)	3.4	(4.9)	20.7
	Christa	5.4	(100)	15.3	(77.3)	7.2	(9.6)	27.9
DET$_{ART}$ / PRON$_{PERS}$	Muhammed	0	(0)	3.7	(13.2)	7.5	(11.8)	11.2
	Simon	0	(0)	1.8	(7.7)	0.0	(0)	1.8
	Maria	0	(0)	1.1	(4.3)	1.1	(1.7)	2.2
	Fuad	0	(0)	1.1	(5.6)	3.4	(4.8)	4.6
	Hamida	0	(0)	1.7	(7.7)	1.7	(2.4)	3.4
	Christa	0	(0)	0.9	(4.5)	1.8	(2.4)	2.7

Table 3.51: continued

Reference form	Participant	Introduction		Reintroduction		Maintenance		Total %
Subject drop	Muhammed	0	(0)	2.2	(7.9)	50.7	(80)	53.0
	Simon	0	(0)	10.7	(46.2)	60.7	(91.9)	71.4
	Maria	0	(0)	7.9	(30.4)	65.2	(98.3)	73.0
	Fuad	0	(0)	3.4	(16.7)	63.2	(87.3)	66.7
	Hamida	0	(0)	10.3	(46.2)	65.5	(92.7)	75.9
	Christa	0	(0)	3.6	(18.2)	65.8	(88)	69.4

* Expressed as a percentage of the total number of reference forms (proportions of forms used for respective function in brackets).
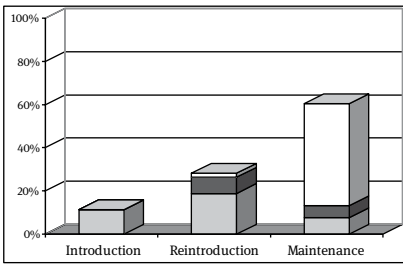
Muhammed file 1
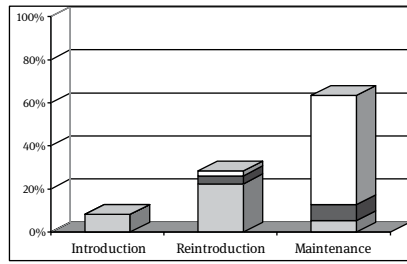
Muhammed file 3
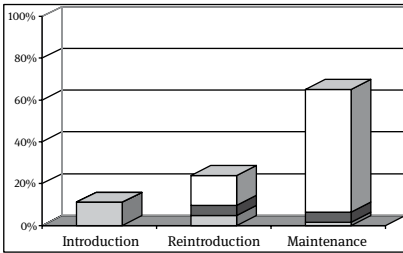
Simon file 1
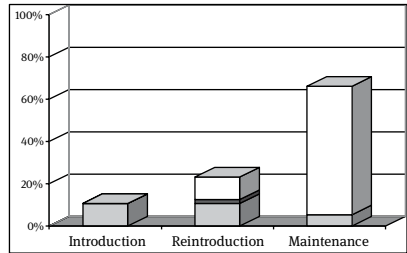
Simon file 3
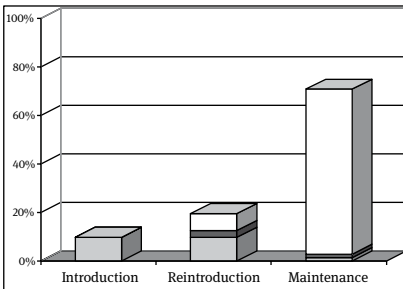
Maria file 1
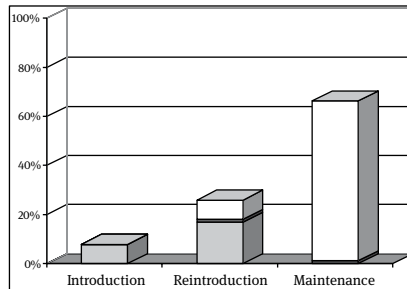
Maria file 3

Figure 3.16: Proportion of reference forms and functions in files 1 and 3 of Muhammed, Simon, and Maria.
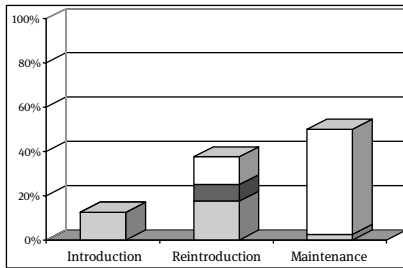
Fuad file 1
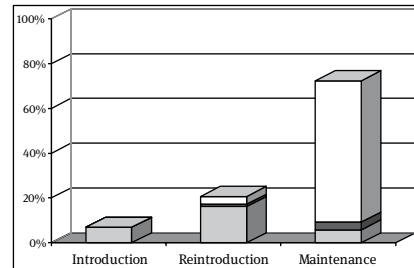
Fuad file 3
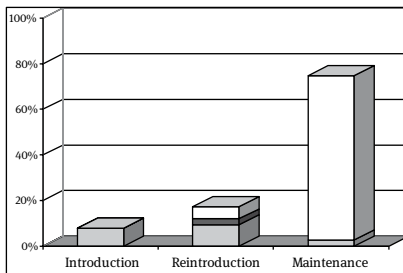
Hamida file 1
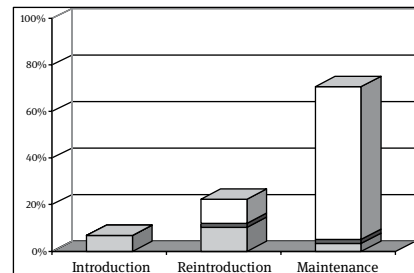
Hamida file 3
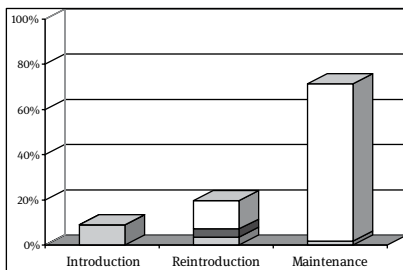
Christa file 1
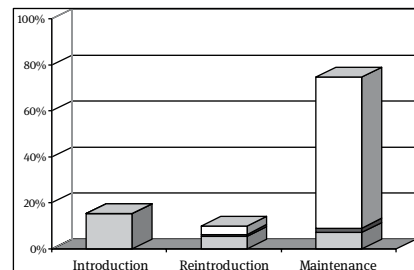
Christa file 3

Figure 3.17: Proportion of reference forms and functions in files 1 and 3 of Fuad, Hamida, and Christa.

Further to the quantitative measures undertaken about the distribution of reference forms and their functions, it is useful to consider the insights obtained in the qualitative analysis of the data about the participants' orchestration of linguistic devices for the purpose of creating cohesion and coherence.

Consistent non-manual marking of POVs. With respect to the consistency in non-manual marking of POVs, Maria's narratives stand out against the productions of other participants, in particular in her recount of narrative episodes in which referential shifts succeed each other. Recall, for example, her description of the boy and the dog looking at the frog, who, in turn looks at them. Perspective

changes are marked through a change in eye gaze direction as well as through changes in the modulation of the sign LOOK. Referential identity is unambiguous because Maria associates referents with contrastive loci on the vertical axis, so that body lean forward and eye gaze directed toward the bottom mark reference to the boy (looking at the frog) and eye gaze directed toward the top of the sign space marks reference to the frog (looking up to the boy and the dog).

Sequential use of FRF-SRF. In our discussion we remarked that some participants adopt a neutral perspective before they shift reference to adopt the perspective of another character. For example, Fuad uses this strategy in his file 3. The alternate use of FRF and SRF corresponds with the "sequential structuring mechanism" described by Perniss (2007: 1324) whereby a "linear sequence of prototypically aligned representations" is used to map observer and character perspectives (which corresponds with our distinction of FRF and SRF):

> *Location and orientation information, represented in observer perspective with entity classifier forms, is followed by constructed action representations using the hands, face, and body in character perspective. In the character perspective representation, the depicted location and orientation information remains valid. A change in location and orientation must be indicated by a return to entity classifier usage in observer perspective. Achieving mapping in this way structures discourse sequentially with respect to the use of perspectives.[32]*

Reintroduction of protagonists via NPs (or other overt lexical means). The comparison of early and later narratives of the participants in our study with respect to reference forms used shows that the use of full NPs clearly has the effect of reducing ambiguity, particularly, in narratives in which referential shifts are common and loci are not always established contrastively, as it was found to be the case in Hamida's narratives. A preference for full NPs in the introduction and reintroduction of referents was also observed in other studies on sign language acquisition (cf. Morgan 2000) and in the narrations of oral language learners. The following excerpt is an example of a 5-year old hearing child's narration of the frog story in English (Berman & Slobin 1994: 65):

(368)   When the boy and the dog were asleep the frog jumped out of the jar. And then the boy and the dog woke up. The frog was gone. Then the boy got dressed, and the dog stuck his head in the jar. And then the boy opened

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32 However, Perniss (2007: 1327) also remarks that while this type of mapping is easy to understand and "highly informative with respect to the expression of spatial relationships" it is not the most efficient strategy, when compared with a "non-prototypically-aligned construction that makes unique use of the possibility of simultaneity (...) as a discourse-structuring mechanism" (see ibid.: 1327f. for further details).

up his window and called out for his frog, and the dog still had the jar on his head. Then the dog fell, and the boy was scared.

In his study on child and adult narrative productions in BSL, Morgan (2006: 325) (cf. section 3.2.3.4) remarks on the early frequent use of NPs by 4–6 year olds that reflects a focus on reference at the sentence level. While the choice of NPs by 7–10 year olds indicates a progress toward the adult usage, choice of NPs in 11–13 year olds still differs from the adult usage. The following two excerpts of narratives from 9-year olds make apparent how reference maintenance represents a challenge, in sign language and in spoken language, in the narration of a picture story in which several events occur simultaneously. Example (369) (from Berman & Slobin 1994: 70, [for further convenience we added the referents intended in brackets]) illustrates the type of ambiguity that emerges where pronouns are used without further indication on the changes of the agents involved. Interestingly, in (370) we find a sequence with a repair indicating the participant's awareness about the failure to mark the change of perspective by using the same pronoun.

(369)   … So they [they boy and the dog] went off to find his [the boy's] pet frog. And he [the boy] looked in a hole, and the dog was chasing the beehive. It [the hole] was a home to a ground squirrel. And he [the boy] got his nose scratched. And the dog was still over playing with the bees.

(370)   … And then they start calling after the frog, and the dog's looking at this beehive. Then some little gopher comes up and then the dog's still looking at the beehive. So then the beehive falls and then the dog's still looking at that beehive. So then the beehive falls and all the bees are – they start chasing after him, and he um – the little boy climbs up a tree and looks into a hole, and an owl flies out, and he falls off the tree.

Choice of a thematic subject perspective (the boy's). The analysis of the narratives with respect to the reference forms used reveals that choice of a dominant or thematic perspective affects choice of reference forms and the functions they might serve.

Recall that in the frog story the boy and the dog are the two main protagonists. During their search they come across several other characters, such as bees, a mole, an owl, a deer, and the members of the frog family. Typically, these other characters are involved in the story for a limited narrative episode only (they are not reintroduced as characters at a later point in the narrative). By contrast, the boy and the dog are not only introduced and involved in a series of events; they are also reintroduced as protagonists after the description of events involving other characters. Hence, switches in perspective occur either from the boy's or the dog's perspective to the perspective of another character, or back

from another character's perspective to the perspective of the boy and the dog. It is interesting to note in this respect that it is the latter type of switch that most often involves subject drop and, hence, referential ambiguity unless other means are used to secure the identification of the referent involved.

The choice of the boy's perspective as the dominant perspective is a recurrent phenomenon in this corpus. This finding patterns with the results obtained in other studies on ASL and BSL discussed in section 3.2.3.4. Recall that the choice of a *thematic perspective* (Morgan 1999: 52) is defined by Morgan as the one that refers "to the signer's use of a main or dominant perspective to report events, as contrasted with a secondary perspective." Notice that this reference strategy differs from a "parallel representation" (Berman 2004: 269), which would involve a balanced account of the activities of the characters involved. In previous studies using the frog story as elicitation material adults were found to preferably choose one perspective (the boy's) vis-à-vis 7-year old signers who chose the dog's perspective, and 5-year olds who tend to evenly distribute the narrative focus on different characters (Emmorey & Reilly 1998; Morgan 1999). Morgan (1999: 51) also reports on the choice of boy's perspective as the dominant perspective, leaving the dog as a secondary character. Typically, this phenomenon is reflected in the choice of subject-drop rather than the use of full NPs or pronouns to refer to the boy, also in those contexts where he is reintroduced as a character. Maria, for example, only introduces the boy once in her file 1 narrative via an NP. All subsequent activities involving this protagonist involve subject drop. Note that, at times, as is documented in Hamida's file 3 example in (371) signers resort to a repetition of the proposition to disambiguate reference that might not be clear in a reintroduction sequence with subject drop, even if it refers to the main protagonist of the story.

(371) a. LATER   SLEEP   (Ham.-file 3)
       b. BOY   SLEEP
         'Later, (he = ?) sleeps. The boy is sleeping.'

While the perspective kept in discourse focus is not labelled overtly, overt reference forms are used to refer to the secondary perspective (Morgan's 1999: 52). This strategy, used also by the participants in our study, can be considered to be an effective way of using reference forms "contrastively", avoiding unnecessary explicitness where referential identity can be conveyed through other means.

On a more general level the preceding observations make apparent that the participants' choice of reference forms significantly affects the cohesion and coherence of their signed narratives, which patterns with the findings obtained for oral language production. Crucially, what we can glean from the preceding observations is that the disambiguation of reference forms is equally a task in

signed and spoken narratives. This is an important observation given the persistent myths that continue to abound about the impact of iconicity on sign language discourse and the use of space in this modality of expression. Clearly, mastery of narrative skills, irrespective of the modality of expression chosen, involves not only full competence of linguistic devices available in a language but also knowledge of the functions they might serve in different communication situations. Once again, it becomes apparent that the orchestration of linguistic devices in discourse involves the integration of different types of knowledge.

3.11.2.4 Expression of spatial relations

The interaction of grammatical and discourse requirements also becomes apparent in the expression of spatial relations as choice of linguistic devices in this case is related also to the discourse status attributed to the information encoded (foreground vs. background).

We remarked previously that verbs in complex classifier constructions are correctly inflected, including the choice of classifier elements for figure and ground, and the spatial orientation of the two classifiers. However, participants differ regarding their use of these constructions at the onset of the study (whereby the lack of these constructions in Hamida's file 1 might be related to her narrative style). We have not found whole body depictions to describe movements in our data as has been shown to be the case in the productions of young infants (before age 2). Neither do our data contain evidence for a sequential expression of meaning components as it has been observed in children aged 2;0–2;6 (Morgan et al. 2008) nor do our participants use of real-world substitutes as the subjects investigated by Tang et al. (2007) did.

As for the constructions produced in the first sample of the present study, it becomes apparent that some sequences are not clear, which, by assumption, reflects deficits at the syntax-discourse interface. Note that the deficits are not related to an incorrect selection of classifier elements as has been found to be the case in the production of the participants in Tang et al.'s (2007) study (see the discussion in section 3.2.3.2), which indicates that participants in the present study have a command of the constraints on the morphological composition of classifier constructions. Rather, the variation observed pertains to information encoded.

Foreground and background, as pointed out by Berman and Slobin (1994: 9) are not only determined by the logic of events in a narrative, but are also the result of the creative perspective taking used by the narrator to guide the listener through a subjective interpretation. To illustrate this point we might consider the range of variation observed in the participants' narration of the episode involving

the frog's escape from inside the jar. We will compare participants' productions produced in the first sample of the data collected.

As we can see in (372), **Muhammed** does not recount the frog's escape, but chooses to focus on the frog's wish to leave and on his motivation to do so.

(372) FROG WANT GET-OUT, WITH MOTHER AT-HOME   (Muh.-file 1)
'The frog wants to get out, (to be) with his mother, at home.'

Fuad also recounts the frog's intention but includes information on the motion involved in the activity intended. He uses a complex spatial predicate but chooses not to provide information about the nature of the location (example (216) repeated in (373)). The referent backgrounded via the h2-classifier remains generic.

(373)   (Fua.-file 1)
                        [– dom] CL:FORM (container)
      [DET$_{ART}$]$_3$ FROG$_3$ WANT   [+ dom] JUMP-OUT
      'Then the frog wants to get out.'

Simon either provides specific information on the background. He focuses on the frog's climbing out of the jar (example (374b)) and the manner in which he does so (silently).

(374)   #([PRON$_{PERS}$]$_{1s}$ [?]) (DET?)   [–   dom   ] [CL:FORM (narrow object)]$_B$
                                    [+   dom   ] CLIMB$_{OUT-OF-B}$ (Sim.-file 1)
      '(He = the frog) gets out (of a container), over the rim.'
      c.   [– dom] [CL:FORM (narrow object)]$_B$
      SILENT   [+dom] CLIMB$_{OUT-OF-B}$
      '(He) gets out silently, over the rim.'

Hamida chooses to describe the episode by shifting reference and adopting the perspective of the frog (cf. (375)). No previous information is provided on the location the frog escapes from.

(375) a. $_2$<_____>   (Ham.-file 1)
            nm: CL:BODY: drawing-up
            THEN   FROG$_2$
            'Then the frog draws up.'
       b.   _____>
                          manner: fast
            [– dom]   JUMP-OUT
            [+ dom]   JUMP-OUT
            '(He) jumps out quickly.'

    c.   GO-AWAY
       '(He) goes away.'

Maria's description of the frog's escape in (376) includes a lexical antecedent providing information about the location the frog escapes from (= the ground); the information is backgrounded through the classifier on the non-dominant hand (the h2-classifier) in the complex spatial predicate used to describe the figure-ground configuration in the frog's escape.

(376)   [– dom] CL:FORM (rim)$_C$ (Mar.-file 1)
      GLASS^BOWL$_C$ [+ dom] SIT$_{IN-C}$
      '(He = the frog) sits in a jar.'

As we can see in (377a), **Christa** provides first a description of the frog's escape without information on the location; this information is provided in a repetition of the propostion in (377b), in which a generic reference form (CL:FORM) used to designate the container is added in the target-like preverbal position.

(377) a.   [– dom] CL:FORM (container)   (Chri.-file 1)
       IDEA+   [+ dom] CLIMB-OUT
       '(He = the frog) has an idea, to climb out.'
    b. IDEA, CL:FORM (container)   [– dom] CL:FORM (container)
                              [+ dom] JUMP-OUT
       '(He) has the idea to get out of the container.'

As we can see, not all participants choose to provide details on the frog's escape (some rather focus on the frog's intention to leave); further, participants vary as to (a) whether they mention the location the frog is in before he escapes, and (b) whether they use generic or specific reference forms to refer to the ground (CL:FORM vs. GLASS^BOWL). One participant uses an SRF to describe the frog's activity. In sum, it becomes apparent that participants vary in their recount of a specific narrative episode, and that they do so also with respect to the background information provided. Not all of them use complex classifier predicates in their descriptions, and for those who use them, they do not use them in the same manner.

    Our observations about variation regarding the provision of prior specification of the ground pattern with the observations made by Tang et al. (2007: 308; cf. also Morgan 2006; Slobin et al. 2003) regarding the productions of more advanced learners who had a tendency to omit lexical antecedents of the classifier referents. Regarding further development, our data reveal that participants that omit this information at the onset of the study provide it in file 3 (notably, Muhammed and Hamida). Hence, from a narrative perspective we are led to con-

clude that the appropriate use of complex classifier constructions is related to the expression of figure-ground relations. Their mastery represents a major developmental step in the attainment of the properties that involve the syntax-discourse interface.

Discourse buoys. Worthy of mention in this context is the participants' skilful use of h2-classifiers for discourse regulatory purposes, that is, as discourse buoys. In several instances, h2-classifiers used to designate the background in complex classifier constructions describing a spatial configuration (particularly in the narrative episodes involving the beehive, the hole in the tree or the stone, behind which the deer is hiding) were retained during subsequent discourse stretches. By providing this additional information, the participants not only demonstrate their command of the classifier system; the appropriate use of discourse buoys is also indicative of their mastery of pragmatic constraints on the use of linguistic devices for the purpose of creating a cohesive account of the episode narrated.

3.11.3 Some notes on the organisation of narrative texts

Throughout the preceding sections we have learned that, beyond the mastery of individual linguistic devices, learners are confronted with the task of learning to appropriately orchestrate the linguistic means available.

Dynamic evolution of learner systems. From a developmental perspective, this challenge implies that learner systems not only become more complex, but also that the organisation of learner systems needs to be regarded as a dynamic process as outlined in section 2.2.3. In a similar vein, based on the data of a broad cross-linguistic study, Berman and Slobin (1994: 608) conclude that "as children build up knowledge about the forms available in their language, these become coordinated and reorganised within more complex, interacting systems." As these authors remark, it is not surprising that the development history extends well into school age, continuing at least to adolescence. Note that proficient speakers are not only able to express a full array of discourse functions in a diversity of communicative activities (e.g. conversations, descriptions, argumentation, narration), they also know what to mark explicitly, monitoring their output also for their listeners.

As in other linguistic domains, the ability to integrate linguistic knowledge has been found to follow a U-shaped pattern, whereby younger learners tend to omit necessary information or overuse linguistic devices (Berman & Slobin 1994: 609). What needs to be taken into consideration is that the pragmatic skills that are relevant for different narrative genres (e.g. personal experience or fictional narratives) "may differ greatly and be acquired at different ages" (Morgan 2000: 281).

Text types and narrative organisation. Although the assessment of the participants' development of narrative skills in terms of the text types produced is beyond the scope of this study, a note is due concerning variation at this level, as the range of text types produced patterns well with what has been found in the literature on hearing learners' recounts of the frog story. In their introduction to the report of the broad cross-linguistic investigation, Berman and Slobin (1994: 17) critically acknowledge that the definition of the task was not controlled for in the studies on narrative development based on the frog story picture book. Summarising, they point out that the range of potential texts elicited included "picture description, picture-supported narrative, colloquial storytelling, bookish storytelling" (Berman & Slobin 1994: 17). The data collected reveal that participants made their individual choices, whereby preferences according to age reveal that picture description (in the sense of a description of the "local" events shown on the respective picture) is favoured by younger participants whereas older subjects rather choose the type of a literary narrative (Berman & Slobin 1994: 17). These observations pattern well with the findings obtained in this study indicating that our participants, too, made their individual choices regarding the type of text they would produce. From a developmental perspective, their choices corroborate the global developmental pattern identified by Berman (2004: 264) regarding the development of narrative organisation. Roughly, this development is characterised by a progression from the description of isolated events, followed by a linear chaining before a hierarchical global structuring becomes apparent.

The observation that participants' recounts of the frog story develop toward but do not yet represent hierarchically structured texts is in line with the findings reported in the literature, documenting that only older school-age children and adults manage to produce globally organised narrative texts. Furthermore, we also remarked upon the relation of narrative type and linguistic means used, reflected also at all levels of linguistic analysis, as the lexical, syntactic and discourse devices that are chosen in a sequential vis-à-vis a storytelling account differ substantially.

Extra-linguistic skills. Finally a note is also due on extra-linguistic abilities involved in the retelling of a story. In this respect, the difficulties observed in the recount of some of the frog story episodes, notably the scene involving the misperception of the deer's antlers, might also be taken as an indication of the challenge story tellers are confronted with at the level of information processing and information packaging in language production. Berman and Slobin (1994: 56) note that narrators face the task of re-evaluating the boy being on the top of a rock and the top of a deer, a reorganisation that "has linguistic as well as conceptual consequences." It is interesting to note in this respect that the referential ambiguities remarked upon in our data reflect a difficulty confronted at the

narrative level, which leads to problems also in spoken language accounts of this narrative episode: "In talking about these two pictures, speakers evince a great deal of disfluency in the form of hesitations and pauses as well as numerous false starts, rewordings, repetitions, paraphrases, and other types of repairs, more so than at other places in the story" (Berman & Slobin 1994: 56).

Points to ponder. The preceding observations also make apparent that we need to be careful in our interpretation of the data regarding the availability vis-à-vis the absence of specific linguistic devices. Consider, for example, the relatively low proportion of determiners found in the narratives collected in this study. How should we interpret this finding? Does the low frequency of these items in the data indicate that there is a general lack of their mastery? Or might it rather be the case that the rare use of determiners is related to the narrative task the participants have to accomplish? Could it possibly be related also to the choice of other linguistic devices such as a frequent alternation between fixed and shifted referential frameworks (recall Morgan's (1999: 35) conclusion that the use of pronominal and agreement forms in FRFs "may not be the most common reference strategy used in discourse")?

These questions raise critical issues that concern not only our understanding of DGS grammar but also how grammatical devices interact with discourse requirements, on the one hand, and external factors bound to communication situations, on the other hand. The data collected in this study open only a small window into the full complexity of these topics, revealing also that more research is needed to help us to clarify these important issues.

Berman and Slobin (1994: 18) concede that the linguistic forms studied in narrative data might have had "prior histories in various types of interactive discourse". In keeping with their focus on the interaction of form and function, these authors remark that the acquisition of a linguistic device, its "structural mechanics", "is only part of the story" (Berman & Slobin 1994: 600). Consider, for example, the use of the progressive aspect in English. This verb form is used by learners first as a default form to encode immediate present in simple clauses ("there's an owl coming out"), while it is used at preschool age as a means to indicate simultaneity. At a later age it is used in diverse complement clauses, and then by adults as a means to background information in non-finite adverbial or relative clauses. In a similar manner, several linguistic devices considered in the present study have their own histories. What we learn from the more advanced level narratives collected in this study, is that these histories ultimately converge as they become part of a linguistic repertoire that is skilfully orchestrated by the narrator.

4 Bilingual deaf learners' written German profiles

Bilingual deaf learners are confronted with the task of attaining the oral language with no or only limited access to the spoken language. Although most of these learners are exposed to spoken language from birth, their acquisition of the language is bound to supportive measures outside the family context. Hence, this acquisition scenario differs from typical (monolingual or bilingual) L1 acquisition situations in that although exposure might occur from birth, the acquisition of the language occurs effectively at a later age because it is bound to a formal context. As we pointed out previously (section 1.3), the assignment of L1 or L2 labels to the languages acquired by deaf learners needs to be conceived of in a flexible manner. This holds equally of the acquisition situation of bilingual deaf learners that is neither adequately captured by the type of bilingual first or child second language acquisition.

Against the backdrop of the ongoing debate about the status of the written language (cf. section 2.4.2), we argued in favour of the Interdependence hypothesis of the relation of the spoken language and the written language. Further, we assume that the oral language grammar can be acquired effectively in written language acquisition by learners who have no or only limited access to the spoken language. Following this assumption the question arises about whether developmental trajectories in this acquisition scenario are similar to those observed in spoken language acquisition. Another fundamental issue pertains to the role of language contact phenomena in the course of the bilingual development.

In the following, we will provide a sketch of the grammatical properties of German that are at the focus in the present study as well as a summary of the main developmental milestones identified in the acquisition of German. The remainder of the chapter is dedicated to a discussion of the developmental profiles established for the participants in our study based on the diagnostic criteria elaborated for the assessment of the attainment of the target grammar.

4.1 German: a grammatical sketch

As we mentioned previously, the grammatical properties of German have been studied within the generative framework for many years. With respect to the structural characteristics of the language, scholars have been confronted with the challenge of accounting for the asymmetry that characterises word order in main and embedded clauses. In the following, we briefly summarise the main characteristics of the language at the levels of word order and morphosyntax before we turn to a structural account of German sentence structure.

4.1.1 Word order

In German, main and embedded clauses differ with regard to the placement of the finite verb: it obligatorily appears in second position in main clauses (examples (378)-(380)), but appears sentence-finally in complementiser introduced embedded clauses (examples (383)-(384)).[1] The restriction regarding the placement of the finite verb in the second position in declarative main clauses, commonly referred to as the *V2 constraint*, holds of all Germanic languages except English. The preverbal position in main declarative clauses is not restricted to subjects, as is illustrated in examples (378)-(380) in Table 4.1. Subjects (378) and non-subjects as, for example, adverbs (379) or direct objects (380) may appear in the preverbal position. Another major characteristic of German word order is that non-finite elements of the verbal complex, such as separable prefixes (378), participles (379), and infinitives (380) obligatorily appear in sentence-final position. Hence, in sentences with periphrastic verb constructions or separable verbs, adverbs, negators and verb complements appear inside the so-called *verb bracket*.

Table 4.1: Verb second (V2) in German main declarative clauses.*

	V2 **V+fin**						**VE** **V-fin / sep. prefixes**
(378)	*Die Frau*	*setzt*			*den*	*Hut*	*nicht*	*auf.*
	the woman	puts			the	hat	not	on
(379)	*Gestern*	*hat*	*die*	*Frau*	*den*	*Hut*	*nicht*	*aufgesetzt.*
	yesterday	has	the	woman	the	hat	not	on-put
(380)	*Den Hut*	*kann*	*die*	*Frau*			*nicht*	*aufsetzen.*
	the hat	can	the	woman			not	on-put

*VE=verb-end, V+fin=finite verb form, V-fin=non-finite verb form.

Note that verbs appear in sentence-initial position in some constructions, such as yes/no questions (381) or imperative constructions (382). The sequences in (381) and (382) illustrate also that the subject appears post-verbally in verb-initial sequences. German, unlike other (so-called *pro-drop*) languages (these can be

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[1] We will disregard here the exceptions to this generalisation concerning verb placement and the main/embedded clause dichotomy. For a more detailed discussion see Plaza-Pust (2000).

spoken languages, such as Italian or Spanish, or sign languages, like DGS, see section 3.1), does not allow empty subjects.

(381) *Setzte   die   Frau   den   Hut   auf?*
      put   the   woman   the   hat   on
      'Did the woman put the hat on?'

(382) *Setzen   Sie   den   Hut   auf!*
      put-on   you   the   hat   on
      'Put the hat on!'

In complementiser introduced embedded clauses finite verbs obligatorily appear in sentence final position (cf. examples (383)–(384) in Table 4.2).

Table 4.2: Verb final in German complementiser embedded clauses.

	Complementiser							VE
(383) *(ich weiß),*	*dass*	*die*	*Frau*	*den*	*Hut*	*nicht*	*aufgesetzt*	*hat*
(I know)	that	the	woman	the	hat	not	on-put	has
(384) *er weiß nicht,*	*ob*	*die*	*Frau*	*den*	*Hut*			*aufsetzt*
he knows not	whether	the	woman	the	hat			puts-on

Notice, however, that verbs do not appear in the final position in unintroduced embedded clauses, compare (385).

(385) *Er   weiß,   die   Frau   hat   den   Hut   aufgesetzt.*
      he   knows   the   woman   has   the   hat   on-put
      'He knows that the woman has put the hat on.'

4.1.2 Inflectional morphology

Inflectional suffixes in German provide information about person, number, tense, and mood. As we can see in Table 4.3 some forms of the German agreement paradigm overlap (that is, the 1st and 3rd pers. plural, and infinitival *–en* forms).

Table 4.3: German inflection paradigm (present tense).

Person	number	suffix	example		transl.
1st	singular	-e/-0	(ich)	*spiel-e*	'(I) play'
2nd	singular	-st	(du)	*spiel-st*	'(you) play'
3rd	singular	-t	(sie)	*spiel-t*	'(she) plays'
1st	plural	-n	(wir)	*spiel-e-n*	'(we) play'
2nd	plural	-t	(ihr)	*spiel-t*	'(you) play'
3rd	plural	-n	(sie)	*spiel-e-n*	'(they) play'

Note that inflected forms of irregular verbs like *singen* ('to sing') exhibit vowel changes in addition to suffixation (cf. (386)). The changes of the root vowel (*Ablaut*) in so-called 'strong verbs' (*starke Verben*) derive different forms for present tense, past tense and the past participle, as illustrated in (386). Some of these strong verbs involve a vowel change in the present tense (e > i) (compare example (387)).

(386) *(ich) s**i**nge* - *(ich) s**a**ng* - *(ich) habe ges**u**ngen*
       (I) sing - (I) sang - (I) have sung

(387) *(ich) br**e**che* – *du br**i**chst*
       (I) break – (you) break

In German, modal verbs exhibit an inflectional paradigm that differs from that of main verbs (cf. Table 4.4): the 1st and 3rd person singular appear without the ending −*e* and −*t* respectively. A characteristic distinguishing German from DGS is that modal verbs in German take infinitive verb forms as complements (cf. (388)).

(388) *Sie   kann   den   Hut   aufsetzen.*
       she   can   the   hat   put-on

The suppletive forms of the copula verb *sein* ('to be') are provided in Table 5.5. Note that the verb *sein* is also used as an auxiliary verb in German (see (389)), in addition to the verb *haben* ('to have') (390). The choice of the auxiliary is determined by subtle semantic aspects.

(389) *Maria   ist   gekommen.*
       Maria   is   come
       'Maria has come.'

(390) *Die   Frau   hat   den   Hut   aufgesetzt.*
      the   woman   has   the   hat   put-on
      'The woman put on the hat.'

Table 4.4: German modal verb inflection paradigm

Person	number	form	transl.
1st	singular	*(ich) kann*	'(I) can'
2nd	singular	*(du) kannst*	'(you) can'
3rd	singular	*(sie) kann*	'(she) can'
1st	plural	*(wir) können*	'(we) can'
2nd	plural	*(ihr) könnt*	'(you) can'
3rd	plural	*(sie) können*	'(they) can'

Table 4.5: Suppletive forms of the verb *sein* ('to be')

Person	number	form	transl.
1st	singular	*(ich) bin*	'(I) am'
2nd	singular	*(du) bist*	'(you) are'
3rd	singular	*(sie) ist*	'(she) is'
1st	plural	*(wir) sind*	'(we) are'
2nd	plural	*(ihr) seid*	'(you) are'
3rd	plural	*(sie) sind*	'(they) are'

4.1.3 Word order and morphological case

German is a language with a rich case system. The overt morphological realisation of case is marked on nouns, adjectives, determiners and pronouns (Haegeman 1994: 157), see (391).

(391) *Der   Lehrer   hat   den   Mann/Studenten   gesehen.*
      the   teacher   has   the   man/student   seen
      NOMINATIVE   ACCUSATIVE

4.1.4 A structural account of German

The position at the right periphery of the sentence (VE, *verb-end*) is assumed to be the base position of the verb in generative approaches to German sentence structure, which implies that with respect to *VP headedness* German instantiates the head-final (OV) option.

Descriptive accounts of the verb placement asymmetry that characterises German word order differ with respect to whether or not main and embedded clauses are assumed to be generated on the basis of a common underlying structure (Grewendorf 1988, Vikner 1995, Gawlitzek-Maiwald et al. 1992, among others). In this study, we adopt the asymmetry hypothesis according to which main clauses are based on a head-initial IP (as in (392) and (393)), whereas complementiser introduced clauses are generated on the basis of a CP with a head-final IP (as in (394)). In main declarative clauses, finite verbs raise from V to I. As the preverbal position cannot remain empty, the subject or any other constituent (XP) is *topicalised* to the sentence-initial position. In complementiser introduced embedded clauses, verbs pick up the grammatical features in the sentence final INFL position.

	[$_{IP}$	SpecI	[$_{I'}$	I	[$_{Vmax}$	[$_{VP}$	...		V]]]]
(392)	*Die*	*Frau*		*backt*			*einen*	*Kuchen.*	
	the	woman		bakes			a	cake	

(393)	*Heute*			*backt*	*sie*		*einen*	*Kuchen.*
	today			bakes	she		a	cake

	[$_{CP}$	[$_{C'}$ C	[$_{IP}$	Spec I	[$_{I'}$	[$_{Vmax}$ [$_{VP}$	...		V]]	I		]]
(394)	...,	*dass*	*die Frau*				*einen*	*Kuchen*		*backt.*		
	...,	that	the woman				a	cake		bakes		

4.2 Research on the acquisition of German

The main developmental milestones in the acquisition of German are well-documented for a variety of acquisition situations. The first accounts of the acquisition of German grammar elaborated within the generative framework emerged in the early 1980s, notably Clahsen's (1982) study of monolingual children. Since then, various studies have also been conducted on the development of the language in bilingual first language and second language acquisition situations.

Taken on the whole there is a sound body of research that serves as a basis for claims about the main developmental milestones and the scope of varia-

tion in the acquisition of German grammar by learners with profiles that differ in age of exposure and previously available knowledge. Thus far, however, the development of the German grammar in bilingual deaf learners remains largely unexplored. The situation is not unique to the acquisition of German but holds equally of the acquisition of other oral languages by bilingual deaf learners in other social contexts.

4.2.1 A fragmented picture of deaf learners' written language competence

We mentioned previously, in the context of our discussion of deaf education (section 1.3), that literature dedicated to monolingual deaf students' written productions, emerging toward the end of the 1960s, documented the lack of literacy achievement in deaf learners. For their greater part, the studies undertaken have been dedicated to the acquisition of written English (cf. Wilbur 2000; Musselman 2000, for detailed discussions). Schäfke (2005) remarks on the research gap in Germany and argues that it reflects the persistent focus on *spoken* language in the domain of deaf education.

From a developmental perspective, the research undertaken to date remains rather descriptive with a focus on the deficits observed. The available accounts coincide in what is considered to represent typical characteristics of deaf students' written productions. Berent's summary, based on a review of articles published between the 1940s and 1960s is representative in this respect: "English language abilities are characterized by the production of short, simple sentences, by the overuse of nouns and articles, and by a considerable restriction in the use of most function words and adverbs" (Berent 1996: 473).

4.2.2 Theoretically based hypotheses of deaf learners' written productions

As we remarked previously, only few authors have addressed deaf learners' development of the oral language in the light of the theoretically based hypotheses of language development discussed in section 2.2. Berent's studies (Berent 1996) are a remarkable exception. This author reinterpreted the results obtained in a broad project, in which deaf students' development of English was assessed through a standardised test (the Test of Syntactic Abilities, TSA), against the backdrop of Radford's VP hypothesis (see section 2.2.2). According to Berent (1996: 489), the results obtained in that study suggest that "deaf learners' acquisition of English syntax follows a developmental pattern in which thematic categories are acquired

before functional categories and that, for many deaf learners, the functional categories resist acquisition indefinitely".

At the same time, Berent (1996: 490) argues that a straightforward interpretation of deaf learners' data is difficult not only because of the variety of methods used to collect them and the diversity of participants' profiles. This author (1996: 490) also remarks on the circumstance that deaf learners are taught the oral language as "a system of rules to be learned consciously", similar to the way foreign languages are taught to hearing learners. Berent speculates on the possibility that learners' skills might reflect both naturally and consciously acquired structures. He argues that the available data are interpretable within the theoretical framework of generative grammar. Based on the data analysed, he proposes that deaf learners' learner grammars of English are best described as VP grammars as they are characterised by a lack of FCs. Learners produce SVO sentence patterns. Question formation is not mastered; neither are subordination nor verb tense and agreement marking. The copula is often omitted. Berent also remarks on the confusion of the auxiliaries *be* and *have*. Further, Berent (1996: 492) argues that the rare use of articles and pronouns reflects the lack of the DP level. The overuse observed in learners that start to use articles is assumed to be an effect of formal instruction in the language, whereby learners develop a metalinguistic awareness about this class of words but do not acquire the grammatical category they relate to.

As pointed out by Berent, many learners remain at the VP stage for many years. For those who expand this structure he maintains that they do so in a stepwise fashion. As some target structures seem to be acquired before others, Berent (1996: 501) argues that deaf learners expand their learner grammars progressively: "Thus, with respect to the successful acquisition of English phrase structure, there is evidence that deaf learners' clauses grow, bottom up, from VP to IP to CP, each successive stage leading to a larger language." Notice that this view differs from Radford's original proposal that all FCs would become available at a time, but patterns well with the structure-building hypothesis portrayed in section 2.2.2.

4.2.3 Tracing the sources of deaf learner errors

Theoretically based accounts distinguish several internal and external sources of the errors identified in deaf learners' written productions (Wilbur 1987, 2000; Berent 1996). As the types of deviances encountered are similar to rule-based errors (i.e. omissions or overgeneralisations) found in learner grammars of other (hearing) L2 learners (Wilbur 2000: 83), it is assumed that they are developmen-

tally constrained. However, the characteristic long-term persistence of these errors is reminiscent of the plateau or fossilisation effects observed in those second language learners who do not make a progress beyond a rudimentary L2 competence. For further illustration consider example (395) (from Leuninger 2007: 158, our translation), a text produced by an orally educated adult deaf individual with little knowledge of sign language. Without going into the details of the numerous errors in this sequence what becomes apparent is that meanings are expressed through a concatenation of formulae and chunks (or only parts thereof).

(395) *Hallo frau k y. fragt dich zu zeit in p. machen wann treffen wir uns im buro mit sprechen. ich wünsche verschiedene beruf finden. Nur gut spass arbeit. aber jetzt viele arbeitslose machen. Ich hoffe dir auf bitte antwort. ich bin viele zeit. ok. viele lieber gruss von yk.* (Handy-Fax einer Gehörlosen mit wenig Gebärdensprache) [Hello Mrs K y asks you to time in p make when meet we us in office with talk. I wish different job find. Only good fun work. But now many unemployed make. I hope you on please answer. I am many time. ok. Many dear greeting from yk. (Mobile-fax from a deaf person with little sign language)]

Rudimentary written language skills as they become apparent in (395) can be taken as an indication that the development of the written language by deaf students might be delayed or truncated due to (a) a restricted *quantity* of language input available to them, and (b) a deficit in the *quality* of the input they are exposed to in the classroom.

Berent (1996: 469), highlighting both the qualitative and the quantitative differences between written language input and spoken language input remarks also on the lack of spontaneous communication when he states that "[p]rinted language also does not serve as a satisfactory substitute for spoken language input, because the ability to read a language, which takes several years to develop, presupposes knowledge of that language, and because natural, spontaneous communication in a language does simply not occur through reading and writing." What these observations also make apparent is that written language cannot substitute the acquisition of a fully accessible first language during the sensitive period for language acquisition (which would amount to sign language acquisition in deaf learners). Further, Berent (1996: 471) notes that with the exception of those children exposed to sign language from birth, deaf students' oral language acquisition scenario is best characterised as "L1,5 acquisition" because the acquisition of the language, only partially developed as an L1, is bound to formal instruction as an L2. The situation is markedly different from the acquisition scenario of bilingually educated deaf students who attain written language *in addition* to L1 sign language.

Apart from quantity and timing there is also the issue of the quality of the input provided. There is a consensus among advocates of bilingual education that the traditional teaching of written language structures in isolation with a focus on formal correctness (ibid.; Günther et al. 2004; Schäfke 2005) occurs at the expense of a creative use of language which would allow deaf children to acquire subtle grammatical and pragmatic properties (cf. also Leuninger et al. 2003). What is more, we might assume that, like a self-fulfilling prophecy, the lack of a creative language usage comes as no surprise given that traditionally low expectations of a successful mastery combine well with the secondary status attributed to the written language. The neglected promotion of the written language in deaf education differs markedly from more recent conceptions developed in the context of bilingual education programmes discussed in section 1.3.2. One crucial component of the didactic measures adopted for literacy promotion in bilingual programmes, as is the case of the one established in Hamburg, pertains to the focus on an early reception and production of written texts. By developing a narrative culture in the classroom, learners are given the opportunity to narrate their own stories. Further, they also learn about their benefit from their use of the written language in their everyday lives.

4.3 Acquisition of German: diagnostic criteria

We remarked previously that the main developmental milestones in the acquisition of German are well-documented for a variety of acquisition situations. Furthermore, while much of the research has been dedicated to the analysis of developmental paths for the respective acquisition situations, over the last years there is a progressive convergence of the different lines of research. In earlier work (Plaza-Pust 2000, 2008a), based on the theoretical framework also presented here in section 2.2, we argued that the available data allow for the conclusion that there is a common developmental sequence that accounts for structure-building in the acquisition of German in diverse situations. Where German is acquired simultaneously with another language as of birth (bilingual first language acquisition) or as a second language at a later point (child or adult second language acquisition) the acquisition of the language must also be understood in relation to the organisation of multilingual knowledge. This might be manifested also in the form of language contact phenomena.

Against this backdrop, we will discuss next the main developmental milestones and the scope of individual variation in the acquisition of German. We will mainly focus on two areas of language knowledge, namely, syntax and morphosyntax. Based on the descriptive framework of German grammar elaborated in

section 4.1, the acquisition task involves the mastery of the properties and processes associated with these areas (see Table 4.6 for a summary).

Table 4.6: Acquisition of German: linguistic areas and related structures, processes, and properties (dotted lines indicate areas at the focus of the analysis).

Area	Processes / properties	
Syntax-discourse interface	– *point-of-view* (complex clauses, direct / indirect quotation) – XP or subject-drop in sentence-initial position – co-reference	
Syntax	– interrogation, subordination – XP topicalisation (V2), finiteness distinction – (verb raising), feature checking projection of categorial-thematic structure	(CP-level) (IP-level) (VP-level)
Morphology	– inflection morphology (person, number, tense, mood)	
Lexicon	– distinction of thematic (main) / non-thematic (copula, auxiliary, modal) verbs	

4.3.1 VP structures

Learners' early word combinations reflect the availability of an elementary structural domain, the verb phrase (VP). The constructions are categorial-thematic in that they express the predicate-argument structures specified in the lexicon (cf. Radford 1990; Berent 1996).

VP structures in L1 acquisition. As grammatical processes that would constrain word order in full blown grammars run vacuous in VP grammars the order of elements may vary (Ouhalla 1991; Tracy 1991: 402f.). However, most scholars agree in the observation of a preference for the verb final order by children acquiring German as their mother tongue as illustrated in example (396). Note also that negators appear in the left-peripheral position (cf. (397) which can be taken as an indication that elements remain inside the VP at this stage.

(396) *Julia   EIS   essen*   (L1 learner) (Tracy 1991: 195)
        Julia   ice-cream   eat

(397) *NICHT   papa   hochfliegen*   (L1 learner) (Stephanie, 1;9.11, to father
        NOT   daddy   up-fly   who was going to toss her in the air)
        'Don't make me fly.'   (Tracy 1991: 402)

VP structures in L2 acquisition. The position of the verb in the early utterances of child and adult L2 learners of German, in contrast, reflects the order of their respective L1 languages (i.e. OV in the case of (398) produced by a Korean L1 speaker). These learners are confronted with the task of restructuring the headedness for the VP as is explained in the next section.

(398) *hier   jacke   ausmachen*   (L2 learner) (Changsu, #150)
      here   jacket   off-make   (Vainikka & Young-Scholten 1994: 280)
      'Here (you) took (your) jacket off.'

4.3.2 IP structures

Several diagnostic criteria can be used to determine whether an additional structural layer above the VP, that is, the *inflection phrase* (IP), is available in learner grammars, such as the production of constructions with auxiliary and modal verbs, the marking of subject-verb agreement, and the raising of finite verbs to a position at the left periphery in main clauses. Crucially, not all of these phenomena need to be available at the same time.

Research into the acquisition of German has shown that learners may take different avenues or strategies in structure-building (D'Avis & Gretsch 1994; Gawlitzek-Maiwald 2003). The variation encountered points to the relevance of paying attention to changes in learner grammars that might conspire in the structural expansion of the VP listed previously.

Discovering the relationship between different verb positions. A fundamental step in the acquisition of German word order concerns the establishment of a relationship between the different positions verbs may appear in. Recall that finite and non-finite elements of the verb complex appear in sentence-second vs. -final position respectively in declarative main clauses (section 4.1.1, Table 4.1), whereby finite elements appear in INFL and non-finite elements in the sentence final V position. The availability of an expanded structure in learner grammars is reflected in the production of sentences containing modal, auxiliary verbs or separable verbs with a target-like distribution of finite and non-finite elements of the verbal complex in sentence-second and final position respectively (see (399) for an example of an L1 learner with a modal verb and (400) for an example of an L2 learner with an auxiliary verb).

(399) *ich   will   ein   TROMmel   holn*   (L1 learner, Tracy 1991)
      I   want   a   drum   fetch

(400)   *ich*   *habe*   *nur*   *de*   *kugelschreiber*   *gebracht*
       I   have   only   the   ballpoint-pen   brought

                                         (L2 learner, Plaza-Pust 2000)

Variation in L2 German acquisition. Variation concerning the relative order of the verb and its complement in constructions with periphrastic verb forms has been found to occur in productions of L2 learners whose L1 differs from the L2 regarding the VP headedness parameter. If we look at the following L2 German utterances of the L1 Italian learner Bruno[2] (examples (401)-(378) from Plaza-Pust 2008a: 257), we can see that these constructions follow the verb–object pattern, which is characteristic of VO languages like Italian.

(401)   *ich*   *habe*   **geler**   **franzosisch**   *drei*   *jahr*   (L2 learner)
       I   have   learned   French   three   year

(402)   *eine*   *person*   **muß**   **studieren**   *eine*   *sprache*   (L2 learner)
       a   person   must   study   a   language

At this stage, it seems, L2 lexical elements are arranged in an order that reflects the L1 parametric option, which amounts to the traditional notion of L1 transfer or influence. Following a dynamic approach to language development (cf. section 2.2.3), the adoption of the L1 parametric value can be rephrased in terms of a *coupling* of the L2 learner system with the available (L1) language knowledge. Further progress in the attainment of the L2 grammar involves system-internal conflicts and ensuing processes of uncoupling or differentiation. In the L2 German grammar, such non-linear processes can be observed upon the inclusion of the target OV (object-verb) option (examples (403) and example (424) above), four to six weeks after the production of the above examples (examples from Plaza-Pust 2000: 182f.).

(403)   *seine*   *vater*   *hat*   *eine*   *fehler*   *gemacht*   (L2 learner)
       his   father   has   a   mistake   made

What is interesting for present purposes is that the transition from a VO- to an OV-grammar does not occur instantaneously, i.e. in terms of an immediate exclusion of VO orders. In fact, the introduction of the new L2 OV-option is subject to fluctuations. Indeed, the Italian learner continues to produce VO constructions

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[2] Bruno was one of the subjects studied in the framework of the Hamburg ZISA (= ***Z**weitspra-chenerwerb **i**talienischer und **s**panischer **A**rbeiter*, 'second language acquisition by Italian and Spanish labourers') project (cf. Clahsen, Meisel and Pienemann 1983 and Plaza-Pust 2000 for further details).

for some time and there seems to be no apparent reason for why and when one word order is chosen over the other as both occur with the same lexical items. As we can see in Figure 4.1, which depicts the relative frequency of the respective orders, both alternate in the data of the Italian learner until file 9, where they are equally frequent. From then on, the proportion of target-deviant structures decreases, disappearing completely as of file 12.

Percent
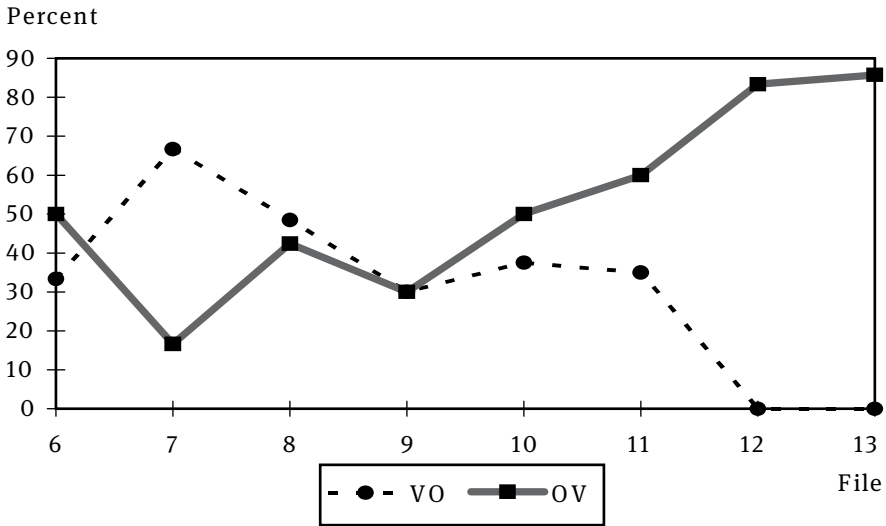
Figure 4.1: Relative frequency of OV and VO sequences in 'Bruno's' L2 German until file 13 (Plaza-Pust 2000: 184, 2008a: 258)

Verb raising, agreement, V2. Another crucial process that is bound to the expansion of the initial VP format by the IP layer is *verb raising*, whereby finite main verbs are raised to I (in main clauses) to have their features checked (because this process applies only to finite verbs, non-finite verbs remaining in the VP, learners are also assumed to master what is commonly dubbed the *finiteness distinction*) (compare examples (404) and (405)). As learners of German are also acquiring a language that is a V2 language, they also have to acquire the V2 constraint which requires that some other XP be moved into the preverbal position in SpecI (compare examples (406) and (407)).

(404)   *Julia*   *bringt*   *buch*   (L1 learner, Tracy 1991)
        Julia   brings   book

(405)   *du*   *sagst*   *deine*   *männer (...)*   (L2 learner, Plaza-Pust 2000)
        you   tell   your   men ...

(406) *jetzt*   *hab*   *ich*   *ein*   *spritze*   (L1 learner, Tracy 1991)
       now   have   I   a   syringe

(407) *das*   *esse*   *ich*   *dir*   *weg*   (L2 learner, Plaza-Pust 2000)
       that   eat   I   you   away

In research on L1 learners of German the acquisition of the finiteness distinction, the target agreement paradigm and the V2 constraint have been found to commonly coincide. In some learners, however, the grammatical properties associated with the IP do not become productive at the same time. This holds equally of monolingual L1 and bilingual or L2 learners of German, as is explained next.

(a) Variation in L1 German acquisition. Variation regarding main-clause word order has been found in some L1 German learners. The child 'Max', for example, shows that bare VPs and "mobile" IPs (initial/final) may coexist prior to the eventual convergence toward a unified structural format. Note that the diversity of main clause patterns in examples (408)-(411) includes V1, V2, and Vend structures (examples from Fritzenschaft et al. 1991: 89).

(408) **hab**   *ich*   *großen*   *traktor*   (L1 learner)
       have   I   big   tractor

(409) *du*   **hast**   *eine*   *schere*   *dabei*   (L1 learner)
       you   *have*   *a*   *scissors*   *with-you*

(410) *hier*   *ich*   *des*   *mal*   **holen**   (L1 learner)
       here   I   that   ptl   take

(411) *des*   *hier*   **haben**   **muß**   (L1 learner)
       that   *here*   *have*   *must*

(b) Variation in L2 German acquisition. Studies on the L2 acquisition of German by Romance L1 learners have shown that their early L2 German productions do not adhere to the V2 constraint. Instead, word order appears to be determined by grammatical processes that relate to the L1 grammar[3], which indicates that the IP is initially set to the L1 value.

As L2 learner grammars progress toward the L2, the grammatical processes associated with the V2 parameter are implemented. Examples (412)-(413) and

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3 The processes include, in particular, free adjunction to IP (which derives V3 structures such as (414) in which the adverbial appears before the subject in preverbal position), and nominative case-checking under spec-head agreement (as nominative case is not checked under government in that language, subjects cannot appear in post-verbal position).

(415)-(419) illustrate the structural variety observed once non-subject V2 appears in the L2 learner grammar of the Italian learner mentioned previously (Plaza-Pust 2000). As examples (412) and (413) show, the productivity of structures that adhere to the V2 constraint (cf. (412)), does not go along with the immediate exclusion of constructions that do not. Instead, target-like non-subject V2 constructions alternate with target-deviant V3 sequences (cf. (413) from Plaza-Pust 2000) that appear to be based on the L1 Italian structure (for further illustration an Italian utterance is provided in (414).

		[$_{IP}$ SpecI	[$_{I'}$ I	[$_{Vmax}$		[$_{VP}$ ...	V	]]]]
(412)	*und*	*dä kosten*	*hast*		*du*	*schon*	*mir*	*gesagt*
	and	the expenses	have		you	already	me	told

	[$_{IP}$ ...	[$_{IP}$ SpecI	[$_{I'}$ I	[$_{Vmax}$ [$_{VP}$ V	...			]]]]]
(413)	*jetzt*	*ich*	*habe*	*gelesen*	*in*	*eine*	*zeitung*	*deutsch*
	now	I	have	read	in	a	newspaper	German

(414)	*Ieri*	*Maria*	*ha*	*mangiato*	*la*	*insalata*
	yesterday	Maria	has	eaten	the	salat

Examples (415)-(416) illustrate the type of Italian-like constructions with subject-verb inversion (involving the so-called *free inversion*) with or without a constituent in the preverbal position (compare with the Italian sentence *compra un libro Gianni*, 'buys a book Gianni'). In addition, the range of sentential formats produced includes verb initial sequences with subject drop (cf. (417)) or with the subject in postverbal position (cf. (418)). Note that the SVX sequence in example (419) is amenable to both a V2 or non V2 analysis (Plaza-Pust 2000: 229).

(415)	*dann*	*hat*	*keine*	*probleme*	*mehr*	*Giovanni*	(L2 learner)
	then	has	no	problems	more	Giovanni	

(416)	*funktioniert*	*nicht*	*mehr*	*die*	*radio*	(L2 learner)
	works		not	more	the	radio	

(417)	*holt*	*zwanzigtausend*	*mark*	*jeden*	*monat*	(L2 learner)
	gets	20,000		marks	each	month	

(418)	*hast*	*du*	*mehr –*	*mehr*	*spaß*	*(L2 learner)*
	have	you	more –	more	fun	

(419)	*viele*	*leute*	*machen*	*viele –*	*viele*	*träume*	*(L2 learner)*
	many	people	make	many –	many	dreams	

4.3.3 CP structures

The production of embedded clauses introduced by a complementiser (compare examples (420) and (421) of an L1 and an L2 learner respectively) and target-like question formation (compare examples (422) and (423) of an L1 and an L2 learner respectively) reflect the expansion of the IP structure through the projection of the complementiser phrase (CP). Following the asymmetry hypothesis of German sentence structure discussed in section 4.1.4, we assume that the headedness of the IP is head final in CP structures.

(420)	*ob*	*ich*	*das*	*kann*		(L1 learner)
	whether	I	that	can		

(421)	*ob*	*ich*	*der*	*star*	*bin*	(L2 learner)
	whether	I	the	star	am	(Plaza-Pust 2000: 263)

(422)	*was*	*hol*	*ichn*	*jetzt?*		(L1 learner)
	what	fetch	I	now		

(423)	*was*	*hast*	*du*	*hier*	*gemacht?*	(L2 learner)
	what	have	you	here	made	(Plaza-Pust 2000: 222)

Variation in L1 German acquisition. Contrary to the generalised assumption that the acquisition of verb final word order for embedded clauses in children acquiring L1 German would be flawless, there is evidence of word order variation in productions of L1 learners. Some children, as for example 'Benny', have been found to produce a range of different constructions including V2, V1, and Vend structures (see examples (424)-(402) from Fritzenschaft et al. 1991). Four weeks after the production of examples (424)-(402), verbs appear in the target final position in all complementiser introduced clauses produced by this learner (Fritzenschaft et al. 1991).

(424)	*will*	*die*	*meerjungfrau*		*haben*	*daß*	*du* **hast**	(L1 learner)
	wants	the	mermaid		have	that	you have	
	net	*die meerjungfrau*						
	not	the mermaid						

(425)	*wenn*	**hab**	*i*	*au*	*mal*	*burtstag*	*habt*	(L1 learner)
	when	have	I	also	ptl	birthday	have	

(426)	*weil*	*die*	*kaputt*	**is**		(L1 learner)
	because	that	broken	is		

In some monolingual L1 German learners variation has also been observed regarding question formation. Gawlitzek-Maiwald and Tracy (2005: 288), for example,

remark on the production of interrogative clauses with finite verbs in final position at a time when the child adheres to the V2 constraint for main clauses (for further illustration compare the main clause V2 and interrogative verb final examples in (427) and (428) from Gawlitzek-Maiwald and Tracy 2005: 288). According to these authors, some learners appear to reserve specific structural formats for specific functions (in this case V2 for main clauses and Vend for wh-questions) (cf. Gawlitzek-Maiwald & Tracy 2005: 288). Interestingly, a few weeks later (at the ages 2;2-2;4) the authors observe the coexistence of both VE and V2 question formats (cf. (428)). Two months later, only V2 formats are produced.

(427)   Valle (monoling. German 2;0)
    a.   pointing:
        da   sind lauter schilder   drauf   (V2, main clause, declarative)
        there are   lots-of signs   on-it
    b.   holding a toy figure named Peter:
        wo   der   peter   hinsitzt/   (VE, main clause, interrogative)
        where the   peter   down-sits
        'Where should Peter sit?'

(428)   Valle (monoling. German 2;3)
    a.   *was   der   gerne   will?*
        what he   gladly wants
        'what would he like?'
    b.   *was   will   der   denn?*
        what wants he   then
        'what does he want?'
    c.   *was   ist denn da   weggegangen ... da   weggegangen   ist*
        what is   then there away-gone ...   there   away-gone   is
        'what has left there?'

Variation in L2 German acquisition. L2 German learners have been found to produce embedded clauses relatively early in their development. Typically, word order in early embedded clauses "reflects" main clause word order. In Plaza-Pust (2000: 249) we remarked that word order in embedded clauses produced by an L2 German Italian learner was target-deviant during the first two thirds of the recording time (cf. example (429)).

(429)   *ich hab   schon   dir gesagt wieviel   ist die kost in   italien*
       I   have   already   you said   how-much   is   the cost in Italy
       'I already told you about the costs in Italy.'
                                   (L2 learner, Plaza-Pust 2000: 249)

Similar to the variation observed in the implementation of V2, target-like verb placement in embedded clauses (430), emerging toward the end of the recording time considered in Plaza-Pust (2000), coexists with target-deviant word orders until the end of the recording time so that it remains unclear whether the target-like word order is ultimately implemented (Plaza-Pust 2000: 257). Interestingly, Plaza-Pust remarks that the introduction of target-like verb-final embedded clauses correlates with an increased productivity of syntactic complementisers such as *dass* ('that') and *ob* ('if'), the availability of new adverbial conjunctions such as *solange* ('as long') and *bevor* ('before') and the differentiated use of relative pronouns. This evidence is argued (Plaza-Pust 2000: 274) to provide further support for the assumption of a dynamic relation between structural development and the expansion of the lexicon (notice that the implementation of FCs in child learner grammars has also been found to be followed by lexical spurts, Radford 1990).

(430)   *manchmal*   *ich*   *werd*   *echt*   *bekloppt*   *wenn*   *die beiden*
      sometimes   I   become   really   crazy   when   the both
      so redden
      so speak   (L2 learner, Plaza-Pust 2000)
      'Sometimes I get crazy when both of them speak like that.'

4.3.4 Structure building in the acquisition of German

Table 4.7 summarises the main developmental milestones described and includes examples from L1 and L2 learners quoted previously for further illustration. Note that this rough characterisation of the major developmental steps leaves enough room for individual variation in the progression toward the target grammar which is deemed necessary in view of the evidence gathered, in particular, concerning finite verb placement (at the left or right periphery of the sentence) prior to the availability of the full sentence structure (i.e. the complementiser phrase or CP layer).

Table 4.7: Structure-building in the acquisition of German.*

CP	Questions	[L2]	*was*	*hast*	*du*	*hier*	*gemacht?*
			what	have	you	here	made
		[L1]	*was*	*hol*	*ichn*	*jetzt?*	
			what	fetch	I	now	
	Embedded clauses	[L2]	*ob*	*ich*	*der*	*star*	*bin*
	(IP final)		whether	I	the	star	am
		[L1]	*ob*	*ich*	*das*	*kann*	
			whether	that	I	can	

Table 4.7: continued

IP	V2	[L2]	*das*	*esse*	*ich*	*dir*	*weg*
	(preverbal non-		that	eat	I	you	away
	subjects)	[L1]	*jetzt*	*hab*	*ich*	*ein*	*spritze*
			now	have	I	a	syringe
	Verb raising	[L2]	*du*	*sagst*	*deine*	*männer* (...)	
	(main verbs)		you	tell	your	men ...	
		[L1]	*Julia*	*bringt*	*buch*		
			Julia	brings	book		
	Verb raising	[L2]	*ich*	*habe*	*nur*	*de*	*kugelschreiber* *gebracht*
	(aux/mod)		I	have	only	the	ballpoint-pen brought
		[L1]	*ich*	*will*	*ein*	*TROM*mel	*holn*
			I	want	a	drum fetch	
VP	VP headedness	[L2]	(L1 Korean)		*hier*	*jacke*	*ausmachen*
					here	jacket	off-make
		[L1]			*Julia*	*EIS*	*essen*
					Julia	ice-cream	eat

* To illustrate the structure-building process, examples are provided "bottom-up". With the exception of the L1 Korean example, all other examples are from a learner L2 German with L1 Italian.

4.4 Analysis of Written German data and outline of the empirical chapters

In the investigation of the participants' command of written German we have used the diagnostic criteria we established in section 4.3 for the assessment of the main structural properties of German associated with the VP, IP, and CP levels respectively. We conducted qualitative and quantitative analyses of the data summarised in the following.[4]

Developmental profiles. Based on the results obtained concerning their development of written German in the time covered by files 1-5, we established a developmental profile for each participant. Individual profiles are summarised in a schematic manner following the template provided in Table 4.8. Examples illus-

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4 A preliminary presentation and discussion of the main results of the qualitative measures was published in Plaza-Pust (2008b). To put these results into perspective, we decided to carry out additional quantitative measures for the present study.

trate the participants' command of the respective property of German. Potential candidates for language mixing are provided in a separate line, shaded in grey.

Table 4.8: Template used for the sketch of participants' German profiles.

CP	Questions	[file]
	Embedded clauses (IP final)	[file]
IP	V2 (preverbal non-subjects)	[file]
	Verb raising (main verbs)	[file]
	Verb raising (aux/mod)	[file]
VP	VP headedness	[file]

Participants' profiles are followed by a more in-depth discussion of their competence at the onset of the study and the progress they make in the course of the time span covered by the first five samples of the longitudinal study.

Word order (verb placement). Regarding word order, we were interested to establish whether participants correctly set the VP and IP headedness values, and whether they adhered to the target V2-constraint. Target-deviant patterns were scrutinised for a potential impact of borrowing from DGS. In addition to qualitative measures assessing verb placement in main and embedded clauses, we used a quantitative measure to determine the absolute and relative frequencies of the different word order patterns identified for main clauses. The results are summarised following the template in Table 4.9. V2 sequences were distinguished into non-subject-verb (XVS), subject-verb (SV), and non-subject-verb sequences without an overt subject (XVX) because this was deemed to contribute to a better assessment of word order variation that might be associated with the attainment of the V2 constraint. Note that SV(X) sequences are ambiguous concerning (a) V2, because they could be based on a grammar without the V2-constraint (English, Italian) and (b) VP headedness, unless the verb is followed by another constituent. XVX structures indicate that sentence-initial non-subjects are integrated into the sentence structure, while subject-drop indicates that the correct setting of the pro-drop parameter remains to be tackled. Because V3 structures typically result from the adjunction of adverbials to the left periphery of the sentence, indicating that the V2 constraint is not yet acquired, we counted these separately.

Furthermore, we also counted V1, Vend and verbless sequences separately. As for V1 sequences, indicating that the topicalisation of non-subject or subject XPs to a position left of the verb is not yet mastered, we further differentiated these into verb-subject (VS) and verb-non-subject sequences (VX), because the former have

been found to occur during reorganisation phases associated with the implementation of V2. Verb-final clauses are of particular interest in this study for two reasons. First, child L1 learners of German have been found to initially produce verb final clauses. Because German is an SOV language this is a fundamental step in their development of the target language. Verb final clauses could also be an indication of borrowing given that in DGS verbs always appear in sentence final position.

Finally, we also considered sequences with verb drop by counting instances of verb omission in obligatory contexts. We were interested to establish the frequency of verb drop to the extent that this phenomenon might be developmentally motivated (initial stages, optional constituents) or an effect of borrowing, bound to certain expressions in the other language and lexical deficits in the host language.

Table 4.9: Template used for the summary of results on main clause verb placement.

File	n	V2			V1			V3	Vend	Ø V	
		XVS	SV	XVX	VS	VX					
			%	%	%	%	%	%	%	%	%

Because the overall frequency of embedded clauses was found to be extremely low, we decided to include the results of quantitative measures in the discussion section on an exceptional basis only.

Morphosyntax. At the level of morphosyntax we focused on verb inflection not only with a view to determining the participants' command of the target inflection paradigm but also to establish whether processes related to the IP level were operative (notably, finiteness distinction, verb raising, subject-verb agreement). In a first step we distinguished target-like forms, errors and omissions. Target-like forms were broken down in accordance with the person/number forms identified in the data. Verb inflection errors were further distinguished into the erroneous use of infinitives (-fin) and other erroneous forms (x), including forms with a wrong inflection ending of the main verb and those errors that pertained to the non-finite part of periphrastic verb constructions. Omissions were broken down into verb drop and copula drop. This differentiation, although not always easy to establish, was done to obtain further insights into the frequency of copula drop, which is known to represent a common phenomenon during the initial stages of language acquisition. In addition, because in DGS knows no copula, a protracted copula drop could be interpreted as an effect of cross-linguistic influence. Table 4.10 illustrates the template used for the summary of the results obtained.

Table 4.10: Template used for the summary of results on verb inflection.*

F	n	Verb forms						Verb drop		
		V	Target-like		Errors					
		Σ 3s	3P	Σ	-fin	x		Ø V (Ø cop)		
			%	%	%	%	%		%	%

* F=file, n=total clauses, V=verbs produced (total), Σ=AGR/TNS (verb inflection) errors,
-fin=infinitives, x=other inflection errors, ØV=total verbless, Ø cop=copula drop

4.5 Developmental profile: Muhammed

Muhammed's narratives at the beginning of the study are characterised by a succession of short sentences that describe some of the main events of the picture book story. Temporal, causal, and spatial relations remain implicit in the first two narratives, in which structural and lexical gaps become apparent. As of file 3, Muhammed skilfully uses linguistic means available for narrative purposes, describing characters' emotions and activities in more detail than in files 1 and 2. Text length varies between 20 to 50 propositions.

By assumption, the structure available to Muhammed at the onset of the study consists of a VP (cf. Table 4.1). Word order variation in Muhammed's first file is indicative of how he exploits the basic sentential pattern at his disposal (the VP) to also convey complex meanings despite the structural limitations.

The expansion of the elementary VP structure by an additional IP layer is documented in file 3. In this file, Muhammed produces target-like sequences with periphrastic verb forms (auxiliary and modal verbs). However, he does not fully exploit the IP structure as he continues to produce more basic sentential formats with main verbs, and sequences with verb drop. The latter are indicative of remaining lexical gaps and a potential influence of DGS. By assumption, the IP structure is used to accommodate target V2 word order in file 5. Complementiser introduced embedded clauses produced as of file 4 indicate that the structure available to Muhammed includes the CP layer. However, verb placement in embedded clauses is not mastered by the end of the recording time covered in the present study. Verb inflection also remains a domain which is not fully mastered by the end of the recording time. There is evidence of a rule-based formation of verb forms, but this is not applied across the board.

Table 4.11: Muhammed's German profile.

CP	Questions / embedded clauses (head-initial IP)	[file 5]	*Max* Max	*wollte* wanted	*und* and	*sehen* see	*wer* who	*ist* is	*sie,* she	
			weil because	*Max* Max	*wollte* wanted	*denken* think	*wer* who	*ist* is	*es.* it	
		[file 4]	*... weil* because	*Lisa* Lisa	*ist* is	*verschwinden.* gone				
IP	[language contact]	[file 5]	(lexicon, DET$_{ART}$)							
		[files 3-4]	(lexicon, DET$_{ART}$, attributive and complex clauses)							
		[file 4]	*Paul* Paul	*da* there	*auch* also	*fallen* fall	*in Wasser.* in water			
	V2 (preverbal non-subjects)	[file 5]	*Am* at.the	*Abend* evening	*haben* have	*Max* Max	*und* and	*Paul* Paul	*ein* a	*Frosch* frog
			geschaut. looked.at							
	Verb raising (main verbs)		[no evidence]							
	Verb raising (aux / mod)	[files 3-4]	(coexistence with VP)							
		[file 3]	*Dayel* Dayel	*und* and	*Kalle* Kalle	*haben* have	*ein* a	*Frosch* frog	*schaut.* looks	
VP	[language contact]	[files 1-2]	word order, figure-ground, OV?, lexicon, complex clauses							
	VP coexistence with IP	[files 3]	*Dayel* Dayel	*und* and	*Kalle* Kalle	*fallen* fall	*auf* on	*der* the	*See.* lake.	
			Dayel Dayel	*under* under	*Wassen.* water					
	VP headedness (head-initial?) (base-generation of modal verbs in IP or adjunction to VP?)	[files 2]	*Law* Law	*musst* must	*suchen* search	*der* the	*ein* a	*Frosch.* frog		
		[files 2]	*Law* Law	*sauer* angry	*weil* because	*Jach* Jach	*auf* on	*Law sitzt.* Law sits		
	No evidence of verb raising	[file 1]	*der* the	*ein* a	*Hirsch* deer	*das* the	*ein* a	*Geweih.* antlers		
			(hoch)nehmen (up) take							
		[file 1]	*Mama* Mama	*auch* also	*sagt* says	*Hallo.* hello				

4.5.1 Word order in Muhammed's narratives

The analysis of main clause verb placement in Muhammed's narratives (see Figure 4.2 and also Table D-1 in Appendix D) reveals that V2 sequences predominate as of file 1. Two phenomena deserve further attention, namely, the high rate of sequences with verb drop, and the frequency of V3 formats. Indeed, as we can glean from Figure 4.2 the proportion of verb drop in main clauses remains relatively high throughout the whole corpus, ranging between 16 and 20% in files 1, 2, 3, and 5; an exceptionally high rate of 30.3% is documented for file 4. Because verb drop remains a constant and a frequent phenomenon in Muhammed's narratives, which marks a difference to the overall tendency of a decrease in the narratives of the other participants, we shall pay particular attention to it in the next sections. As for Muhammed's use of V3 formats, we can see in Figure 4.2 that sequences with the verb in sentence-third position appear in files 1 and 2 but not in file 3. They reappear in file 4 with a relative frequency of 15.2%, nearly disappearing again in file 5, the file in which we find the highest number of XVS sequences, that is, patterns which comply with the target V2 constraint. We advance that this development is connected, as it has been found to be the case in the grammars of other learners of German as a second language.
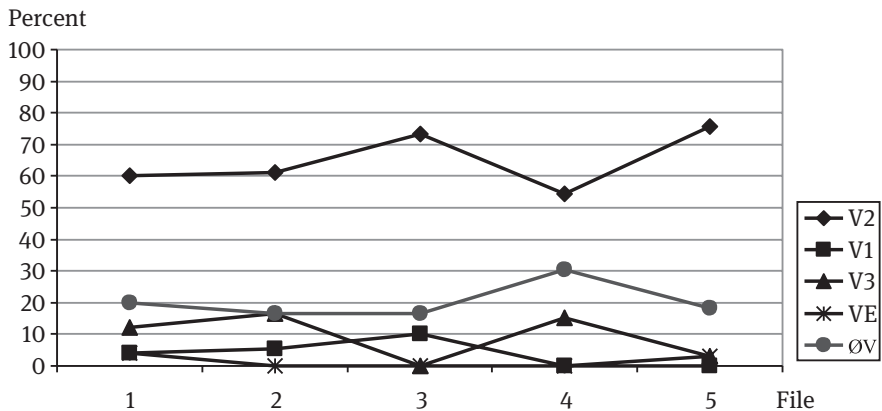
Figure 4.2: Main clause verb placement in Muhammed's narratives.

Turning to complex constructions in Muhammed's narratives, we can see in Figure 4.3 that the frequency of embedded clauses (EC) remains rather low throughout the recording time covered in this study. This holds equally of coordinated clauses (CC).

Percent
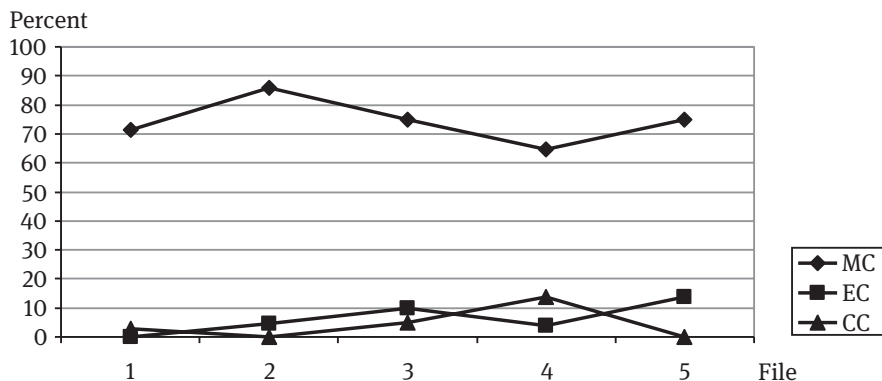
Figure 4.3: Relative frequency of main (MC), embedded (EC) and coordinated clauses (CC) in Muhammed's narratives.

The analysis of word order in the few embedded clauses produced reveals that the placement of the verb in the second position after the complementiser (EC-V2) predominates throughout the recording time (cf. Figure 4.4).

Percent
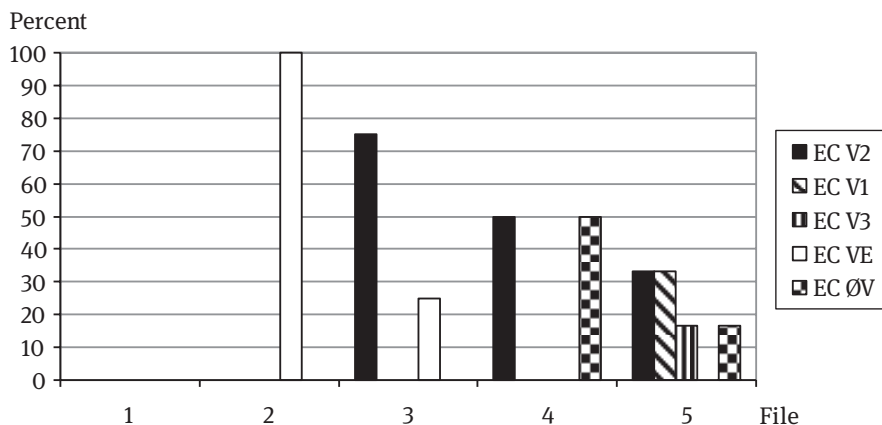
Figure 4.4: Verb placement in subordinated clauses of Muhammed's narratives.

4.5.2 Written German competence at the onset of the study

Muhammed's L2 German learner grammar at the onset of the recording time can be described as a VP grammar. Grammatical processes such as subject-verb agreement or verb raising run vacuous because the relevant functional projections are not yet available.

Word order. Muhammed uses a diversity of word order patterns in file 1. Apart from SVX constructions (cf. (431)), he produces a range of V3 patterns that result from (a) the non-application of verb raising (to INFL) with the effect that sentence-internal adverbs appear between the subject and the verb (compare example (432)), (b) the adujuntion of an adverbial phrase in sentence-initial position as in example (433), or, (c) the application of the figure-ground principle which would hold in the equivalent DGS construction as in example (434). Further, there is one verb final sequence in this file (example (435)) which occurs with a main verb infinitive.

Word order and language contact. Some sequences in Muhammed's file 1 represent candidates for language mixing. For example, the sequence in (434) could be categorised as a V3 sequence with a postverbal prepositional phrase. Yet there are two elements in this sequence that deserve further attention. First, there is the preposition *mit* ('with'), which is erroneously chosen in the place of *on* (the boy is lying on the deer's back). Secondly, there is the repetition of the reference to the deer. Why would the deer appear once at the beginning of the sequence, as if preposed to the clause, and then occur another time at the end of the clause, in a prepositional phrase indicating the location of the boy? At closer inspection, and considering DGS as potential source of what looks like the ground-figure order characteristic of that language, the sequence might be rein-terpreted as a translation from an equivalent DGS sequence. Indeed, apart from the ground-figure order, the expression "*liegen mit Hirsch*" could be reinterpreted as a sequential translation of a meaning that would be simultaneously expressed in DGS by means of a complex classifier construction. Example (436) represents another candidate for borrowing from DGS. Not only do the constructions that would require the copula appear without a verb. The question answer pair is also reminiscent of question answer pairs used in DGS for narrative purposes.

(431) *Paul   geht   der   Wald*   (Muh.-file 1)
       Paul   goes   the   woods
       'Paul goes into the woods.'

(432) *Mama   auch   sagt   Hallo*   (Muh.-file 1)
       Mama   also   says   hello
       'Mum also says hello.'

(433) *am   Abend   Paul   schaut   mit   Max.*   (Muh.-file 1)
       at.the   evening   Paul   looks.at   with   Max
       'In the evening Paul looks at (the frog) together with Max.'

(434) *der   ein   Hirsch   Paul   liegen   mit   Hirsch.* (Muh.-file 1)
       the   a   deer   Paul   lies   with   deer
       'Paul is lying on the deer.'

(435)   *der   ein   Hirsch   das   ein   Geweih   (hoch)   nehmen.*   (Muh.-file 1)
        the   a   deer   the   a   antlers   high   take
        'The deer is raising his antlers.'

(436)   *Wo   Max   keint   Da   Max*   (Muh.-file 1)
        where   Max   no   there   Max
        'Where is Max? He is not there.'

Verb inflection. Examples (431)-(433) above show that Muhammed already produces some verb forms that are correctly inflected for person and number in file 1 (cf. also (437) below). However, apart from the forms *geht* ('goes'), *sagt* ('says') and *schaut* ('looks-at'), all other verbs produced in this file appear in their infinitive form (cf. (434)-(435) above, and (437) below), which suggests that inflection is not rule-based. Further, and unlike other participants, Muhammed does not produce constructions with the copula *sein* ('be') at the onset of the study.

Percentage
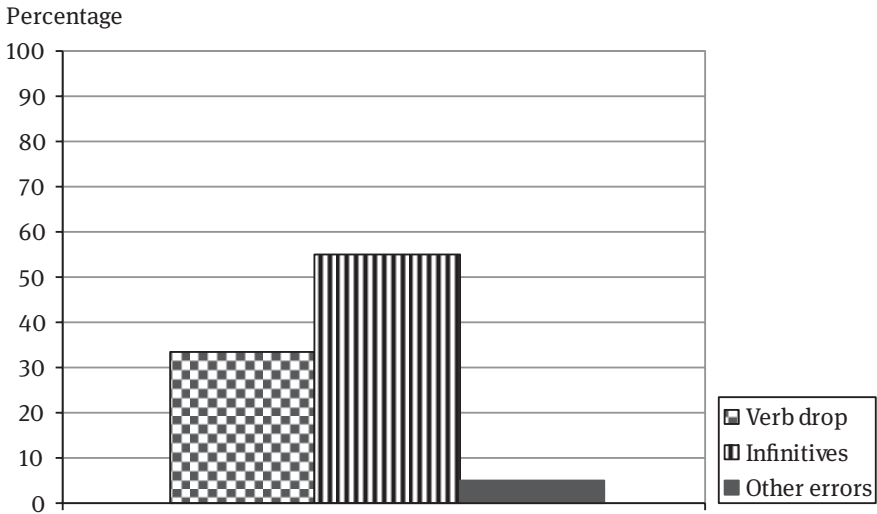
Figure 4.5: Verb inflection errors and verb drop in Muhammed's file 1.

Figure 4.5 provides an overview of the errors produced by Muhammed in this file in the area of verb inflection, including the relative frequency of verb drop (copula drop making up 70% of the instances of the percentage of 33.3 of constructions with verb drop). As we can see, the erroneous use of infinitive forms outnumbers the relative frequency of verb drop. Erroneous verb endings make up only a small percentage of the overall error rate (5% of 60% verb inflection errors).

Finally, note that Muhammed already produces sequences with verbs that take clausal complements, such as *wünschen* ('wish') (437), but does not yet master the target selective properties of these verbs (in the case of (437) target German would require an infinitive clause). Examples such as (437) show that Muhammed expresses complex meanings by combining different propositions paratactically, at a time when he lacks the necessary structural means that would allow him to integrate the related propositions syntactically. We might speculate further that Muhammed also draws on his knowledge of complex syntax in DGS (recall that he produces complex clauses in that language such as the one provided in (438), repeated here for convenience).

(437) *Max Wünschen geht mit der Wald.*   (Muh.-file 1)
      Max wish goes with the woods
      'Max wants to go with (Paul) into the woods.'

(438) [PRON$_{PERS}$]$_{SIGNER}$ THINK: SHORTLY CAN FROG SEE
      'I think he can see the frog shortly.'   (Muh.-DGS file 1)

4.5.3 Further development

4.5.3.1 Expansion of the VP structure: coexistence of VP and IP structures

The first periphrastic verb constructions with a correct placement of objects inside the verb bracket appear in file 3. Before, Muhammed produces some constructions with modal verbs in file 2. However, as the object is placed after the verbal complex, these sequences remain ambiguous regarding the expansion of the VP by an additional structural projection, the IP. While the appearance of the complement after the periphrastic verb form in example (439) could result from a failure to correctly set the headedness of the VP, the word order in (440) (i.e. the placement of the negator after the modal verb, the object appearing after the lexical verb) suggests that "*kann nicht* + X" may be used as a formula at the time. In addition, we might speculate that the modal verb expression is borrowed from DGS and used as an unanalysed or idiomatic expression at a time when the necessary structure is not yet available in L2 German.

In this context, a note is due on the use of determiners. Although this is not a domain we will deal with in depth in this study, the determiners appearing examples (439) and (440) illustrate that Muhammed uses a combination of a definite and an indefinite article. This unusual combination is likely to result from vocabulary training measures, involving the learning of the determiner-noun pairs by rote. That both determiners are used at a time makes apparent, perhaps more so

than if the participant had learned to combine only one at a time, that the grammatical constraints determining their combination are not yet mastered.

(439) *Law   musst   suchen   der   ein   Frosch.*   (Muh.-file 2)
       Law   must   search   the   a   frog
       'Law must look for the frog.'

(440) *kann   nicht   finden   der   ein   Frosch.*   (Muh.-file 2)
       can   not   find   the   a   frog
       'He can't find the frog.'

The sentence-final placement of the finite verb in Muhammed's first *weil* ('because')-introduced embedded clause (441) is target-like, but represents an exception as all other *weil*-clauses in subsequent files appear with main clause order.

(441) *Law   sauer   weil   Jach   auf   Law   sitzt.*   (Muh.-file 2)
       Law   angry   because   Jach   on   Law   sits
       'Law is angry because Jach is sitting on him.'

Constructions with periphrastic verb forms. As of file 3, periphrastic verb constructions appear with a correct placement of objects inside the verb bracket (compare example (442), a construction with an auxiliary, and example (443), a sequence with a modal verb), providing evidence of a structural layer above the VP, the IP, and the target-like fixation of the VP-headedness parameter.

(442) *Dayel   und   Kalle   haben   ein   Frosch   schaut.*   (Muh.-file 3)
       Dayel   and   Kalle   have   a   frog   looks
       'Dayel and Kalle looked at a frog.'

(443) *Lisa   will   der   Glas   hinaus   klehern.*   (Muh.-file 3)
       Lisa   wants   the   glass   out   climb
       'Lisa wants to climb out of the glass.'

It must be noted, however, that the lexical verb in example (442) lacks the prefix *ge-*, which shows that participle formation is not fully mastered at the time (notice that some participles appear in their correct form, such as the participle of the verb *schlafen* ('to sleep') in example (444)). Subsequent recordings show that the task remains to be tackled by the end of the recording time. The sequence in (444) is also illustrative of another phenomenon, namely the target-deviant use of the auxiliary *haben* ('to have') in the place of the copula *sein* ('to be') in combination with an adjective (*müde* 'tired', in this case). Note that the auxiliary would be target-like if it appeared only in combination with the participle *geschlafen*.

Example (445), in which the auxiliary appears with the adjective *traurig* ('sad')), documents a similar error in file 4.

(444) *Dayel   und   Kalle   haben   müde   und   geschlafen.*   (Muh.-file 3)
      Dayel   and   Kalle   have   tired   and   slept
      'Dayel and Kalle were tired and they slept.'

(445) *Am   Morgen   haben   Max   und   Paul   traurig*   (Muh.-file 4)
      in.the   morning   have   Max   and   Paul   sad
      weil   ein   Frosch   ist   weg.
      because   a   frog   is   gone
      'In the morning, Max and Paul were sad because the frog had gone.'

Coexistence of VP and IP structures. We remarked previously that verb drop remains a constant and a frequent phenomenon in Muhammed's narratives. As we can see in examples (446)-(449), which make up the passage describing the boy and the dog's falling into the water, verb drop occurs in constructions that provide information about the locations of the main characters. To describe such spatial locations in target German would require the use of the copula or the existential main verb *sich befinden* ('to be situated'). Notice that the concatenation of propositions does not involve connecting elements such as adverbials (e.g. *dann*, 'then') or conjunctions (e.g. *weil*, 'because', or *und* 'and'), which Muhammed uses in other parts of the text. Consequently, the text passage serves more the purpose of picture description than of narrating connected events.

(446) *Dayel   und   Kalle   fallen   auf   der   See.* (Muh.-file 3)
      Dayel   and   Kalle   fall   on   the   lake.
      'Dayel and Kalle fall into the lake.'

(447) *Dayel   under   Wassen.*   (Muh.-file 3)
      Dayel   under   water
      'Dayel is under water.'

(448) *Dayel   horend.*   (Muh.-file 3)
      Dayel   listening
      'Dayel is listening.'

(449) *Dayel   neben   Holz.*   (Muh.-file 3)
      Dayel   beside   wood
      'Dayel is next to a log.'

Main verbs vs. non-thematic verbs. From a structural perspective, it seems, however, Muhammed does not yet fully exploit the IP structure as main verb raising is not productive until the end of the recording time. Consider in this

respect the preverbal placement of the sentence-internal adverb in example (450) or the preverbal position the negator in file 4 in example (451).

Note, additionally, the use of *da* ('there') in sequences like (450). The use of this element in combination with the subject, as well as its placement after the referent and prior to the main verb derives a sequence that is reminiscent of referential establishment in DGS constructions (recall that the determiner DET$_{\text{EXIST}}$ in DGS is often annotated as DA). By assumption, this usage of *da* (serving the function of a referential marker) differs from the predicative function this element fulfils in other contexts, as illustrated in example (452). This sequence is also an example of how Muhammed expresses a complex meaning through a concatenation of propositions. Verb drop in these constructions reflects the continuing lack of structural and lexical means in his written German. Attributive constructions with the copula are not productive. Neither is the complementiser *dass* ('that') (note that *dass* would be used to introduce the embedded clause subcategorised by the psychological verb *denken* ('to think') of the main clause; alternatively, an unintroduced embedded clause with main clause verb placement could be used).

(450) *Paul   da   auch   fallen   in   Wasser.*   (Muh.-file 4)
   Paul   there also fall   in   water
   'Paul also falls into the water.'

(451) *Max   sagt   Bitte   nicht   ruft.*   (Muh.-file 4)
   Max   says please not   calls
   'Max says: "Please, do not call (the frog)."'

(452) *Max   schaut   und   denke   Frosch   im   Baum*   (Muh.-file 4)
   Max   looks and think frog   in.the tree
   aber   nicht   da   nur   Uhu   da.
   but   not   there only eagle.owl there
   'Max looks and believes that the frog is in the tree. But it is not there. There is only an eagle-owl there.'

Complex sentential constructions. Muhammed occasionally produces complex constructions with embedded clauses introduced by the complementiser *weil* ('because') (see examples (453) and (454)). The verb appears in second position after the complementiser with the exception of example (454) in which *hinaus* ('out') appears preverbally. Notice that in target German *hinaus* functions as a separable prefix of the verb *hinausklettern* ('climb out'), which implies that it appears preverbally in embedded clauses. However, because the verb appears in the infinitive form (we disregard the spelling error in this context, as the target form should correctly be *klettern*, 'to climb', which he produces correctly later in the narrative), and all other *weil*-clauses appear with V2 it seems likely that the

word order in (454) results from the use of an unanalysed form rather than from the correct raising of the verb to a head-final INFL.

(453) *Dayel und   Kalle   haben   schaut   und   weinen*   (Muh.-file 3)
       Dayel and   Kalle   have   look   and   cry
       weil   Lisa   ist   verschwinden.
       because   Lisa   is   gone
       'Dayel and Kalle looked (at the jar) and cry, because Lisa is gone.'

(454) *Dayel ist   sauer   weil   Kalle   hinaus   klehern.*   (Muh.-file 3)
       Dayel is   cross   because   Kalle   out   climb
       'Dayel is annoyed because Kalle has climbed out.'

4.5.3.2 V2 and complex clauses

V2 constraint. Evidence for the integration of sentence-initial non-subject XPs into the main clause structure deriving target non-subject V2 sequences appears first in file 5 (see example (455)). In this file we also observe that the frequency of V3 structures has dropped to only one instance. Taken together these two observations suggest that the V2 constraint is a component of Muhammed's L2 German grammar at this stage.

(455) *Am   Abend   haben Max und Paul ein Frosch   geschaut.*
       at.the   evening have   Max and Paul a   frog   looked.at
       'In the evening Max and Paul looked at the frog.'   (Muh.-file 5)

Complex clauses. In this file, too, Muhammed produces a series of complex clauses including the first instances of embedded clauses introduced by a wh-word. Note, though, that the verb fails to appear in the target final position (cf. (456)) or is dropped (cf. (457)).

(456) *Max   wollte   und   sehen   wer   ist   sie,*   (Muh.-file 5)
       Max   wanted   and   see   who   is   she
       weil   Max   wollte   denken   wer   ist   es.
       because Max   wanted   think   who   is   it
       'Max wanted to see who they are because Max wanted to know who they are.'

(457) *Dann   habe Max schau   wo   ein Frosch.*   (Muh.-file 5)
       then   have Max look   where   a   frog
       'Then Max looked where the frog was.'

4.5.3.3 Language contact phenomena

Taking up the phenomenon of verb drop, we can see that Muhammed continues to produce verbless clauses such as examples (458) and (459) until the end of the recording time considered in this study. In some cases, verb drop results from remaining lexical gaps in German: in example (458), which, by assumption, describes the dog's licking of the boy's cheek Muhammed uses the adjective *sauber* ('clean') instead of the verb *lecken* ('to lick'). Other cases of verb drop seem to involve the calquing of predicative DGS constructions including the existential determiner of that language, translated into German as *da* ('there'). This is probably the case in example (459), which provides information about the frog parents having six children. In contrast to previous narratives, however, the one produced in file 5 provides evidence for the use of the copula in various contexts. Indeed, the copula appears in interrogative clauses (cf. example (456) discussed previously), in embedded clauses with the expression *weg* ('gone') (example (460)) or in combination with *da* in example (461) (recall that *da*+X used as a verbless formula represented a recurrent phenomenon in previous narratives). In sum, the drop of the copula at this stage does not reflect the unavailability of this verb, but rather results from the production of structures that are likely candidates for borrowing from DGS.

(458) *Max   sauber   auf   Paul.*   (Muh.-file 5)
       Max   clean   on   Paul
       'Max cleans (licks) Paul('s cheek).'

(459) *Frosch   Eltern   da   sechs   Froschkind.*   (Muh.-file 5)
       frog   parents   there   six   frog-kid
       'The frog parents (have) six kids.'

(460) *Am   Morgen   haben   Max   und   Paul   traurig,*
       in.the   morning   have   Max   and   Paul   sad
       weil   ein   Frosch   ist   weg.   (Muh.-file 5)
       because   a   frog   is   gone
       'In the morning Max and Paul were sad because the frog was gone.'

(461) *Ja   da   ist   ein   Froschfamilie.*   (Muh.-file 5)
       yes   there   is   a   frog.family
       'Yes there is a frog family.'

4.5.4 Verb inflection in Muhammed's narratives

Turning to Muhammed's development in the domain of verb inflection we can see in Figure 4.6 (cf. also Table E.1 in Appendix E) that the relative frequency of verb inflection errors remains relatively high throughout the recording time covered in this study. Although it drops to a rate of 26 and 35% in files 2 and 4, the rate in the file 5 reaches 43.2%. Verb drop, too, as we remarked upon previously, remains a constant and a frequent phenomenon, the proportion of verbless clauses amounting to 17.5% in file 5.

Interestingly, a closer look at the type of errors produced reveals a change over time: the frequency of erroneous infinitives, predominating at the beginning of the recording (55.0%), drops to a rate of 12.2% in file 5, whereas the production of erroneously marked verb forms increases from 5.0% in file 1 to 27.3% in file 5. Looking at the type of errors classified here as "other" (that is, other than infinitives), it is interesting to note that many target-deviant forms result from remaining problems in participle formation. Deficits become apparent also regarding main verb inflection, although −*t* as a marker for 3rd person singular subjects is productive as of file 3. Example (462) shows that the imperative verb form is not mastered at this stage (the target form would be *komm*), and example (463) shows that the inflection of irregular verbs remains a task to be tackled by the end of the recording time (the target form would be *nimmt*).

(462) *Max   ruft   kommt   kommt   /Frosch/*   (Muh.-file 4)
      Max   calls   comes   comes   frog
      'Max calls, frog come.'

(463) *Max   nehmmt   ein   Frosch.*   (Muh.-file 5)
      Max   takes   a   frog
      'Max takes a frog.'

Against this backdrop it is certainly remarkable that Muhammed's inventory of verb forms includes imperfect verb forms (see examples (464)-(465)). It must be noted, however, that the choice of tense is not consistent throughout the narrative, with present, perfect and imperfect tense verb forms being used alternatively (apart from the infinitive forms). In some cases, various options occur within a complex clause. This is the case in examples (466)-(468). The alternation of finite and non-finite verb forms occurs in propositions following each other, as can be seen in (468), or perfect and imperfect tense forms are combined in complex clauses as in (466). Example (467) documents the (unclear) addition of the participle of the copula verb *sein* ('to be') at the end of the clause. The variation encountered raises the question of the status of verb inflection in Muhammed's

learner grammar. Some errors might reflect a potential lack of attention during the writing process (e.g. the combination of finite and non-finite forms), many other errors, however, seem to result from a lack of differentiation of the different verb forms available.

(464) *Dann   Max   und   Paul   sagten   auf Froschfamilie   tschüüüßß*
      then   Max   and   Paul   said   on frog.family   bye
      'Then Max and Paul said to the frog family: bye bye.'   (Muh.-file 5)

(465) *Dann   ging   an   Wasser.*   (Muh.-file 5)
      then   went   on   water
      'Then he went to the water.'

(466) *Frosch   ha#t   wünsch weg   wollte.*   (Muh.-file 5)
      frog   has   wish   away   wanted
      'The frog wanted to go away.'

(467) *Paul   und   Max   suchen   ein Frosch   gewesen.*   (Muh.-file 5)
      Paul   and   Max   search   a   frog   been
      'Paul and Max searched the frog.'

(468) *Reh   sitzt   dann   stehen.*   (Muh.-file 5)
      deer   sit   then   stand
      'The deer sits, then it gets up.'
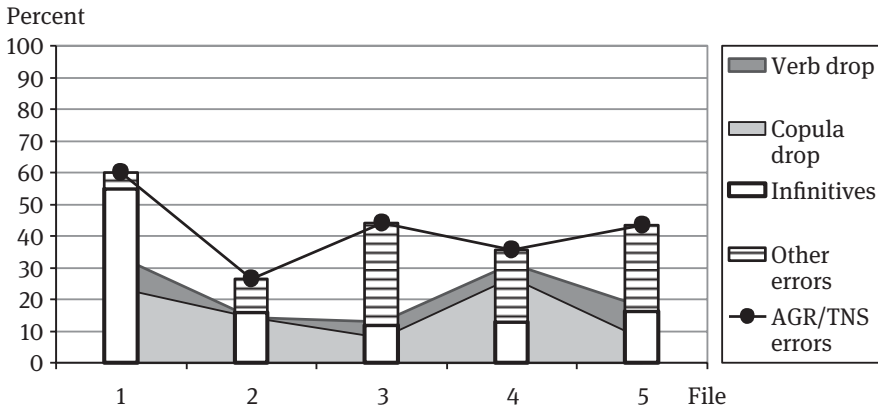
Figure 4.6: Verb inflection errors and verb drop in Muhammed's narratives.

4.6 Developmental profile: Simon

Simon's early narratives typically consist of a series of short clauses. The main events of the picture story are summarised, with occasional reference to the characters' emotions and interactions (via direct speech). As of file 3, the stories increase in length (from 35 propositions in file 1 to 54 in file 3). At the same time, the written productions reflect an increasing narrative complexity as the story events are narrated in more detail and temporal and spatial relations are expressed. This development contrasts with a slower progress in the attainment of the target properties at the levels of morphology and syntax when compared with other participants in this study.

The developmental profile established for Simon indicates that the elementary structural domain (VP structure) available at the onset of the study is not expanded during the time span covered by the present study (cf. Table 4.12). Nevertheless, it is important to note that variation in sentential arrangements becomes apparent after an initial phase characterised by the adherence to a rigid sentence pattern (SVX) and the frequent use of the copula as a connector between subject and verb complements: new elements appear in the left periphery (deriving V3 constructions), the preposition *auf* is used to mark relations between constituents in a clause, and clauses are combined to express more complex meanings. This variation shows that Simon pools his resources, including his knowledge of DGS, to overcome lexical and structural gaps in his written German. So, while there is no indication that the elementary structure is expanded, the variation observed indicates that learning processes are at work and that his learner grammar might be in a reorganisation phase by the end of the recording time.

Table 4.12: Simon's German profile.

CP	Questions	[no evidence]
	Embedded clauses	[no evidence]
IP	V2 (preverbal non-subjects)	[no evidence]
	Subject-verb agreement	[no evidence]
	Verb raising, finiteness distinction	[no evidence]

Table 4.12: continued

VP	[Language contact]	[files 3-5] (word order, *auf*, lexicon)						
		[file 5]	*Der*	*Junge*	*und der*	*Hund*	*suchen*	*auf*
			the	boy	and the	dog	search	on
			ein	*Frosch*	*nicht find.*			
			a	frog	not find			
		[file 4]	*Der*	*Frosch*	*das ein*	*Glas*	*kletter*	
			the	frog	the one	glass	climb	
	SVX schema	[files 1-2]						
		[file 1]	*Max*	*und*	*Timo*	*ist*	*trauig.*	
			Max	and	Timo	is	sad	
		[file 1]	*Timo*	*gehen*	*ein*	*Loch*		
			Timo	goes	one	hole		

4.6.1 Word order in Simon's narratives

The overview of the verb placement patterns observed in Simon's narratives provided in Figure 4.7 (cf. Table D-2 in Appendix D) shows that word order in Simon's narratives predominantly follows the SVX schema. Only as of file 3 does he produce sequences that do not adhere to this schema. In this file, he produces 5 main clauses in which the verb appears in the third position (V3), in file 4 twice as many (the relative frequency of V3 sequences raises from 9.8% in file 3 to 23.8% in file 4). Verb final structures only occur occasionally, in contrast to propositions without a verb. The frequency of verb drop increases substantially as of file 3 (from 21.6% in file 3 to 22.2% in file 4).

Percent
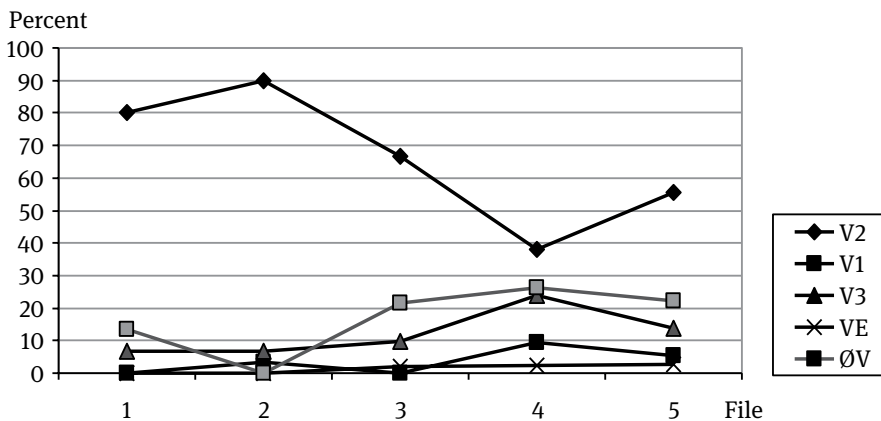
Figure 4.7: Main clause verb placement in Simon's narratives.

Turning to the production of complex clauses, the analysis of Simon's narratives reveals that he only produces one sequence with an embedded clause in file 4, a *weil* ('because')-clause. As for coordinated clauses, Simon produces two in each of the narratives collected with the exception of file 2, which contains only simple main clauses. Although there is no evidence for the expansion of the available structure, the variation observed indicates that learning processes are at work in the second half of the recording time covered in this study.

4.6.2 Written German competence at the onset of the study

Word order. Word order in Simon's first written narrative included in this study adheres rather strictly to the SVX pattern. The coordination of these patterns via the conjunction *und* ('and') as in (469) remains an exception (notice that the sequence serves the function of introducing the main characters of the story). The few sequences in which the copula is dropped follow the pattern SPrepX (cf. (470)). Against the backdrop of the elementary structures produced at the time, a sequence like the one provided in (471) is remarkable in that it shows Simon knows that the verb *sehen* ('to see') can take a clausal argument. The juxtaposition of the two clauses, however, reveals the lack of the target selective properties of the verb (a target equivalent would require an embedded clause introduced by the complementiser *dass* ['that'], or, alternatively, an infinitive construction).

(469)　*ein*　*Junge*　*ist*　*Max*　*und*　*ein*　*Hund*　　(Sim.-file 1)
　　　　a　　boy　　is　　Max　　and　　a　　dog
　　　　ist　*Timo*　*und*　*ein*　*Frosch*　*ist*　*Toin.*
　　　　is　　Timo　and　　a　　frog　　is　　toin
　　　　'There is a boy called Max, a dog called Timo and a frog called Toin.'

(470)　*eine*　*Eule*　*auf*　*Max*　　　　　　　　(Sim.-file 1)
　　　　an　　owl　　on　　Max
　　　　'An owl is on Max.'

(471)　*Timo*　*sehern*　*da*　*ist*　*viele*　*Bienen.*　　(Sim.-file 1)
　　　　Timo　see　　there　is　　many　bees
　　　　'Timo sees that there are many bees there.'

Verb inflection. Regarding inflectional morphology and subject-verb agreement, the analysis reveals that Simon uses the form *ist* ('is') of the German copula verb *sein* ('to be') paradigm not only with 3rd person singular subjects but also with plural 3rd person plural subject arguments (compare examples (472)-(450)). In two sequences of file 1, main verb infinitives appear combined with the copula form

ist (cf. example (450)). Main verbs appear in their infinitive form in this file (see example (451)) and throughout the whole corpus irrespective of the person and number of the subject.

(472)	*Max*	*und*	*Timo*	*ist*	*trauig.*	(Sim.-file 1)
Max	and	Timo	is	sad	

'Max and Timo are sad.'

(473)	*Max*	*und*	*Timo*	*ist*	*schlafen*	(Sim.-file 1)
Max	and	Timo	is	sleep	

'Max and Timo are sleeping.'

(474)	*Max*	*machen*	*Hand*	*auf*	*dem*	*baum.*	(Sim.-file 1)
Max	make	hand	on	the	tree	

'Max puts his hand on the tree.'

Summarising, Simon's adherence to a rigid SVX pattern as well as his use of non-finite forms reflect the availability of an elementary structural domain, the VP.

4.6.3 Further development

4.6.3.1 Word order variation
From file 3 onwards, the order of the elements in the clause varies (cf. Figure 4.8, for a differentiated overview of verb positions in Simon's main clauses).
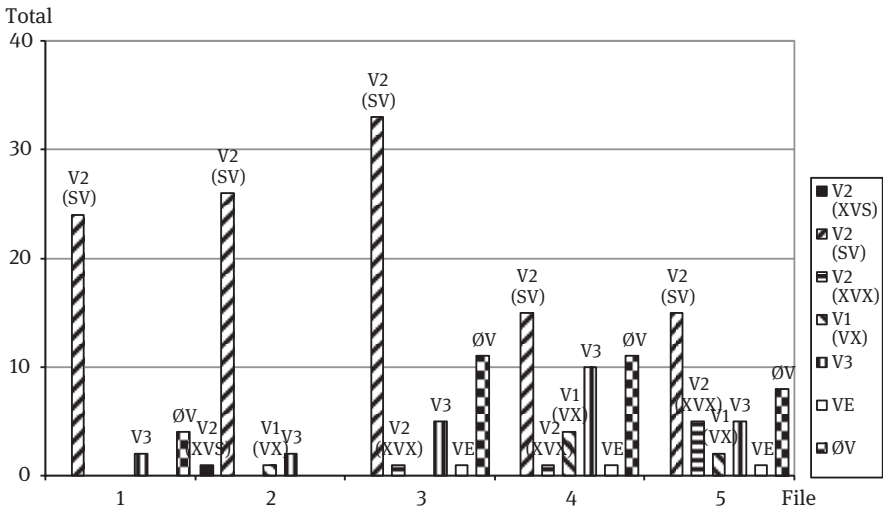
Figure 4.8: Word order patterns in Simon's narratives.

(475) is an example of Simon's V3 constructions, increasing in number as of file 3. It is interesting to note that the time of an increased verb placement variation coincides with a higher frequency of verbless clauses; we might take this variation as an indication that learning processes are at work and that Simon's grammar is in a phase of reorganisation.

(475) *Am Morgen Markus schauen auf den Frosch.* (Sim.-file 3)
      at   morning Markus look.at on   the   frog
      'In the morning, Markus looks at the frog.'

Word order and language contact. Some constructions with verb drop seem to involve translations of DGS classifier expressions. The utterance in (476) is a remarkable example particularly if we think of how this narrative episode would be expressed in DGS. Indeed, it seems we are dealing here with a translation of a complex classifier construction into German, expressed with the lexical and structural means available at the time. Other occasional candidates for language contact include verb final (OV) patterns (compare example (477)).

(476) *Der Hund Glas den Kopfen in.* (Sim.-file 3)
      the   dog   glass the   head   in
      'The dog puts the head into a glass.'

(477) *Markus Holz halt* (Sim.-file 3)
      Markus wood holds
      'Markus holds a piece of wood.'

Another remarkable phenomenon concerns the use of the preposition *auf* ('on'). Notice that Simon uses *auf* not only in a target-like manner to express a location but also in a target-deviant way, as illustrated in example (478), to mark the grammatical relation between transitive verbs and their objects. As he does not master the morphological devices for object case marking at this stage, *auf* appears to serve the function of a case marker which is reminiscent of the function PAM (often annotated as AUF) would fulfil in DGS. Recall, however, that the use of PAM in DGS is constrained to a restricted type of verbs; the preposition *auf* in Simon's L2 German learner grammar, by contrast, serves the function of an overt case marker to mark the relation between the verb and its complement. Interestingly, throughout the recording time covered in this study, *auf* is not only erroneously used as a case marker in combination with various transitive verbs (see examples (478)-(479)), but also in attributive constructions with copula drop (see examples (480)-(481)). We will see in the course of the following sections that *auf* appears to serve this function in the narratives of other participants, too.

(478) *Der*   *Hund*   *suche*   *auf*   *Frosch.*   (Sim.-file 3)
        the   dog   search   on   frog
        'The dog looks for the frog.'

(479) *dann* *der*   *Junge*   *sage:*   *du ##* *bist* *doff*   (Sim.-file 4)
        then   the   boy   says   you   are   dumb
        auf   *dem*   *der*   *Hund.*
        on   the   the   dog
        'Then the boy says to the dog: "you are dumb."'

(480) *Dann* *ein* *Tiere*   *sauer*   *auf*   *der*   *Junge*   (Sim.-file 5)
        then   a   animal   cross   on   the   boy
        'Then an animal is cross with the boy.'

Examples with verb drop, such as the one provided in (481), suggest that literal translations from DGS expressions serve as a means to circumvent remaining lexical gaps (the construction would require the use of the target German verb *hören*, 'to hear').

(481) *Der*   *Junge*   *ohr*   *auf*   *er*   *Frosch.*   (Sim.-file 5)
        the   boy   ear   on   the   frog
        'Then the boy hears the frog'

4.6.3.2 Concatenation of propositions

Despite limitations at the structural level, Simon's written productions as of file 3 reflect an increasing complexity at the narrative level. By assumption, different propositions are combined in sequences like (482) and (483), produced in file 4, to express a complex story event. In (482), a verb final clause ("*Der Frosch das ein Glas kletter*") is combined with a prepositional phrase ("*auf dem Boden*") (probably used to express that the frog "lands" on the floor after climbing out of the glass) and a conjoined V3 clause ("*und Dann hüpfen*"). Example (483) involves the combination of a main clause with copula drop and a clause introduced by the complementiser *weil* ('because'), the only one Simon produces in the corpus.

(482) *Der*   *Frosch* *das*   *ein*   *Glas*   *kletter*   (Sim.-file 4)
        the   frog   the   one   glass   climb
        auf   *dem*   *Boden* *und*   *Dann*   *hüpfen.*   (Sim.-file 4)
        on   the   floor   and   then   jump
        'The frog climbs out of the glass, lands on the floor,and jumps away.'

(483) *die*   *viele*   *bienen*   *saure*   *weil*   *bienenhaus* *ist*   *kaukut*
        the   many   bees   angry   because bee.house   is   broken
        'The bees are cheeky because the beehive is destroyed.'   (Sim.-file 4)

Examples (484)-(486) show how he manages to express cause-effect relations (though not always explicitly), character's emotions and temporal relations. Notice that (484a) involves a combination of two propositions, that is, "*Der Junge schaue auf der Hund*" is combined with "*falle auf dem boden*", which might be interpreted as a merger of two structures, a main clause and an embedded clause, whereby the subject dropped in the second would correspond with the object of the first (the dog). The reason for the boy's annoyance ("*Der Junge ist große sauer auf der Hund*") remains implicit, that is, it has to be inferred by the reader. The same holds of example (485), a complex narrative passage, which describes the scene of the boy and the dog falling into the water and their subsequent discovery of the frog ((481) is repeated here in (485d)). The sequence is also illustrative of the lack of cohesive devices at the time, in particular, pronouns. Finally, example (486) illustrates the expression of simultaneous events through the use of the coordinating conjunction *und* ('and').

(484)   (Sim.-file 5)

    a. *Der   Junge   schaue   auf   der   Hund   falle   auf   dem   boden*
       the   boy   looks   on   the   dog   falls   on   the   floor
       'The boy looks at the dog falling on the floor.'

    b. *Der   Junge   ist   große   sauer   auf   der   Hund*
       the   boy   is   big   cross   on   the   dog
       'The boy is very cross with the dog.'

(485) a. *Dann   der   Junge   und   der   Hund   fallen   im   wasser*
       then   the   boy   and   the   dog   fall   in.the   water
       'Then the boy and the dog fall into the water.'

    b. *Dann   der   Junge   und   der   Hund   im   Wasser.*
       then   the   boy   and   the   dog   in.the   water
       'Then the boy and the dog are in the water.'

    c. *Der   Junge   ist   sauer   auf   Reh.*
       the   boy   is   cross   on   deer
       'The boy is cross with the dear.'

    d. *Der   Junge   ohr   auf   er   Frosch.*
       the   boy   ear   on   the   frog
       'The boy hears the frog.'

    e. *Der   Junge   sagen   leise.*   (Sim.-file 5)
       the   boy   say   quiet
       'The boy says (be) quiet.'

(486) *Dann   der   Junge   falle   auf   Boden   und*   (Sim.-file 5)
then   the   boy   falls   on   floor   and
der   Hund   schnell   laufen.
the   dog   fast   run
'Then the boy falls on the floor and the dog runs fast.'

4.6.3.3 Lack of evidence for the expansion of the VP

Simon's written narratives do not provide (unambiguous) evidence for the projection of an additional structural layer above the VP and verb raising to INFL. The analysis reveals that none of the diagnostic criteria used to establish the availability of the IP is fulfilled.

Target inflectional morphology is not productive by the end of the recording time. Main verbs appear with the infinitive marker *–en* or a default *–e* suffix (cf. (487) an example from file 3), and, at times, with no suffix at all (compare *find*, 'find', in example (488)) and there is no apparent reason why one form is preferred over the other (we will come back to verb inflection in Simon's narratives in the next sub-section). Apart from one construction with the verb *mag* ('like') (cf. (489)), produced in file 1, and one with the verb *müssen* ('have to') (cf. (490)), produced in file 2, Simon does not use periphrastic verb constructions with modal or auxiliary verbs in subsequent files. Finally, adverbs (cf. example (491) from file 5) and the negator (cf. (488)) continue to appear in the preverbal position (there are only two exceptions, one in file 1 and the other in file 3, both of them in constructions with non-finite verb forms). Based on these observations we are led to conclude that Simon has not expanded the VP structure by the end of the recording time.

(487) *Marukus   schaue   auf   der   Hund.*   (Sim.-file 3)
Marukus   look.at   on   the   dog
'Marukus looks at the dog.'

(488) *Der   Junge   und   der   Hund   suchen*   (Sim.-file 5)
the   boy   and   the   dog   search
auf   ein   Frosch   nicht   find.
on   a   frog   not   find
'The boy and the dog look for a frog. They don't find it.'

(489) *Timo   mag   schwimmen.*   (Sim.-file 1)
Timo   likes   swim
'Timo likes to swim.'

(490) *Law*   *mussen* *schlafen.*   (Sim.-file 2)
       Law   must   sleep
       'Law must go to sleep.'

(491) *Reh*   *schnell*   *laufen.*   (Sim.-file 5)
       deer   fast   run
       'The deer is running fast.'

4.6.4 Verb inflection in Simon's narratives

Turning to verb inflection in Simon's narratives, we remarked previously on the early production of constructions with the 3rd person singular form *ist* ('is') of the German copula verb *sein* ('to be'), a form used also with plural subject arguments, and, at times, in combination with non-finite main verb forms. The analysis of the main verb forms produced by Simon reveals that he uses infinitive forms not only in this file but also throughout the whole corpus irrespective of the person and number of the subject. It becomes apparent then that the only verb form correctly marked for agreement with 3s subjects is the expletive form "*ist*": in file 1, for example, Simon produces 9 constructions that are correct out of 12 total instances. By contrast, constructions with main verb forms are mostly target-deviant because Simon fails to inflect the verb correctly. This finding clearly sets Simon apart from other participants in this study who make a progress in marking subject-verb agreement.

For further illustration we provide an overview in Table 4.13. In this table, the verb forms produced by Simon are listed alphabetically by file in the third column, and the person/number they encode in the fourth column. Information on person/number of the respective subject arguments, where this information differs from the one encoded in the verb form produced, is provided in the fifth column ("OK" in this column indicates that the forms produced are target-like). As we can see, target-like 3rd person singular main verb forms occur only rarely, whereas 3rd person plural verb forms that conform with the target appear more frequently. It must be noted, however, that 3rd person plural verb forms are identical with the respective non-finite infinitive forms. Not only are these forms ambiguous concerning subject-verb agreement, in addition we need to consider that Simon uses these non-finite forms also with 3rd person singular subjects.

Table 4.13: Verb forms in Simon's narratives.

File	n	Verb forms produced	pers./no.		Target pers./no.
1	30	– ist	– 3s	(9x)	– OK
		– ist	– 3s	(3x)	– 3p
		– geben	– infinitive		– 3s
		– gehen	– infinitive		– 3s
		– gehren	– 3p		– OK
		– horchen	– 3p		– OK
		– ist schlafen	– 3s & infinitive		– 3p
		– ist unter fallen	– 3s & infinitive		– 3p
		– laufe	– default	(2x)	– 3s
		– mach	– default		– 3s
		– machen	– infinitive		– 3s
		– mag schwimmen	– 3s		– OK
		– rufen	– 3p		– OK
		– rufen	– infinitive		– 3s
		– satg	– 3s		– 3s
		– schauen	– 3p	(2x)	– OK
		– sehern	– infinitive		– 3s
		– zusammen gehen	– 3p		– OK
2	31	– aus gemacht	– participle		– 3s
		– ist	– 3s	(14x)	– OK
		– ist	– 3s		– 2p
		– fallen	– infinitive		– 3s
		– ist	– 3s		– OK
		– ist schlafen	– 3s & infinitive		– 3p
		– mussen schlafen	– infinitive & infinitive		– 3s
		– rufen	– infinitive	(2x)	– 3s
		– rufen	– 3p		– OK
		– sagt	– 3s		– OK
		– saten	– infinitive		– 3s
		– sauen	– infinitive		– 3s
		– schauen	– infinitive	(2x)	– 3s
		– sehen	– infinitive		– 3p
		– suchen	– 3p		– OK
		– suchen	– infinitive		– 3s

Table 4.13: continued

File	n	Verb forms produced	pers./no.		Target pers./no.
3	26	– bist	– 2s		– OK
		– falle	– default	(2x)	– 3s
		– freuchen	– infinitive		– 3s
		– halt	– 3s		– OK
		– hält	– 3s		– OK
		– hören	– infinitive		– 3s
		– ist	– 3s	(5x)	– OK
		– ist lacht	– 3s & 3s	(2x)	– 3s
		– la.ufe	– default		– 3s
		– lacht	– 3s	(2x)	– OK
		– laht	– 3s		– OK
		– latf	– 3s		– 3s
		– liegen	– infinitive		– 3s
		– ligen	– 3p		– OK
		– sagen	– 3p		– OK
		– sagt	– 3s		– OK
		– schaue	– default	(2x)	– 3s
		– schauen	– infinitive	(2x)	– 3s
		– sehren	– infinitive		– 3s
		– suche	– default		– 3s
4	35	– bell	– default	(3x)	– 3s
		– bis	– 2s		– 2s
		– bist	– 2s		– OK
		– fallen	– infinitive	(2x)	– 3s
		– hüpfen	– infinitive		– 3s
		– ist	– 3s	(7x)	– OK
		– ist schlafen	– 3s & infinitive		– 3s
		– ist suche	– 3s & default		– 3s
		– kletter	– default		– 3s
		– lauf	– default	(2x)	– 3s
		– liege	– default		– 3s
		– mögen	– infinitive		– 2s
		– rufen	– infinitive	(2x)	– 3s
		– sage	– default		– 3p
		– sage	– default	(7x)	– 3s
		– sauen	– infinitive		– 3s
		– schaue	– default		– 3s
		– will	– 3s		– OK

Table 4.13: continued

File	n	Verb forms produced	pers./no.		Target pers./no.
5	33	– angezen	– infinitive		– 3s
		– falle	– default	(2x)	– 3s
		– fallen	– 3p		– OK
		– find	– default		– 3p
		– ist	– 3s	(3x)	– OK
		– klertte	– default		– 3s
		– laufen	– infinitive	(2x)	– 3s
		– rufe	– default	(6x)	– 3s
		– rufe	– default		– 2s
		– rufen	– infinitive		– 3s
		– sage	– default		– 3s
		– sagen	– infinitive		– 3s
		– sagen	– 3p		– 3s
		– schaue	– default	(2x)	– 3s
		– schauen	– 3p		– OK
		– schrechen	– infinitive		– 3s
		– sehen	– infinitive		– 3s
		– springen	– infinitive		– 3s
		– suchen	– 3p		– OK
		– war	– 3s		– OK
		– wunder	– default		– 3p
		– wunder	– default		– 3s

The numbers for absolute and relative frequencies of verb inflection errors and verb drop in Simon's narratives are provided in Table 4.14. Worthy of mention among those forms we categorise as "other inflection errors" are those forms that do not appear with no or a final *−e* ending. The frequency of these "default" forms increases substantially as of file 4 (from a percentage of 14.6 in file 3 to 45.7 in file 4 and 50 in file 5). Note that the increase of these forms goes along with a decrease of infinitives (from 29.3% in file 3 to 17.1% in file 4, with a slight increase in file 5 to 25%). By the end of the recording time default and infinitive forms are used alternatively, they also occur with the same verbs and seem to be chosen irrespective of the subject person/number. So, although we might regard default forms as precursors for inflected forms, the ongoing alternation of default and infinitive forms suggests that Simon is still confronted with the task of acquiring the knowledge about the mechanisms that constrain subject-verb agreement. In a similar vein, we might speculate on the precursor character of the occasional combinations of the copula form *ist* with finite or non-finite main verb forms. By assumption,

the combination of the copula form *ist* with infinitive main verb forms such as *schlafen* ('to sleep') in example (473) above serves the function of a finite tense marking in the absence of the target verb inflection paradigm.

If we look at Simon's development over time (cf. Figure 4.9 and Table 4.14), we can see not only that he does not master verb inflection by the end of the recording time. What the overviews make apparent is that the relative frequency of errors in the area of verb inflection increases dramatically in the course of the recording time, from a rate of 50.0% in file 1 to a rate of 87.5% in file 5. This increase reflects not only the use of default forms in later files. It patterns also with the changes observed previously at the level word order and narrative complexity. As we noted, Simon's productions do not reflect a structural expansion in the time span covered by the present study. However, as word order patterns become more varied, and the events described more complex, mismatches at the level of verb inflection become more apparent.

Table 4.14: Verb inflection and verb drop in Simon's narratives.*

F	n	Verb forms											Verb drop		
		V	Target-like					Errors							
			Σ	3s		3p		Σ		-fin		x	ØV (Ø cop)		
					%		%		%		%	%		%	(%)
1	35	30	15	9	30.0	6	20.0	15	50.0	5	16.7	10 (3) 33.3 (10)	5 (4)	14.3	(80.0)
2	31	31	17	15	48.4	2	6.5	14	45.1	10	32.3	4 (0) 12.9 (0)	0 (0)	0	(0)
3	54	41**	18	15	36.6	3	7.3	22	53.7	12	29.3	10 (6) 24.4 (14.6)	12 (5)	22.2	(41.7)
4	48	35**	7	7	20.0	0	0	25	71.4	6	17.1	19 (16) 54.3 (45.7)	13 (3)	27.0	(23.0)
5	38	32	4	2	6.3	2	6.3	28	87.5	8	25.0	20 (16) 62.5 (50)	6 (4)	15.8	(66.7)

* F= file, n= clauses, V= verbs, Errors Σ= AGR/TNS (verb inflection) errors, ØV= verb drop, Ø cop= copula drop (percentages in relation to total verb drop), -fin= infinitives, x= other inflection errors (numbers for default –e or –ø verb ending appear in brackets)
** File includes one instance of the 2s copula verb (= *bist*, 'are'), not included in the table for reasons of space.

Percent
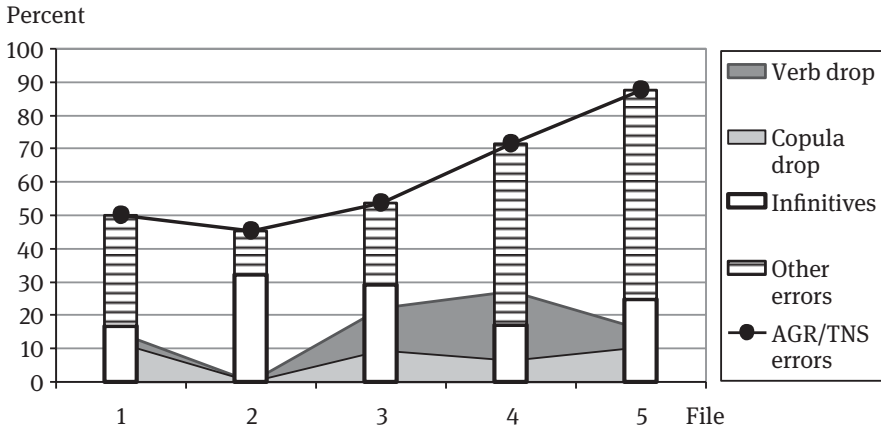
Figure 4.9: Verb inflection errors and verb drop in Simon's narratives.

4.7 Developmental profile: Maria

Maria's written productions reflect a high degree of narrative complexity as of file 1. She uses the linguistic means available in a creative manner, not only to describe the main picture story events, but also to narrate the connections between narrative events and the emotions of the story characters. The analysis of the data reveals that her level of competence in L2 German is quite advanced in comparison to other participants in this study. Text length remains rather constant with an average of about 50 propositions per text.

As of the onset of the study, Maria's data provide evidence for the availability of an expanded sentence structure including functional projections (cf. Table 4.15). Maria does not produce basic VP patterns nor do we find evidence of DGS-like sentential formats. Only two instances of verb drop in file 1 might be taken as an indication of occasional lexical borrowings from that language. Variation in her narratives concerns the distribution of verbal elements in the clause (VP headedness, verb raising), the status of the preverbal position (V2 constraint), subject drop, and verb placement in embedded clauses. Variation thus pertains to the properties of the VP, the IP and the CP respectively. By the end of the time span covered in this study, Maria has attained the relevant grammatical mechanisms concerning the finiteness distinction and V2.

Table 4.15: Maria's German profile.

CP	Questions	[file 2]	*… wo*	*bist*	*du*	*Pia!*		
			… where	are	you	Pia		
	Embedded clauses (IP final?)	[file 3]	*… daß*	*viel*	*Frosch*	*ruft: (…)*		
			… that	many	frog	call		
		[file 3]	*… daß*	*Bella*	*#m# mit*	*nach*	*Hause*	*gehen*
			… that	Bella	with	to	home	go
	Embedded clauses (IP initial)	[file 1]	*Max*	*seht*	*da*	*is*	*Bello.*	
			Max	sees	there	is	Bello	
		[file 1]	*weil*	*Max*	*und*	*Bello*	*mag*	*nicht*
			because	Max	and	Bello	like	not
			allei	*schlafen.*				
			alone	sleep				
IP	V2 (established) (preverbal non-subjects)	[file 5]	*plötlich*	*fallt Tom #*	*auf*	*der*	*Hirschs*	*Gesicht*
			suddenly	falls Tom	on	the	deer's	face
	Variation (V2 and V3 formats)	[files 2-4]						
		[file 2]	*Am*	*Morgen*	*wacht*	*Tim*	*und*	*Tom*	*auf.*
			at.the	morning	wakes	Tim	and	Tom	up
		[file 2]	*Am*	*Nacht*	*Pia*	*wünscht*	*weg*	*läuft*
			at.the	night	Pia	wishes	away	runs
	Verb raising (main verbs)	[file 1]	*Dann*	*wir*	*wachen auf.*			
			then	we	wake	up		
		[file 1]	*Er*	*läuft*	*und*	*der*	*Hirsch*	*läuft*	*auch.*
			he	runs	and	the	deer	runs	too
	Verb raising (aux/mod) (head-initial IP, mobile VP)	[file 1]	*Bello*	*und*	*Max*	*will*	*schlafen*	*zusammen,*
			Bello	and	Max	wants	sleep	together
			weil	*Max*	*und*	*Bello*	*mag*	*nicht*
			because	Max	and	Bello	like	not
			allei	*schlafen.*				
			alone	sleep				
VP	[language contact]	[file 1]	(verb drop, lexicon)					
		[file 1]	*Bello*	*Anst*	*vom*	*Bienkorb.*		
			Bello	fear	of	beehive		

4.7.1 Word order in Maria's narratives

Word order in Maria's narratives complies largely with the constraints of the target German grammar. Figure 4.10 (cf. also Table D-3 in Appendix D) provides

an overview of main clause verb placement in Maria's narratives. We can see that V2 clearly predominates. Worthy of mention is also the low incidence of verb drop (only two verbless constructions in file 1), as well as the absence of target-deviant SOV main clause patterns. Unlike other participants, word order in Maria's narrative does not adhere to a rigid SVX pattern. What is more, we can glean from Figure 4.10 that Maria already produces XVS patterns as of file 1. Non-subject initial V2 patterns without subject drop are produced at a rate between 6.0 and 21.9% in files 1-5. In addition, we might consider that Maria also produces verb subject-sequences and non-subject initial sequences with subject drop. In file 5, for example, the frequency of XVS patterns amounts to 15.2, whereas VS formats make up 12.1% and XVX 21.2% of the main clauses produced. The proportion of V3 patterns in turn remains relatively low in the first three files, between 8.1% in file 1 and 5.1% in file 3, raising dramatically to a percentage of 23.3 in file 4 before it drops to zero in file 5. In the course of the next sections, we shall have a closer look at this variation, which we assume is bound to the implementation of the V2 constraint, as it has also been observed in the development of other (advanced) L2 German learner grammars.
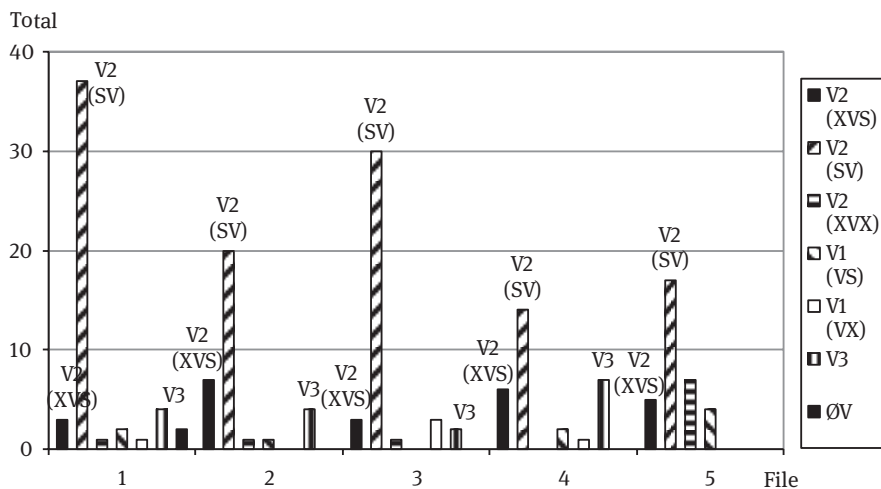
Figure 4.10: Main clause verb placement in Maria's narratives.

Turning to complex constructions, we can see in Figure 4.11 that Maria produces nearly no embedded clauses introduced by a conjunction. However, she produces several complex structures with unintroduced subordinated clauses (not covered in Figure 4.11). The relative frequency of complex constructions involving coordi-

nated clauses increases as of file 3, with a relative proportion varying between 4.9 and 20% in files 1-5 (13.2% in file 5).
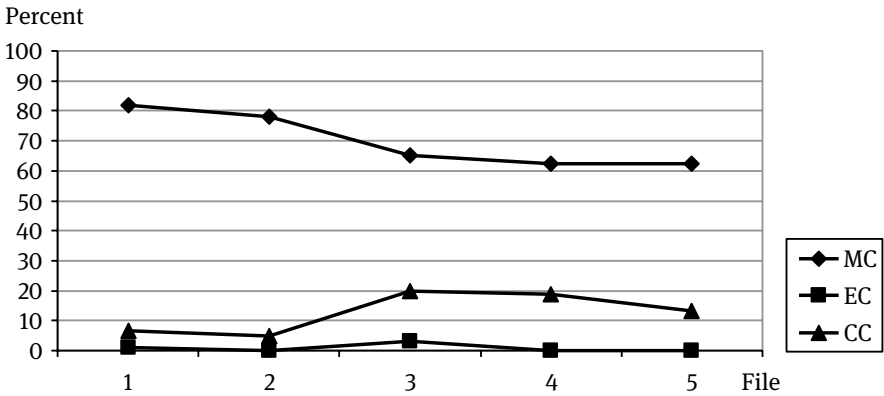
Figure 4.11: Relative frequency of main (MC), embedded (EC) and coordinated (CC) clauses in Maria's narratives.

4.7.2 Written German competence at the onset of the study

By assumption, Maria's learner grammar at the onset of the study already includes the functional projections IP and CP. Grammatical processes associated with these projections are operative, but are not yet applied across the board.

Word order. Main clause word order in Maria's file 1 is characterised by a predominant placement of the verb in sentence-second position (cf. Figure 4.10 above). Taken together, all V2 constructions in this first narrative make up 82.0%; the proportion of SV(X) constructions amounts to 74%. However, alternative patterns are also produced at this stage, although with a lower frequency. The few non-subject initial sequences produced at the time involve existential constructions with the adverbial *da* ('there'), compare examples (492) and (493). Further, the verb appears in sentence-third position in constructions with the adverbial *dann* ('then') in the left periphery (compare example (494)) or sequences with a misanalysed phrasal verbs such as *runterfallen* ('fall down'), in which the separable part is placed before the main verb. By assumption, *runter* is attributed the status of an adverb in a sequence like (495), in which the verb fails to raise to INFL. The only two verbless sequences in Maria's narratives occur in this file and they pattern with the verbless clauses encountered in the narratives of other participants in that they include the expression *Angst* ('fear') (473) or involve the drop of the copula in constructions with predicative adjectives.

(492) *Bello   sage   Oh   da   ist   Bubi!*   (Mar.-file 1)
Bello   say   Oh   there   is   Bubi
'Bello says, "oh, there is Bubi."'

(493) *Da   ist   vielen   Frosch sage Max   und   Bello.*   (Mar.-file 1)
there   is   many   frog   says Max   and   Bello
'"There are many frogs there", say Max and Bellow.'

(494) *Dann   der   Hirsch lacht   sehr   laut.*   (Mar.-file 1)
there   the   deer   laughs   very   loudly
'The deer laughs out loud.'

(495) *Bello   und   Max   runter   faller.*   (Mar.-file 1)
Bello   and   Max   down   fall
'Bello and Max fall down.'

(496) *Bello   Anst   vom   Bienkorb.*   (Mar.-file 1)
Bello   fear   of   beehive
'Bello is frightened about the beehive.'

With the exception of example (495) above, the analysis of Maria's narratives reveals that verb raising is operative. Indeed, the syntactic constructions in file 1 provide evidence of the availability of two structural levels above the VP, the IP and the CP. Consider, for example, the target-like placement of the sentence-internal adverb after the finite verb in example (497), and the modal verb and the negator in the subordinated clause in (498).[5] Note, however, that in example (498), a complex sentential construction with modal verbs in the main and in the embedded clause, the adverbs *zusammen* ('together') and *allein* ('alone') appear in two different positions: while *zusammen* follows the main verb infinitive, *allei* (> *allein*) correctly appears after the negator and before the non-finite main verb in the subordinated clause. This variation might reflect the availability of the two values of the VP headedness parameter.

The alternation of target-like (cf. (499)) and target-deviant constructions with separable verbs (examples (500)-(501)) provides additional support for this hypothesis. In example (500), the separable prefix appears twice, not only correctly in

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5 Note that Maria does not use the perfect tense in the narratives collected in this study but uses the present tense throughout. Thus, we can only speculate on the mastery of periphrastic verb constructions with auxiliary verbs. Yet given Maria's structural development we assume that her choice is determined by narrative considerations. The assumption is in line with Berman and Slobin's (1994: 507) conclusion "…that certain linguistic forms may be mastered structurally, and applied in other discourse contexts, well before they are recruited for narrative functions."

sentence-final position, but also attached to the verb, which might be interpreted as a blend of analysed and non-analysed forms. In example (501), too, the phrasal verb appears in the non-analysed form combined with the separable verb part. As the separable verb part appears between the verb and its complement in this case, it seems to serve the function of a preposition, case marking the object.

Turning to complex clauses in file 1, example (498) above illustrates Maria's use of main clause word order in embedded clauses. In (498) this word order pattern is target-like as the complementiser *weil* ('because') is the only one that allows for an SVX order. Further, examples (502) and (503) illustrate the target-like production of subordinated clauses without a conjunction.

(497) *Er   läuft   und   der   Hirsch   läuft   auch.*   (Mar.-file 1)
      he   runs   and   the   deer   runs   too
      'He is running and the deer, too.'

(498) *Bello   und   Max   will   schlafen   zusammen,*   (Mar.-file 1)
      Bello   and   Max   wants   sleep   together
      weil   Max   und   Bello   mag   nicht   allei   schlafen.
      because   Max   and   Bello   like   not   alone   sleep
      'Bello and Max want to sleep together because they do not want to sleep alone.'

(499) *Dann   wir   wachen   auf.*
      then   we   wake   up
      'Then they wake up.'

(500) *Max   anieht   ein   Schuhe   an.*   (Mar.-file 1)
      Max   on.put   a   shoe   on
      'Max puts on shoes.'

(501) *Max   anfasst   an   Geweih.*   (Mar.-file 1)
      Max   touch   at   antlers
      'Max touches the antlers.'

(502) *Max   seht   da   ist   Bello.*   (Mar.-file 1)
      Max   sees   there   is   Bello
      'Max sees that Bello is there.'

(503) *Max   und   Bello   hören   da   ist   vielleicht   Bubi.*   (Mar.-file 1)
      Max   and   Bello   hear   there   is   perhaps   Bubi
      'Max and Bello hear, there is perhaps Bubi.'

Verb inflection. Regarding inflectional morphology, the analysis reveals that, in file 1, Maria produces many target-like but also nearly equally as many erroneous verb forms. However, at closer inspection it becomes apparent that the relatively high rate of errors (27 tokens, 48.2% of the verb forms produced) results from a repeated use of erroneous forms of a few verbs, such as the verb *sagen* ('to say') (n= 4), the verb *heißen* ('to be called') (n= 3), or the verb *sehen* ('see') (n= 3). Some verbs appear in their infinitive form (see examples (504) and (505)) or with a default −ø or −e ending (compare examples (506) and (507)). While Maria fails to correctly inflect verbs like *sagen* ('to say') or *heißen* ('to be called') with the 3rd person singular marker −*t*, this verb ending is correctly used with other verbs with an irregular inflection, such as the verb *sehen* ('to see'), as illustrated in example (508). Verb forms like these, though erroneous, suggest that verb inflection is rule-based at the time. With the exception of the choice of the 3rd person singular (3s) modal verb form *will* ('wants') instead of the 3rd person plural form *wollen* in example (498) above, Maria correctly uses 3p verb forms for plural (conjoined subjects) (cf. examples (509) and (510), which illustrate the correct choice of 3p and 3s forms of the verb *sitzen* ('sit')). We are left then with a contradictory picture of Maria's mastery of verb inflection at the time, with some evidence indicating a rule-based behaviour, and other examples suggesting that this is not applied across the board (we will discuss Maria's development of verb inflection in section 4.7.4).

(504) *Max   klettern   am   Stein   und   die   Eule*   (Mar.-file 1)
Max   climb   at.the   stone   and   the   owl
fliegen   am   die   Immel   und   schauen   zu   Max.
fly   at.the   the   sky   and   look   at   Max
'Max climbs on a stone and the owl flies in the sky, looking at Max.'

(505) *Bubi   springen zu   Max.*   (Mar.-file 1)
Bubi   jump   to   Max
'Bubi jumps on Max.'

(506) *Oh   wo   ist   Bubi   sage   Max.*   (Mar.-file 1)
oh   where   is   Bubi   say   Max
'"Oh, where is Bubi", says Max.'

(507) *ein   Junge   heiß   Max.*   (Mar.-file 1)
a boy   is.called Max
'A boy is called Max.'

(508) *Bello   seht   ein   Bienkorb*   (Mar.-file 1)
Bello   see   a   beehive
'Bello sees a beehive.'

(509) *Max   und   Bello   sitzen   am   Bett*
       Max   and   Bello   sit   at.the   bed
       und   schauen   zum   Bubi.   (Mar.-file 1)
       and   look.at   to.the   Bubi
       'Max and Bello are sitting on the bed and looking at Bubi.'

(510) *Max   sitzt   auf   der   Hirsch.*   (Mar.-file 1)
       Max   sits   on   the   deer
       'Max is sitting on the deer.'

4.7.3 Further development

4.7.3.1 Variation in the left periphery and complex clauses
V2 constraint. While adverbial phrases in sentence initial position (with the exception of *da*, 'there') are attached to the available SVX format in file 1 (cf. (499) above), their integration into the target V2 format occurs already in file 2 (see example (511)) (note, though, that the verb fails to correctly agree with the subject, the only exception to our previous observation about Maria's target-like verb inflection with conjoined subjects). We remarked previously on the variation of XVS, VS, XVX and V3 formats in Maria's written German narratives. File 2 contains no VS orders, but one XVX pattern (compare (513) in which the subject is dropped). As for V3, there is a total of 3 constructions vis-à-vis 7 instances of XVS sentential formats. The proportion of XVS formats thus clearly exceeds that of target-deviant V3 patterns as it occurs in all other files, with the exception of file 4 (compare also Figure 4.10 above). Nevertheless, the alternation of target V2 and target-deviant V3 in files 2–4 (see examples (511)-(512) produced in file 2 and examples (514)-(515) produced in file 4) suggests that the availability of non-subject V2 does not go along with the immediate exclusion of alternative formats. This conclusion is in line with what is known about the attainment of V2 by other L2 learners of German. It is interesting to note in this context that main clause V3 patterns appear in files 3 and 4 only with the adverbials *plötzlich* ('suddenly') and *dann* ('then'), two elements that typically serve the function of connecting narrative episodes; at the same time, we acknowledge that these elements also appear in target-like XVS patterns.

(511) *Am   Morgen   wacht   Tim   und   Tom   auf.*   (Mar.-file 2)
       at.the   morning wakes   Tim   and   Tom   up
       'In the morning Tim and Tom wake up.'

(512) | *Am* | *Nacht* | *Pia* | *wünscht* | *weg* | *läuft* | (Mar.-file 2)
at.the | night | Pia | wishes | away | runs
'In the evening Pia wants to go away'

(513) | *Am* | *Fensterbank* | *#set#* | *steh#t#en.* | (Mar.-file 2)
at.the | windowsill | stand
'He stands at the windowsill.'

(514) | *Dann* | *sagt* | *Tom:* | *"Pss."* | (Mar.-file 4)
then | says | Tom | ...
'Tom says "pss" to Tom'

(515) | *Dann* | *alle* | *singen:* | *"Tschüss!"* | (Mar.-file 4)
then | all | sing | bye
'Then all sing "bye".'

Incidentally, example (512) above shows that the selective properties of verbs taking infinitive clausal arguments are not yet mastered (alternatively, the verb *wünschen*, 'wish', might appear with a finite verb, but in the context of an embedded clause introduced by *dass*, 'that').

Verb inflection. Turning to verb inflection in file 2 the analysis reveals that it continues to be characterised by the alternation of target-like and target-deviant forms. The sequence in example (516), in which the copula verb *ist* ('is') appears in combination with the main verb *bleibt* ('stays') might reflect a lack of attention during the production process; alternatively, it might represent an error in the past participle formation of the verb *bleiben* ('stay'), that is, *geblieben* ('stayed') (perfect tense with this verb involves the auxiliary *sein*). However, if we look at the verb forms produced in example (517), where, by assumption, Maria also intended to produce a perfect tense form, we might speculate that Maria still lacks the knowledge of the constraints on perfect tense formation with the auxiliary verb *sein* ('be'). Whereas the target perfect tense form would require the combination of the auxiliary *ist* with a past participle form of the main verb, a finite main verb form appears in combination with *ist* in example (516), and in a non-finite (infinitive) form (517). Against this backdrop, we conclude that although Maria's learner grammar is quite advanced with regard to structure-building, the domain of inflectional morphology is subject to variation.

Finally, example (518) is a remarkable infinitive construction; however, the choice of the wrong modal verb form *will* ('wants') suggests the inflection paradigm of this modal verb is not mastered. Example (496) shows that constructions with some separable verbs are not yet fully mastered as the separable prefix appears twice in this construction.

(516)   *Pia*   *ist*   *bleibt*   *in*   *das*   *Glas.*   (Mar.-file 2)
         Pia   is   remains   in   the   jar
         'Pia remains in the jar.'

(517)   *#B#*   *Der*   *Bienenkorb*   *ist*   *fallen.*   (Mar.-file 2)
                the   beehive   is   fall
         'The beehive fell.'

(518)   *Tim*   *und*   *Tom*   *will*   *schlafen*   *gehen.*   (Mar.-file 2)
         Tim   and   Tom   want   sleep   go
         'Tim and Tom want to go to sleep.'

(519)   *Tim #*   *hoch*   *klettert*   *am*   *Baum*   *hoch*   (Mar.-file 2)
         Tim   high   climb   at.the   tree   high
         und   *er*   *sucht*   *Pia.*
         and   he   searches   Pia
         'Tim climbs up a tree and searches Pia.'

Interrogation. Turning to question formation at this stage, the sequence in (520) is an example of target-like question formation, with the target-like choice of the 2nd person singular expletive form of the copula *sein*.

(520)   *Tom*   *und*   *Tim*   *rufen*   *wo*   *bist*   *du*   *Pia!*
         Tom   and   Tim   call   where   are   you   Pia
         'Tom and Tim call: where are you, Pia?'   (Mar.-file 2)

Embedded clauses. Maria produces embedded clauses with the complementiser *dass* ('that') and a target-like sentence-final verb placement in file 3 (cf. (521)). However, given that there is no further instance of such complex structures in files 4 and 5 we can only speculate on the implementation of the target-like head-final IP. Nevertheless, structures like (521) are remarkable as they do not occur in the narratives of the other participants. Neither do constructions with impersonal or expletive pronouns. Again, Maria's production of a construction with the impersonal pronoun *es* ('it') in file 3 (cf. (522)) marks an exception.

(521)   *Aber,*   *klar*   *daß*   *Bella #m#*   *mit*   *nach*   *Hause #gefe#*   *gehen*
         but   of.course   that   Bella   with   to   home   go
         'But, of course, Bella goes home with (us).'   (Mar.-file 3)

(522)   *Ben*   *sagt*   *"aua!*   *Oh*   *es*   *tut*   *weh!"*
         Ben   says   ouch   oh   it   does   aching   (Mar.-file 3)
         'Ben says "ouch, it hurts".'

In this context a note is due on another phenomenon that reveals Maria's advanced knowledge of German. Indeed, the analysis of the file 3 narrative also reveals a sophisticated use of prepositions (compare examples (523)-(526)), to indicate locations and the relation between the verb and the complement. Although not all constructions are target-like they contrast markedly with the use of *auf* ('on') observed in other written German productions of this corpus. In fact, in Maria's narratives we do not find evidence for the use of *auf* as a case marker with verbs that do not subcategorise for it in target German.

(523) *Bella   fällt   aus   dem   Fenster.*   (Mar.-file 3)
Bella   falls   out   the   window
'Bella falls out of the window.'

(524) *Bella   leckt   an   der   Bens   Backe.*   (Mar.-file 3)
Bella   licks   at   the   Bens   cheek
'Bella licks Ben's cheek.'

(525) *Bella   hüpft   und   schaut   nach   oben.*   (Mar.-file 3)
Bella   jumps   and   looks   to   above
'Bella jumps and looks up.'

(526) *Ben   steht   auf   dem   Stein   und   hält*   (Mar.-file 3)
Ben   stands   on   the   stone   and   holds
den   Arz   Und   Bella   läuft   wieder   zurück.
the   branch   and   Bella   runs   again   back
'Ben stands on the stone and holds the branch and Bella runs back again.'

4.7.3.2 Implementation of V2

Eventually, in file 5, constructions with non-subjects in sentence-initial position adhere to the V2 constraint across the board. Sequences like (527a-c) show that target-deviant subject drop continues to be produced until file 5, which suggests that the correct setting of the pro-drop parameter remains a task to be tackled. Finally, the target-like yes-no question in (528) is illustrative of the availability of the mechanisms for question formation (including verb raising and a structural layer above the IP, i.e. the CP).

(527) *a. Tim   will   auch   mit*   (Mar.-file 5)
Tim   wants   also   with
b. dann   rennt
then   runs

    c. *plötlich   steht   Hirsch.*
       suddenly   stands deer
       'Tim wants to go with (the boy) then he runs and suddenly the deer stops.'

(528) *möchst du   mit   uns zu Hause gehen? Sagt Tom.*
       want   you   with us   to home   go?   says Tom
       '"Do you want to come home with us?" says Tom.'   (Mar.-file 5)

4.7.4 Verb inflection in Maria's narratives

As we can see in Figure 4.12 the rate of verb inflection errors in Maria's narratives drops from 48.2% in file 1 to 11.6% in file 5. This is a notable development compared with the error rates observed in the narratives of the other participants. Among the errors produced, the choice of infinitive forms represents a rather random phenomenon (2.3% in file 5). Recall, in addition, that constructions with verb drop only occur twice in file 1 (3.5%). Further, and in contrast to other participants in this study, Maria correctly chooses the 3rd person plural verb form for conjoined subjects (see examples (529)-(531)). Maria's editings in (531) and (532) are indicative of her awareness about the verb form that needs to be chosen (although she forgets to delete the 3s marker –*t*). The examples provided are also remarkable regarding the use of the plural pronoun *sie* ('they') and subject ellipsis in conjoined clauses (see (529)). Example (530) illustrates the target-like use of the phrasal verb *aufwachen* ('wake up').

(529) *am   Abend # sind Ben   und   Bella*   (Mar.-file 3)
       in.the evening   are   Ben   and   Bella
       sehr   müde   und   sie   gehen zum   Bett   und schlafen.
       very   tired   and   they go   to.the bed   and sleep
       'In the evening Ben and Bella are very tired, and they go to bed and sleep.'

(530) *der Hund und   Ben   wachen   am   Morgen*
       the   dog   and   Ben   wake.up   at.the morning
       auf   und   #sehen zu#   schauen   zum   Glas.   (Mar.-file 3)
       on   and   look   to.the   glass
       'The dog and Ben wake up in the morning and look at the jar.'

(531) *plötlich   fällt_en   der   Jung   und*
       suddenly   fall   the   boy   and
       Bella   zu   #ut#   unter.   (Mar.-file 3)
       Bella   to   down
       'Suddenly the boy and Bella fall down.'

(532) *Ben*   *und*   *Bella*   *geht_en*   *sehr*   *leicht*   *zum*   *Holz.*
　　　 Ben   and   Bella   go   very   light   to.the   log
　　　 'Ben and Bella approach the log silently.'　　　 (Mar.-file 3)

As we remarked upon previously, errors in the domain of verb inflection result from the choice of an incorrect or a default form, with occasional variation between the target-like and the target-deviant form in the same narrative (or even sequence). The few errors produced in file 4, for example, result from a repeated production of the default form *heiße* (used to introduce the three main characters of the story) instead of the target form *heißt* ('is called'). The only other default *−e* verb form produced in file 4, that is, *schaue* (cf. (533)) indicates that the erroneous default forms still belong to Maria's repertoire, through probably with the status of a vestigial remnant of an earlier grammar. Notice that both this form, that is, *schaue* and the target-like form *schaut* ('looks'), appear in the context of the complex sequence in (533). Finally, example (534) shows that the acquisition of the target paradigm of the verb *mögen* ('want to') remains to be tackled.

(533) *Tom*   *schaue*   *eine*   *Loch*   *und*   *der*   *Hund*   *hüpft*   (Mar. -file 4)
　　　 Tom   look   a   hole   and   the   dog   jumps
　　　 und   *schaut*   *am*   *Bienkorb.*
　　　 and   look   at.the   beehive
　　　 'Tom looks a hole and the dog jumps and looks at the beehive.'

(534) „*Oh*   *da*   *ist*   *süß*   *Forsch*   *Familie.*   (Mar. -file 4)
　　　 oh   there   is   sweet   frog   family
　　　 Da   *sind*   *uns*   *Freund*   *Tem.*"   *sagt*   *Tom:*
　　　 there   are   us   friend   Tem   says   Tom
　　　 "*Mögt*   *du*   *mit*   *nach*   *Hause?*"
　　　 Want   you   with   to   home
　　　 "Oh there is a sweet frog family. There is our friend Tem", says Tom: "do you want to come home with (us)?"
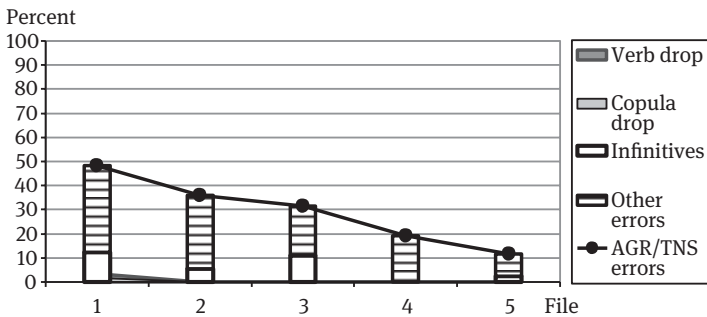
Figure 4.12: Verb inflection errors and verb drop in Maria's narratives.

4.8 Developmental profile: Fuad

Fuad's narratives are characterised by his aim to convey complex meanings that go well beyond simple picture descriptions. The increasing diversity of lexical elements used to describe the story characters' emotions and goals contrasts with the lack of the structural means necessary to express complex temporal and spatial relations. Only toward the end of the recording time covered in the present study do these structural means become available. Text length increases from about 30 propositions at the beginning of the study to about 80 at the end of the study.

Summarising (cf. Table 4.16), Fuad shows a liberal use of main clause word orders as of file 1 including DGS-like sentential patterns. Fuad expands the VP format to accommodate constructions with complex verbs, but fails to consistently apply verb raising with main verbs. The overgeneralisation of the preposition *auf* ('on') to mark the relation between the verb and its complements suggests that he pools his resources to fill some of the remaining gaps concerning the morphosyntactic means necessary to express grammatical relations.

Table 4.16: Fuad's German profile.

CP	Questions		[no sufficient evidence]							
	Embedded clauses (IP initial)	[file 3]	*weil*	*Eole*	*veile*	*ströt*	*auf*	*Tom.*		
			because	owl	many	bothers	on	Tom		
IP	[language contact]	[file 3]	(lexicon, *auf*)							
		[file 3]	*Tom*	*mag*	*auf*	*#Frosch#*		*Frosch …*		
			Tom	likes	on			frog		
	V2 (preverbal non-subjects)		[no sufficient evidence]							
	Verb raising (main verbs)	[file 4]	*Plötzlich*	*Reh*	*steht*	*auf.*				
			suddenly	deer	stands	up				
	Verb raising (aux verbs)	[file 4]	*Jason*	*hat*	*auf*	*Peter*	*geschimpft.*			
			Jason	has	on	Peter	told.him.off			
	Verb raising (modal verbs)	[file 3]	*Tom*	*muss*	*schnell*	*suche*	*und*	*Paul*	*suchen*	
			Tom	must	fast	search	and	Paul	search	
			auf	*Glas*						
			on	glass						

Table 4.16: continued

VP	[language contact]	[files 1-2]	(word order, DET$_{ART}$, complex clauses, lexicon)						
		[file 1]	*Dann*	*Da*		*ein*	*Resch*	*auf*	*den*	*Kopf*
			then	there	a	deer	on	the	head
			mit	*Geweih.*					
			with	antlers					
	No evidence of verb raising	[file 1]	*Dann*	*Tom*	*gehen*	*im*	*ein*	*Felsen.*	
			then	Tom	go	in.the	a	rock	
		[file 1]	*Der*	*Law*	*und*	*der*	*Kai*	*sehr*	*langweilen.*
			the	Law	and	the	Kai	very	be.bored

4.8.1 Word order in Fuad's narratives

Fuad produces a remarkable diversity of sentential patterns from the beginning of the recordings covered in this study. As we can see in Figure 4.13 (cf. also Table D-4 in Appendix D), which provides an overview of verb placement patterns in Fuad's narratives, he produces V3, V2 and V1 formats. Verbless constructions make up a total of 29.6% and 46.7% in files 1 and 2 respectively, a relative frequency that is similar to the proportion of V2 clauses in the respective files. In file 3, verb drop decreases to 9.0%, dropping to 0% in file 4, yet rising again to 11.3% in file 5. Finally, while non-subject initial V2 in main clauses remains an exception, with a relative proportion of 1.3 and 4.8% in files 3 and 5 respectively, the rate of V3 clearly increases from 10.3 in file 3 to 17.7% in file 5, which we might take as an indication of Fuad's elaboration of the left periphery of the sentence.
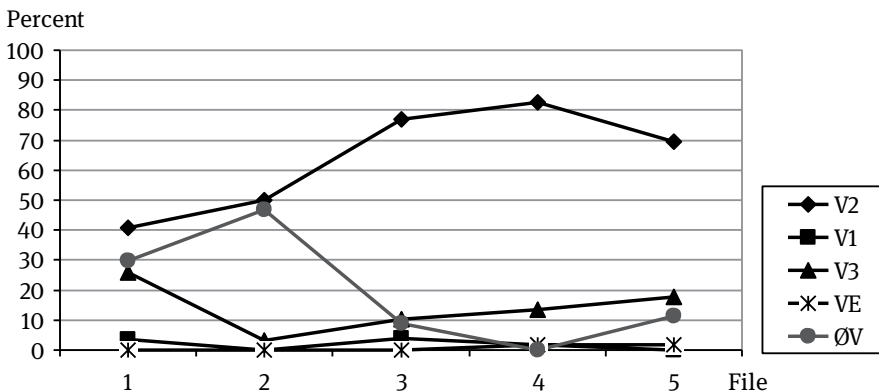
Figure 4.13: Main clause verb placement in Fuad's narratives.

As for complex sentential constructions, we can glean from Figure 4.14 that Fuad produces only few embedded clauses introduced with a conjunction in his written narratives (between one and three per file, and none in file 2). The overall frequency of complex constructions with coordinated clauses, however, ranges between 3.3 and 16.7%.
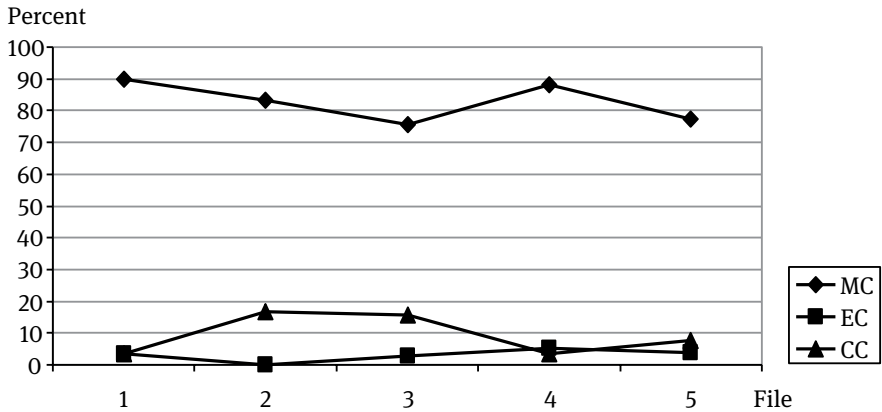
Figure 4.14: Relative frequency of main (MC), embedded (EC) and coordinated (CC) clauses Fuad's narratives.

4.8.2 Written German competence at the onset of the study

By assumption, Fuad's L2 learner grammar of German at the onset of the study represents a VP grammar. There is no evidence for the availability of functional projections.

Word order. Examples (535)-(538) illustrate the diversity of word order patterns produced by Fuad in file 1. Apart from V2 patterns (535), he produces V3 formats (536), including one non-subject initial V2 construction (537), and verbless sequences (538). Interestingly, the latter example (538) represents a potential candidate for language mixing. The sequence is reminiscent of DGS-constructions in that (a) elements are arranged in accordance with the figure-ground principle (deer= ground, antlers= figure), and (b) the referent is "established" via the expression *da* (recall that we already remarked upon the use of *da* with this function reminiscent of referential establishment in DGS in Muhammed's narratives). Note that a target-like equivalent expression (*ein Reh mit einem Geweih auf dem Kopf*, 'a deer with antlers on his head') makes it apparent that it is rather the order of the constituents than the prepositions chosen that render Fuad's sequence odd.

(535)   *Tom*   *und*   *Hund*   *schauen*   *ein*   *Frosch.*   (Fua.-file 1)
        Tom   and   dog   look.at   a   frog
        'Tom and the dog look at a frog.'

(536)   *Dann*   *Tom*   *gehen*   *im*   *ein*   *Felsen.*   (Fua.-file 1)
        then   Tom   go   in.the   a   rock
        'Then Tom goes toward a rock.'

(537)   *Dann*   *gehen*   *Resch*   *bis*   *im*   *Wasser.*
        then   go   deer   till   in.the   water
        'Then the deer goes toward the water.'   (Fua.-file 1)

(538)   *Dann*   *Da*   *ein*   *Resch*   *auf*   *den*   *Kopf mit Geweih.*
        then   there   a   deer   on   the   head with antlers
        'Then there is a deer with antlers on its head.'   (Fua.-file 1)

Verb inflection. The analysis of inflectional morphology in file 1 reveals that target verb inflection is not productive at this stage. Fuad produces many non-finite forms and verbless sequences at the beginning of the study. However, it is also worth noting that Fuad already uses the modal verb form *möchte* ('wants') as a main verb in the idiomatic expression "want to go home" (cf. (539)), and as a modal verb (cf. (540)) in combination with a finite main verb instead of an infinitive as would be required in target German. Given that there is no additional evidence for an expanded syntactic structure, we may assume that these constructions have the status of idiomatic expressions (possibly the case of (539)) or translations from an equivalent DGS expression (possibly the case of (540)). Sentence-internal adverbs occur in preverbal position in file 2 (cf. (541)) and subsequent files which suggests that main verbs fail to raise to INFL.

(539)   *Dann*   *Tom*   *und*   *Hund*   *mochte*   *nach*   *Hause.*
        then   Tom   and   dog   wants   to   home
        'Then Tom and the dog want to go home.'   (Fua.-file 1)

(540)   *Dann*   *Abend*   *Frosch*   *möchte*   *aus*   *macht.*
        then   evening   frog   wants   off   makes
        'Then, in the evening, the frog wants to leave.'   (Fua.-file 1)

(541)   *Der*   *Law*   *und*   *der*   *Kai*   *sehr*   *langweilen.*
        the   Law   and   the   Kai   very   be.bored
        'Law and Kai are very bored.'   (Fua.-file 1)

4.8.3 Further development

4.8.3.1 Expansion of the VP structure: coexistence of VP and IP structures

In file 3, two other modal verbs appear, *wollen* ('want') and *müssen* ('have to'). The correct placement of adverbs (cf. (542)) or negators (cf. (543)) inside the verb bracket provide support for the availability of the IP level at this stage. Sentential patterns continue to include SVX, V3 and verbless constructions.

(542)   *Tom muss schnell suche und Paul suchen auf Glas*   (Fua.-file 3)
      Tom must fast search and Paul search on glass
      'Tom must search fast and Paul searches in the glass.'

(543)   *Paul mochten nicht lessen*   (Fua.-file 3)
      Paul want not let
      'Paul does not want to leave (the frog).'

In contrast to his early use of modal verbs, Fuad produces the first constructions with the auxiliary verbs *haben* ('to have') (cf. (544)) and *sein* ('to be') (cf. (545)) only in file 4. Although participle formation is rule-based at this stage, verb-specific characteristics remain to be attained. Further, although the target-like sequence with a separable verb in (cf. (546)) might indicate that verb raising is operative in this file, the preverbal placement of the adverb in example (547) shows that the process is not applied across the board. At closer inspection, the data reveal a discrepancy regarding non-thematic and thematic verbs, whereby the former comprise auxiliary, modal or copula verbs, and the latter main verbs. Whereas non-thematic verbs appear in I, thematic verbs appear to remain in the VP. The examples produced in file 5 reveal the continuity of this discrepancy until the end of the recording time covered in this study (compare example (548) with a non-thematic verb and example (549) with a lexical verb preceded by the negator *nicht*).

(544)   *Jason hat auf Peter geschimpft.*   (Fua.-file 4)
      Jason has on Peter told.him.off
      'Jason told Peter off.'

(545)   *Es war nass gewesen.*   (Fua.-file 4)
      it was wet been
      'It was wet.'

(546)   *Plötzlich Reh steht auf.*   (Fua.-file 4)
      suddenly deer stands up
      'Suddenly the deer stands up.'

(547) *Peter   schnell   läuft   weil   Bienen   sauer   auf   Peter.*
Peter   fast   runs   because   bees   angry   on   Peter
'Peter runs fast because the bees are cheeky with him.'   (Fua.-file 4)

(548) *es   war   auch   nicht   da.*   (Fua.-file 5)
it   was   also   not   there
'But it wasn't there either.'

(549) *Aber   nicht   schmerzen.*   (Fua.-file 5)
but   not   hurt
'But it didn't hurt.'

4.8.3.2 Word order and language contact

There is a remarkable increase of constructions with *auf* ('on') as of file 3. Much like other participants in this study, Fuad uses *auf* not only with verbs that sub-categorise for this preposition (cf. (550)), but also with verbs that do not (cf. (551)). In the latter case, the preposition seems to serve the function of an overt marker of the verb complement relation.

(550) *Paul   fällt   auf   dem   Boden*   (Fua.-file 3)
Paul   falls   on   the   floor
'Paul falls on the floor.'

(551) *Tom mag   auf #Frosch#   Frosch   und #ac#   auch #Hu#   Paul.*
Tom likes   on   frog   and   also   Paul
'Tom likes the frog and Paul (too).'   (Fua.-file 3)

Verbless sequences continue to appear in file 3, although less frequently than in file 2. Notice that example (554), if understood against the backdrop of the two propositions preceding it in (552) and (553), seems to involve the type of role shift characteristic of storytelling in a signed language like DGS in that it mimics the thoughts of the story character. The change of perspective is indeed remarkable as it is not observed elsewhere in the corpus covered by the present study.

(552) *Tom   uberlegen   schon.*   (Fua.-file 3)
Tom   think.over   already
'Tom is thinking (it) over already.'

(553) *Tom   mochten   jetzt   nehmen   nach   Hause*   (Fua.-file 3)
Tom   want   now   take   to   home
'Tom wants to take it home now.'

(554) *Tom   klar   jetzt   nach Haus   mit   Frosch   und auch Paul.*
       Tom   of.course   now   to   home   with   frog   and also Paul
                                                                 (Fua.-file 3)
       'Tom thinks, "of course, (we) go home now, with the frog and Paul.'

Further, if we contrast example (548) above and (555) below, we can see that elementary, verbless patterns continue to be produced alongside target-like formats with the copula *sein* ('to be') in file 5. Interestingly, the concatenation of propositions in (555) is reminiscent of expressions used in recounts of the episode in DGS (the frog's disappearance, the emptiness of the glass). As we can see in example (556), produced in file 5, both options might be used in the context of a complex clause, whereby in (556) the copula is dropped in the main clause but used in combination with *da* in the *weil*-introduced embedded clause.

(555) *Am   Morgen   sehen nicht da   Frosch   leer.*   (Fua.-file 5)
       at.the morning see   not   there frog   empty
       'In the morning they see that the frog is not there (and the glass is) empty.'

(556) *Dann   froh   Tom   und   Tim weil Frosch   ist da*
       then   happy   Tom   and   Tim because frog   is there
       'Then Tom and Tim are happy because the frog is there.'   (Fua.-file 5)

4.8.3.3 Complex clauses and V2
Complex clauses. The first embedded *weil* ('because') clause appears in file 3, although with main clause word order (cf. (557)). This file also contains a range of complex clauses with psychological verbs (cf. (558)), in which clauses are combined paratactically. From a narrative perspective, clauses like these are indicative of how Fuad skilfully uses the linguistic means available to provide a detailed account of the frog story events, their connections and the characters' emotions.

(557) *Tom   ist   sauer   auf   dem   Eole*   (Fua.-file 3)
       Tom   is   angry   on   the   owl
       weil   Eole   veile   ströt   auf   #mir#   Tom.
       because   owl   many   bothers on   Tom
       'Tom is cheeky with the owl because it has bothered him.'

(558) *Tom   laube   ja   das   ist   Frosch.*   (Fua.-file 3)
       Tom   believes yes   this   is   frog
       'Tom believes that that is the frog.'

Subordination with the complementiser *dass* ('that') appears 5 months later in file 4 (559). The target-like embedded clause introduced by a *wh*-word in (560)

remains an exception which is why we can only speculate on the availability of a head-final IP by the end of the recording time considered here (file 5). Nevertheless, we must acknowledge that this is quite a sophisticated structure, involving the correct use of a subordinated interrogative.

(559) *Jason   und   Peter   hat gehört   dass   sie   hat   ruft   machen.*
      Jason   and   Peter   has heard   that   she   has   calls   make
      'Jason and Paul heard that they called.'   (Fua.-file 4)

(560) *Tom   und   Tim   möchten   schauen   was   darin   war.*
      Tom   and   Tim   want.to   look.at   what   therein   was
      'Tom and Tim want to see what was inside.'   (Fua.-file 5)

Variation in the left periphery. Non-subject XPs appearing in the left periphery of the sentence occur in the context of sentential V3 formats with only a few exceptions (compare (561) produced in file 3 and (562) produced in file 5). V3 structures produced in file 5 reflect various tasks that remain to be tackled by the end of the recording time, namely, (a) the integration of sentence-initial adverbials into the V2 format, (b) verb raising to INFL, and (c) the lexical analysis of phrasal verbs. For further illustration consider examples (563)-(569). By assumption, sentence-initial adverbials in (563) and (564) are adjoined to the available structural format. The sentence-internal adverbial in example (565) might be taken as an indication of the non-application of verb raising, even though the verb appears in the target-like finite form. The same interpretation would be applicable to example (566). In example (567), by contrast, the adverbial correctly occurs after the main verb. Examples (568) and (569) illustrate what could be an erroneous analysis of phrasal verbs: the infinitive *fallen* ('fall') is preceded by the adverb *unter* ('under'). Because *runterfallen* ('to fall down') is a phrasal verb, the separable part should appear in sentence-final position in main clauses.

(561) ***dann***   *kommt   ein   #El#   Eole.*   (Fua.-file 3)
      then   come   an   owl
      'Then the owl came.'

(562) ***Plötzlich***   *komm   ein   #H#   Ratten.*   (Fua.-file 5)
      suddenly   come   a   rat
      'Suddenly, a rat appears.'

(563) ***Am***   ***Abend***   *ein   Jungen   heißt   Tom   und   ein*
      in.the   evening   a   boy   is.called Tom   and   a
      Hund   heißt   Tim.
      dog   is.called   Tim
      'One evening, there is boy called Tom and a dog called Tim.' (Fua.-file 5)

(564)   ***am***   ***Nach***   *der*   *F#o#r/o/sch*   *möchte*   *rausgehen.*
       in.the   night   the   frog   wants   go.out
       'In the night, the frog wants to go out.'   (Fua.-file 5)

(565)   *Tom*   ***immer***   *ruft*   *sagt:*   *"Wo*   *bist du*   *Frosch!"*
       Tom   always   calls   says   where   are you   frog
       'Tom repeatedly calls 'Frog, where are you''

(566)   *Tim*   ***weiter***   *ruft*   *auf*   *ein*   *Binenkrob*   (Fua.-file 5)
       Time   further   calls   on   a   beehive
       'Tim continues to call at a beehive.'

(567)   *Tom*   *ruf*   ***uberball***   *in*   *den*   *Wald und Tim*   *ruft*   ***auch***
       Tom   calls   everywhere   in   the   forest and Tim   call   also
       in   *den*   *Wald*
       in   the   forest   (Fua.-file 5)
       'Tom calls everywhere in the woods and Tim also calls in the woods.'

(568)   ***Plötzlich***   *Tim*   *unter*   *fallen*   *auf boden.*   (Fua.-file 5)
       suddenly   Tim   down   fall   on floor
       'Suddenly Tim falls down on the floor.'

(569)   *Tim*   *schusbe*   *auf*   *ein*   *Bienenkrob*   *dann* ***unter***   *fallen*
       Tim   push   on   a   beehive   then down   fall
       'Tim pushes the beehive. Then it falls down.'   (Fua.-file 5)

A note on the use of linguistic means for narrative purposes. Finally, a note is due concerning Fuad's written productions in file 5, as they constitute a remarkable text from a narrative perspective. The following examples illustrate his creative use of a variety of linguistic means for narrative purposes, namely, the expression of

–   characters' emotions toward each other (example (570))
–   narrator's evaluations (example (571))
–   causal relations (example (572))
–   temporal relation of events (examples (573)-(575))
–   characters' wishes and objectives (example (574))

(570)   *Tom #schp# schimpfen auf Tim:*   *"Du muss aufpassen nicht unterfallen."*
       Tom   scold   on Tim   you must take.care   not   down.fall
       'Tom scolds Tim: You have to take care not to fall down.'   (Fua.-file 5)

(571)   *Pech*   *für*   *Tom*   *und*   *Tim.*   (Fua.-file 5)
       tough   for   Tom   and   Tim
       'Tom and Tim's tough luck.'

(572) *Tom   und   Tim   kann   nicht   sehen   weil   es   wr   schlafen.*
Tom   and   Tim   can   not   see   because   it   was   sleep
(Fua.-file 5)
'Tom and Tim cannot see (the frog's escape) because they were sleeping.'

(573) *Am   Abend   ein   Jungen   heißt   Tom*   (Fua.-file 5)
in.the   evening   a   boy   is.called   Tom
und   ein   Hund   heißt   Tim.
and   a   dog   is.called   Tim
'In the evening, there is a boy called Tom and a dog called Tim.'

(574) *am   Nach   der   F#o#r/o/sch   möchte   rausgehen.*   (Fua.-file 5)
in.the   night   the   frog   wants   out.go
'In the night the frog wants to leave.'

(575) *Am   Morgen   sehen   nicht   da   Frosch   leer.*   (Fua.-file 5)
in.the   morning   see   not   there   frog   empty
'In the morning they see that the frog is not there, (the jar) is empty.'

4.8.4 Verb inflection in Fuad's narratives

We remarked previously that target-like verb inflection is not productive in files 1 and 2. As we can glean from the overview provided in Figure 4.15 (see also Table E.4 in Appendix E), the proportion of errors in these two first files is relatively high, amounting to 68.4%, with a predominance of an erroneous choice of non-finite forms, although other erroneous forms are also common. Further, verb drop in files 1 and 2 occurs frequently, with a proportion of 34.5 and 45.7% respectively. As of file 3 the overall picture changes slightly as the percentage of errors decreases to 39.1, with a proportion of 34.9% in file 5. This is still a relatively high rate; however, it belongs to the lowest rates found in our corpus for file 5 narratives (only Hamida and Maria produce a lower error rate at that time).

Main verb inflection is productive as of file 3 but is not applied across the board. We noted previously that Fuad produces constructions with periphrastic verb forms early on, but that many errors result from remaining gaps in the knowledge of the target rules for participle formation. Errors in file 4 include the erroneous choice of participles in the place of infinitives in constructions with modal verbs (cf. (576)), or the drop of the auxiliary (see example (577)). (578) is an interesting case of a blend of two modal verb constructions. (560) shows the correct use of a plural modal verb in a construction with conjoined subjects in

file 4 (only the umlaut is missing) (recall that example (564) mentioned above documents the correct choice of a main verb infinitive with this modal verb).

Fuad's errors in file 4 indicate that participle formation is rule-based with respect to the use of the prefix *ge–*, but lacking specific information regarding the formation of participles of individual lexical items. As a consequence, some forms produced at this stage are correct (compare (561)), whereas others are not (compare (562)). Variation might also pertain to the same verb, as is the case of *erschrecken* ('to frighten') in file 4. The form *erschreck* in (563), close to the target *erschreckt*, contrasts with the erroneous usage of the prefix *ge–* in (564)). Target-deviant word order in constructions with modal verbs, as we can see in example (565), might be an effect of the use of the preposition *auf* to case mark the object. Finally, while subject-verb agreement marking in constructions with conjoined subjects continue to pose a problem, the repaired sequence in (566) might be taken as an indication of Fuad's awareness of the plural verb form that needs to be chosen in this context.

(576)   *Jason   und   Peter   wollen   geschlafen.*   (Fua.-file 4)
        Jason   and   Peter   want   slept
        'Jason and Peter want to sleep.'

(577)   *Jason   und   Peter   auf   Frosch   geschaut.*   (Fua.-file 4)
        Jason   and   Peter   on   frog   looked
        'Jason and Peter look at the frog.'

(578)   *Aber   Frosch   möchten   raus   wollen.*   (Fua.-file 4)
        but   frog   want   out   want
        'But the frog wants to get out.'

(579)   *Jason   und   Peter   mochten   ins   Wald   gehen.*   (Fua.-file 4)
        Jason   and   Peter   wanted   into   woods   go
        'Jason and Peter wanted to go into the woods.'

(580)   *Jason   hat   auf   Peter   geschimpft.*   (Fua.-file 4)
        Jason   has   on   Peter   scolded
        'Jason scolded Peter.'

(581)   *Jason   und   Peter   hat   geruft.*   (Fua.-file 4)
        Jason   and   Peter   have   called
        'Jason and Peter have called.'

(582)   *Jason   /hat/   erschreck.*   (Fua.-file 4)
        Jason   has   frighten
        'Jason was frightened.'

(583) *Jason*   *#s#*   *hat*   *geschreck.*   (Fua.-file 4)
       Jason   has   frightened
       'Jason was frighened'

(584) *Bienen*   *möchte* *fangen* *auf*   *Tim.*   (Fua.-file 5)
       bees   want   catch   on   Tim
       'The bees want to catch Tim.'

(585) *Tom*   *und*   *Tim*   *#ist#*   *sind*   *traurig.*   (Fua.-file 5)
       Tom   and   Tim   are   sad
       'Tom and Tim are sad.'
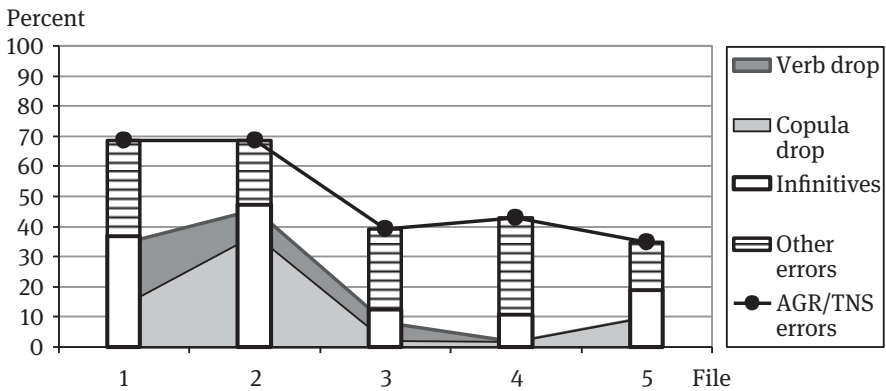
Figure 4.15: Verb inflection errors and verb drop in Fuad's narratives.

4.9 Developmental profile: Hamida

From the onset of the study, Hamida's written productions document her creative though not always target-like use of the linguistic means available for the purpose of recounting complex narrative events. While Hamida makes a progress in the attainment of the German grammar in the time span covered by this study, her written productions are characterised by a high degree of variation as she alternatively uses target-like and target-deviant structures. Complex narrative episodes are often expressed through a concatenation of propositions that are difficult to interpret at times, in particular, where sentence boundaries are not easy to establish. Text length remains relatively constant with an average of around 40 propositions.

Hamida's narratives exhibit a remarkable variation regarding word order as of the onset of the study (cf. Table 4.17.). As of file 2, variation in verb place-

ment and verb inflection, including numerous structural blends, is indicative of a syntax that seems to be overgenerating, possibly, because the headedness of the IP remains to be fixed. Variation in the left periphery provides evidence of a reorganisation phase bound to the implementation of the target V2 constraint. Worthy of mention is the substantial decrease of the error rate in the domain of verb inflection from 45.4% to 26.3% by the end of the study.

Table 4.17: Hamida's German profile.

CP	Questions	[no sufficient evidence]						
	Embedded clauses (CP with head-initial IP)	[files 3-5]						
		[files 5]	*Der* the	*Junge* boy	*und* and	*der* the	*Hund* dog	*schauen* look	*auf* at
			Frosch, frog	*was* what	*#Frosch#*	*er* he	*gemacht.* done	
		[file 3]	*… weil* … because	*Frosch* frog	*ist* is	*verschwinden.* disappear		
IP	[language contact]	(head-final IP?)						
		[file 1]	*Junge* boy	*deine* your	*Hand* hand	*da* there	*Frosch* frog	*sitzt* sits
	IP headedness	[mobile IP until file 5]						
	Variation (V2 and V3 formats)	[file 3-5]						
		[file 3]	*Dann* then	*steht* stands	*einen* a	*#Reh#*	*Hirsche* deer	*auf* on	*dem* the
			Wald woods	*und* and	*lauft* runs	*im* in.the	*wasser.* water	
	Verb raising (main verbs) (mobile IP)	[files 2-5]						
		[file 5]	*Danach* then	*wieder* again	*suchen* search	*ein* a	*Frosch* frog	*seid.* are
	Verb raising (aux / mod and main verbs) (mobile IP)	[files 2-5]						
		[file 5]	*Plötzlich* suddenly	*fallen* fall	*ein* a	*Hund* dog	*in* on	*Boden*, floor	(file 5)
			und and	*ein* a	*Junge* boy	*#erschrok#*	*erschrocken* frightened	*sind.* are
		[file 3]	*Dann* then	*Junge* boy	*hat* has	*#vielen Euelen#*	*Eule* owl	*angreifen.* attack
		[file 3]	*Später* later	*Junge* boy	*steht* stands	*auf* on	*dem* the	*Stein* stone
		[file 2]	*Timo* Timo	*hat* has	*auch* also	*was* what	*du* you	*schreit* shout	*haben* have

Table 4.77: continued

VP	[language contact]	(lexicon)							
		[file 1]	*Der*	*Inana*	*auch*	*Ansgt*	*vielen*	*Bienen*	*damit*
			the	Inana	also	fear	many	bees	with.that
		[file 1]	*Frosch*		*aussteigen*		*sind*	*weg*	
			frog		out-climb		are	away	

4.9.1 Word order in Hamida's narratives

Main clause verb placement in Hamida's narratives, as can be gleaned from the overview provided in Figure 4.16 (cf. also Table D-5 in Appendix D), is subject to variation throughout the recording time covered in this study. As we can see, V2 patterns predominate in all files, with the exception of file 3. In this file, the relative frequency of V3 sequences (39.3%) exceeds the one of V2 sequences (32.1%). While the proportion of V3 drops to 11.1% in file 4, it raises again to 33.3% in file 5. V1 sequences also occur fairly frequently in files 2 to 4, with an average relative frequency of around 20%. Non-subject initial V2 clauses occur in files 3 to 5, with a relative frequency between 10.7% to 20.0% (cf. Table D-5 in Appendix D). As remarked upon previously, we assume that these two phenomena are related developmentally: variation in the left periphery has been found to precede the eventual implementation of the target V2 constraint. Another phenomenon that is characteristic of Hamida's written productions concerns verb drop, which at the onset of the study occurs with a relative frequency of 18.5%. While the proportion decreases to 0% and 3.6% in files 2 and 3 respectively, verbless sequences continue to be produced in files 4 and 5 with a frequency of 11.1% and 13.3% respectively.
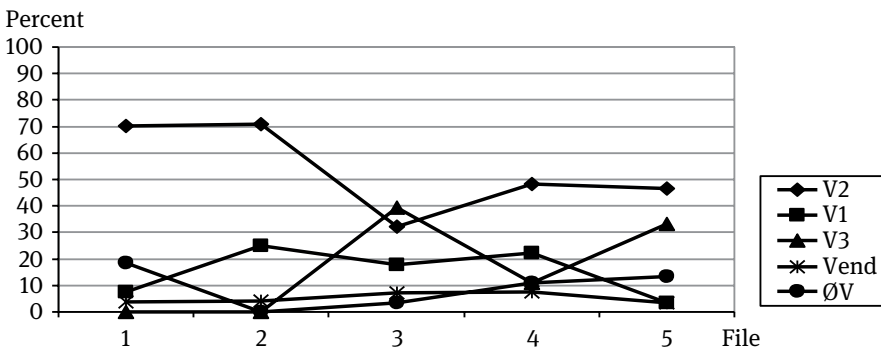
Figure 4.16: Main clause verb placement in Hamida's narratives.

Turning to complex constructions in Hamida's narratives, we can glean from the overview provided in Figure 4.17 that the frequency of embedded clauses in Hamida's narratives remains relatively low, with a rate of embedded clauses amounting to 8.3% in file 1 and 6.4% in file 5. We can also see that the proportion of coordinated clauses is higher than that of subordinated clauses in files 3 and 5 (with a percentage of 15.4% and 23.4% respectively).
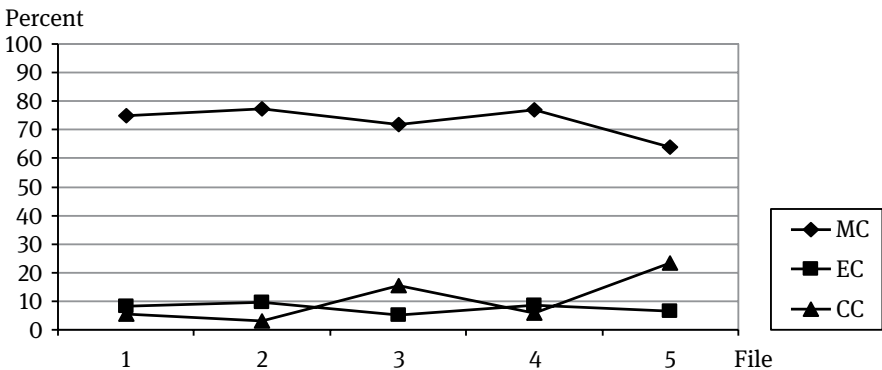
Figure 4.17: Relative frequency of main (MC), embedded (EC) and coordinated (CC) clauses in Hamida's narratives.

4.9.2 Written German competence at the onset of the study

Word order. In Hamida's file 1, main clauses adhere to the SVX pattern (cf. (586)) with a few exceptions, such as (587), a sequence in which non-subject V2 appears in a quotation environment.

(586)   *Der*   *Junge*   *fällte*   *im*   *Fluss.*   (Ham.-file 1)
        the   boy   falls   in.the   river
        'The boy falls into the river.'

(587)   *Hallo*   *sagt*   *Frosch #froch#*   *froh.*   (Ham.-file 1)
        Hallo   says   frog   happy
        'Hello says the frog happily.'

Word order and language contact. Constructions with a sentence final placement of the finite main verb (example (588)) represent an exception. However, at closer inspection, the sequence in (588) represents a remarkable candidate for borrowing from DGS: notice that elements are arranged following the figure-ground principle as it is characteristic of that language. In addition, the use of

da ('there') to express the location of the referent is reminiscent of the use of the existential determiner also glossed as DA in DGS. Recall that we already remarked upon this phenomenon in the narratives of Muhammed.

Example (589), in turn, shows that structural gaps concerning complex clauses do not prevent Hamida from expressing complex causal relations to describe the events of the picture story: although the example consists of a combination of verbless sequences, including a "*weil*+X" pattern, the meaning of the sequence is clear. Other verbless clauses at the time (the rate of verb drop in main clauses is of 18.5%) typically involve predicative constructions or expressions for which the target lexical means are not fully available. Example (590) involves the expression *Angst* ('fright') which would require the use of the *haben* ('to have') in target German to express the meaning of 'being frightened'. It must be noted that verb drop in constructions with the expression *Angst* represents another recurrent phenomenon observed in written productions of DGS-German bilingual deaf children. We will come to this phenomenon in more detail in the discussion section 4.11.

(588) *Junge   deine   Hand   da   Frosch   sitzt*   (Ham.-file 1)
       boy   your   hand   there   frog   sits
       'The frog is sitting on the boy's hand.'

(589) *Der   #Jun#   Junge   weg   weil   da   Eule.*
       the   boy   away   because   there   owl
       'The boy is gone because the owl is there.'   (Ham.-file 1)

(590) *Der   Inana   auch   Ansgt   vielen   Bienen   damit.*
       the   Inana   also   fear   many   bees   with.that
       'The Inana is also afraid of the bees.'   (Ham.-file 1)

Verb inflection. Turning to verb inflection the analysis of the data reveals that the overall frequency of target-like verb inflection in Hamida's file 1 narrative amounts to 48% of all verb forms produced. Example (587) above illustrates the production of target-like finite verb forms, such as *sagt* ('says'). Yet Hamida also produces target-deviant non-finite forms in contexts where a finite form would be required, this is the case in example (591a), which involves the phrasal verb *aussteigen* ('get out'). Another type of error concerns the choice of a verb ending that does not agree with the subject argument; this type of error occurs not only with main verbs but also with the suppletive forms of the copula verb *sein* ('to be'). Indeed, this is the case in example (591b) where Hamida erroneously produces the 3rd person plural form *sind* ('are') instead of the 3rd person singular form *ist* ('is') to express the frog's leaving. The use of this form in other contexts, at times in combination with main verb infinitives as in example (592) suggests that this expletive form is used as a default form at the time.

(591) a. *Frosch   aussteigen*
            frog   out.climb

     b. *sind   weg*   (Ham.-file 1)
            are   away

       'The frog climbs out (of the glass) and is gone'

(592) *der   Junge   sind   schlafen*   (Ham.-file 1)
        the   boy   are   sleep
        'The boy is sleeping.'

Worthy of mention is also Hamida's use of the first person plural pronoun *wir* ('we') already in this first narrative of our corpus. However, this pronoun is erroneously used to refer 3rd person plural referents (in the case of (593) and (594) to refer to the two story characters). Because this type of error was also observed in the productions of other participants (for example, by Maria in file 1), we may assumme it is initially used by some learners as a pronoun to refer to plural referents, lacking the feature specification for number (1st vs. 3rd).

(593) *Wir   gehen   zum   Wald.*   (Ham.-file 1)
        we   go   to.the woods
        'We (> they) go to the woods.'

(594) *Wir   suchen   im   Wald.*   (Ham.-file 1)
        we   search   in.the woods
        'We (> they) search in the woods.'

Summarising, Hamida's written productions at the onset of the study do not provide unambiguous evidence of the availability of an expanded structure. Her learner grammar at the time is best described as a VP grammar.

4.9.3 Further development

4.9.3.1 Coexistence of head-initial and head-final IP structures
Constructions containing periphrastic verb constructions with the auxiliary verb *haben* ('to have') appear in file 2; yet they are difficult to interpret in structural terms as the placement of the auxiliary alternates between the left and the right periphery of the sentence, and in several instances the auxiliary appears twice in the same sequence.

    At closer inspection, it becomes apparent that the alternation is not random but follows a pattern, whereby the form *haben* (infinitive, 2nd or 3rd pers. plural)

appears sentence-finally, while the form *hat* (3rd person singular) appears in the left periphery of the sentence. The distribution can be observed in example (595), a sequence that is also illustrative regarding the type of concatenated propositions difficult to interpret in a clear-cut manner. By assumption, the intended meaning can be paraphrased as follows: the boy shouts at the dog "what have you (done)" (the sequence is part of the episode in which the dog sticks his head into the jar). Following this interpretation, we assume that there is a blend of two complex verb forms, namely "*hat ... schreit*" and "*schreit haben*" (whereby "*schreit*" would be attributed the status of a past participle, used in the place of the target form *geschrien*). Example (596) provides further support for the availability of different verb positions. What these examples reveal is that the derivational relationship between the different verb positions has not yet been established. Hence, Hamida's overgenerating syntax at the time results in sequences that appear to be blends of alternative structures, in particular, where they involve a combination of various propositions. (597) is a remarkably complex example, in which "*verschwunden ist*" might represent a precursor of a relative clause modifying the subject of the interrogative clause (in the sense of "where is the frog that disappeared").

(595)   *#Timo hat auch#/#hat auch#/ Timo hat auch was   du   schreit haben*
                                     Timo has also what you shout   have
      'Timo also shouts what (are) you (doing)?'   (Ham.-file 2)

(596)   *eine Hund   hat ein glas   auf den Kopf   sind.*   (Ham.-file 2)
      a   dog   has a   glass on the   head   are
      'The dog has a jar on his head.'

(597)   *und   und   Timo   suchen wo   ist   frosch*
      and   and   Timo   search where   is   frog
      verschwinden   ist.   (Ham.-file 2)
      disappeared   is
      'and Timo is searching where the frog could be. He has disappeared.'

Other examples of concatenated propositions such as (598) seem to serve a more pragmatic function. At closer inspection, this sequence involves three different propositions providing information about the boy and the dog's activity (the search), the location (the woods), and its purpose (to find the frog). Note that the repetition of the verb *suchen* ('to search') is reminiscent of the verb sandwiches observed in the participants' DGS narratives. The combination of the prepostion *zu* ('to') and an infinitive form in the third part of the sequence might be interpreted as a precursor of a final clause with the conjunction *um... zu* ('in order to') to express the purpose of the search (in this case, *haben* is used as a main verb).

(598) a. *Die   beiden haben suche#m#n zum   wald   suchen*
          the   both   have   search   to.the forest search
     b. *zur   Frosch haben.*   (Ham.-file 2)
          to.the frog   have
          'Both went to search in the forest to get the frog.'

Variation regarding verb placement continues to occur in subsequent files. In file 3, for example, Hamida produces a sequence like (599), which we might take as an indication that the target German verb bracket is established at the time, even though errors continue to occur not only in participle formation, but also in the expression of the auxiliary, as the element is dropped in several sequences (compare (600) and (601)) (this continues to occur in subsequent files). With respect to the directionality of the IP, sequences without an auxiliary verb remain ambiguous even though the final position of the participle might be taken as an indication of the target-like head-final setting of the VP headedness parameter. The assumption that Hamida's IP remains *mobile*, that is, not fixed to either value, is corroborated by verb final coordinated structures she produces about a year later in file 5 (note that we use the notion of *mobile IP* in the sense described by Gawlitzek-Maiwald et al. (2002) (cf. section 4.5.2). It is important to note that the apparent IP final structures are not only used in the coordinated clause after the conjunction *und* ('and') (cf. (602)); as we can see in (603) and (604) verb final structures with the auxiliary *sein* are also used in main clauses (incidentally, the examples also document errors in the choice of the auxiliary and the participle forms).

(599) *Dann   Junge hat #vielen Euelen# Eule   angreifen.*   (Ham.- file 3)
       then   boy   has   owl   attack
       'The boy attacked the owl.'

(600) *Damit   Junge #und# /mit/ Hund   einen Frosch gesucht.*
       with.that boy   with   dog   a   frog   searched
       'The boy and the dog looked for the frog.'   (Ham.-file 3)

(601) *Der   Hund   gefreut   weil   sie   Frosch   gebracht*
       the   dog   pleased   because they   frog   brought
       'The dog is happy because they have brought the frog.'   (Ham.-file 4)

(602) *Plötzlich fallen ein   Hund   in   Boden,*
       suddenly   fall   a   dog   in   floor   (Ham.-file 5)
       und   ein   Junge   #erschrok#   erschrocken   sind.
       and   a   boy   frightened   are
       'Suddenly the dog fell on the floor and the boy was frightened'

(603) *Dann   läuft   #Hu#   ein   Hirsch   ins   Wasser*   (Ham.-file 5)
       then   goes   a   deer   into.the water
       ein   Hund   und   ein   Junge   fallen   #un#   ist.
       a   dog   and   a   boy   fall   is
       'Then a deer goes to the water. A dog and a boy fall.'

(604) *Danach   wieder   suchen   ein   Frosch   seid.*
       Afterwards   again   search   a   frog   are
       'Afterwards they continue to search a frog.'   (Ham.-file 5)

4.9.3.2 Variation in the left periphery

As of file 3 adverbial phrases such as *dann* ('then'), *plötzlich* ('suddenly') or *später* ('later') are, at times, correctly integrated into the sentence structure deriving target-like non-subject V2 (see examples (605)-(606)); however, non-subject XPs also continue to be adjoined to the SVX format in many other cases (cf. example (607) below). Notice, additionally, that the verb-subject pattern occurs at times in embedded clauses introduced by *weil* ('because'), as in example (606), an order which is not possible in target German.

(605) *Dann   steht   einen   #Reh#   Hirsche auf*
       then   stands   a   deer   on
       dem   Wald   und   lauft   im   wasser.   (Ham.-file 3)
       the   woods   and   runs   in.the   water
       'Then there is a deer standing in the woods and running toward the water.'

(606) *Plötlich   fällt   Junge   und   Hund   ist*
       suddenly   falls   boy   and   dog   is
       Angst   weil   kommt   einen   Bienen.   (Ham.-file 3)
       fear   because comes   a   bees
       'Suddenly the boy falls and the dog is frightened because the bees come.'

4.9.3.3 Candidates for language mixing

The coexistence of advanced structures with elementary "da+X" or "neg+da" constructions (cf. (607)) until the end of the recording time raises the question about the status of the latter. As copula drop in these elementary structures continues to occur at a time when other sequences document the availability of the copula we might speculate that the elementary formats are used as formulae or idiomatic expressions. These constructions might also represent candidates for language mixing, which could also be the case of example (608), produced in

file 4, in which verb drop derives a sequence that is reminiscent of the rhetorical question-answer pairs that are used in DGS for narrative purposes.

(607) *Plötzlich*   *#sehen# #Junge# #und# #Hun#*   *Junge*   *sehen*
     suddenly   boy   see
     da   *Frosch*   *aber*   *schon*   *#weg#*   *nicht*   *da.*   (Ham.-file 3)
     there frog but already   not there
     'Suddenly the boy sees the frog, but he is already gone, not there.'

(608) *im*   *wasser*   *#wer# #ver#*   *was*   *Junge*   *und*   *Hud.*
     in.the water   what boy and dog
     'What's in the water? (The) boy and (the) dog.'   (Ham.-file 4)

4.9.4 Verb inflection in Hamida's narratives

Throughout the preceding sections we have had a closer look at verb placement and sentence structure in Hamida's narratives. We have remarked upon several phenomena observed regarding verb placement, indicating also that verb inflection is characterised by variation between target-like and target-deviant forms. Interestingly, a detailed analysis of Hamida's errors in the domain of verb inflection reveals that only a relatively small proportion results from the use of infinitive forms in the place of finite ones (in file 3, for example, only 5 of 16 errors produced involve the infinitive form). Rather, the greater part of Hamida's errors involves the target-deviant use of the 3rd person singular verb form in constructions with conjoined subjects (compare example (609) and notice, incidentally, that erroneous word order and choice of the form *sagen* in the second part of the coordinated clause renders the sequence ambiguous concerning who's actually bidding good-bye to whom, the boy and the dog to the frog or *vice versa*). At the same time, we also acknowledge that the alternate use of target-like and target-deviant forms still occurs in file 5, where we also observe the use of infinitive forms with verbs that appeared correctly in previous narratives. The verb *fallen* ('to fall') is a case in point (610).

(609) *Junge*   *und*   *Hund*   *geht*   *nach*   *Hause*   (Ham.-file 3)
     boy   and   dog   go   to   home
     und   *Tschüss*   *sagen*   *Frosch.*
     and   bye   say   frog
     'The boy and the dog go home and say good-bye to the frog.'

(610) *Ein*   *Junge*   *fallen*   *im*   *Boden.*   (Ham.-file 5)
     a   boy   fall   on.the floor
     'The boy falls on the floor.'

Another type of error we already remarked upon pertains to the drop of the auxiliary in constructions with a past participle main verb form in sentence-final position, a phenomenon that appears as of file 3. Although the frequency of this phenomenon is low (in file 3, 3 out of 16, in file 4, 5 out of 18, and in file 5, 1 out of 10 errors produced), it might be taken as an indication, as we noted previously, that problems remain regarding the fixation of the IP headedness parameter. These problems are also reflected in those complex verb constructions in which main verb forms are combined with an erroneous auxiliary verb form. Example (611) indicates that the formation of the past participle of fallen (‘*fall*’) is not the only task that remains to be tackled as errors continue to occur in the marking of subject-verb agreement (the choice of the auxiliary forms *sind* (compare example (602) above) and *seid* (612), for example, seems to occur randomly). Finally, although sequences such as (613) are remarkable constructions documenting target V2 and the correct choice of the plural modal verb form *mussten* (‘had to’) in a construction with a conjoined subject, a consistent use of verb tense remains a task to be tackled in file 5.

(611)   *Dann*   *läuft*   *#Hu#*   *ein*   *Hirsch*   *ins*   *Wasser*
      then   go   a   deer   in.the   water
      ein   *Hund*   *und*   *ein*   *Junge*   *fallen #un# ist.*
      a dog   and   a   boy   fall   is   (Ham.-file 5)
      ‘Then a deer runs to the water, and a dog and a boy fall.’

(612)   *Danach*   *wieder*   *suchen*   *ein*   *Frosch*   *seid.*   (Ham.-file 5)
      then   again   search   a   frog   are
      ‘Then you (target: they) are again looking for the frog.’

(613)   *Danach*   *mussten*   *ein*   *Junge*   *und*
      then   must   a   boy   and
      ein   *Hund*   *suchen*   *norrmal*   *im*   *Wald.*
      a   dog   search   normal   in.the   woods
      ‘Then a boy and a dog had to search again in the woods.’   (Ham.-file 5)

Finally, the overview of verb inflection errors and verb drop in Hamida’s files provided Figure 4.18 (cf. also Table E.5 in Appendix E) makes it apparent that the frequency of non-finite forms remains relatively constant in the files covered in this analysis (about 14%, with exception of file 2 for which the percentage is about 23%), whereas the erroneous choice of verb endings ranges between 13.2 and 51.9%. The overall trend, though, with the exception of file 4, is characterised by a decrease in the frequency of errors (from 45.4 to 26.3%).
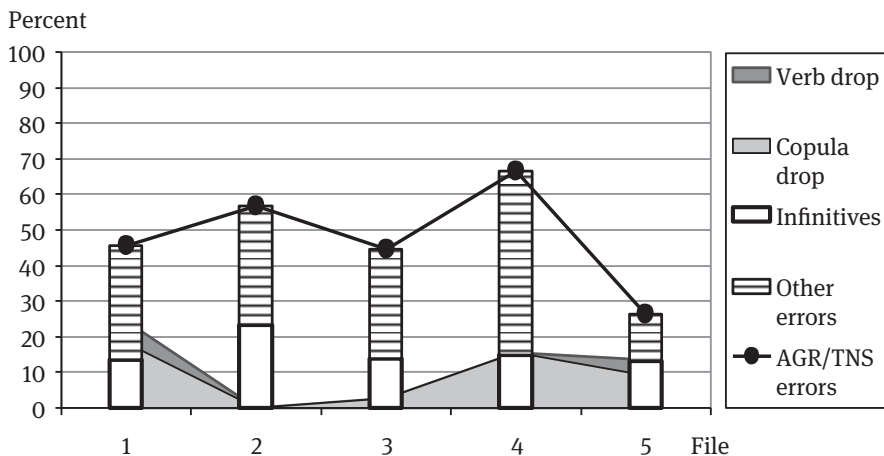
Figure 4.18: Verb inflection errors and verb drop in Hamida's narratives.

4.10 Developmental profile: Christa

Christa's early narratives are characterised by the use of short clauses to sketch the main events of the picture story. Text length increases from about 20 propositions in files 1 and 2 to about 60 propositions in file 3. This increase in text length reflects Christa's more detailed accounts of the story events and their relations as of file 3. Subsequent texts reflect a growing repertoire of structural and lexical means used creatively for narrative purposes.

Christa exhibits quite a liberal use of word order in her German prior to the expansion of the VP through an additional IP layer in file 4. By assumption, VP initial and final structures coexist in this file, following an initial adherence to a surface SVX schema in file 1 (cf. Table 4.18). Patterns reminiscent of DGS constructions indicate that Christa pools her resources at the time. After the implementation of the IP, and the fixation of the VP headedness to the target-like final value, Christa continues to produce sentential patterns that are potential candidates for borrowing from DGS at the lexical level and seem to have the status of (unanalysed) idiomatic expressions. The target V2 constraint remains a task to be tackled by the end of the recording time considered here. So does verb inflection, as the relative frequency of errors in this domain remains relatively high by the end of the recording time (about 50%).

Table 4.18: Christa's German profile.

CP	Questions	[no sufficient evidence]				
		[file 5]	(several instances of the same question)			
			Frosch	*Wo*	*bist*	*du.*
			frog	where	are	you
	Embedded clauses	[no sufficient evidence]				
		[file 5]	(one instance only)			
			...	*bis*	*beide*	*schlafen* *sind.*
			...	until	both	sleep are
IP	[language contact]	(lexicon, *auf*)				
		[file 4]	*er*	*bescheid*	*auf*	*Junge.*
			he	information	on	boy
	V2 (preverbal non-subjects)	[no evidence]				
	Verb raising (main verbs)	[file 5]	*Kläff*	*fällt*	*runter.*	
			Kläff	falls	down	
		[file 5]	*Kläff*	*steckt*	*voll*	*in* *Glas.*
			Kläff	sticks	fully	in jar
	Verb raising (aux)	[file 4]	*Er* *hat* *ein*	*froschen*	*angenommen.*	
			he has a	frog	accepted	
VP	[language contact]	(word order, loan translations, *auf*)				
		[file 2]	*der*	*Hund*	*Kopf*	*im* *Glas.*
			the	dog	head	in.the glass
		[file 2]	*Bied*	*sehen*	*auf*	*Fenster*
			both	look	at	window
		[file 2]	*auf*	*Wiesen*	*Sock*	*Bieden* *ruft.*
			on	prairie	(hive-	bee) calls
	Word order variation	[files 2-3] (no evidence of verb raising)				
	SVX schema (VP headedness initial)	[file 1]	*Jung* *klettern* *auf* *dem* *ein* *Felsen.*			
			boy climbs on the a rock			

4.10.1 Word order in Christa's narratives

The analysis of verb placement in Christa's written productions reveals that the verb predominantly appears in sentence second position throughout the recording time covered in this study. As we can see in Figure 4.19 (cf. also Table D-6 in Appendix D), which provides an overview of the relative frequency of the different verb placement patterns, the proportion of constructions with verb drop is

relatively low. Only in file 2 we find a high rate of sequences without an overt verb (43.8%), clearly exceeding the percentage of verb second patterns in this file (31.3%). Interestingly, this is also the narrative in which the frequency of verb final clauses reaches a peak (12.5%). Worthy of mention is the relatively low frequency of V3 patterns, which contrasts with the higher proportion of this sentential format in the narratives of other participants in this study and the productions of other learners of L2 German.

Percent
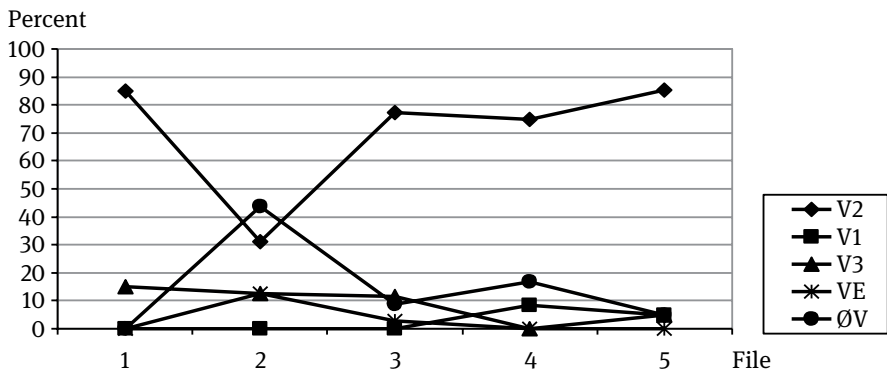
Figure 4.19: Main clause verb placement in Christa's narratives.

Turning to complex constructions in Christa's narratives we can see in Figure 4.20 that sequences with embedded clauses only rarely occur in her written productions (1 per file). By contrast, the relative frequency of complex constructions involving coordinated clauses ranges between 0 to 13.3%.

Percent
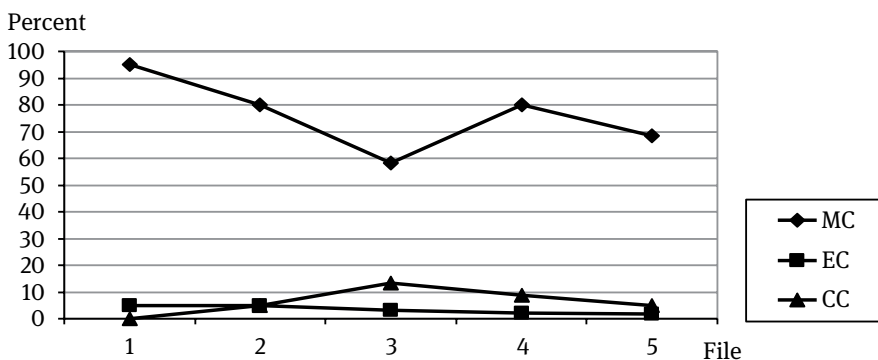
Figure 4.20: Relative frequency of main (MC), embedded (EC) and coordinated (CC) clauses in Christa's narratives.

4.10.2 Written German competence at the onset of the study

Word order. At the onset of the data collection, Christa produces a relatively short text consisting of 20 propositions (while file 2 is equally short, the written texts are about three times as long as of file 3). Apart from SVX formats (cf. (614)), Christa produces some V3 constructions, in which adverbial temporal expressions appear in sentence-initial position (cf. example (615)), and one non-subject initial V2 sequence in which the subject is dropped (cf. (616)). However, the XVX construction in (616) remains an exception as this sentential format does not occur again in subsequent files. Example (617) illustrates the use of the complementiser *weil* ('because') to combine two propositions. Sequences like these are indicative of Christa's expression of complex causal and temporal relations despite her lack of the necessary structural means (note that the verb is dropped in the *weil*-introduced clause). Some sequences, however, remain opaque, as for example (599), a sequence following example (615), in which we learn that the frog climbs out of the jar. Christa produces two such sequences with an unclear meaning in this first file, which might reflect lexical gaps apart from an erroneous use of the copula.

(614) *Jung   klettern   auf   dem   ein   Felsen.*   (Chri.-file 1)
      boy   climbs   on   the   a   rock
      'The boy climbs on a rock.'

(615) *Am   Abend   ein   Frosch   aussteigen   auf   dem   Glas*
      at.the evening   a   frog   get.out   on   the   glass
      'In the evening a frog climbs out of the glass'   (Chri.-file 1)

(616) *plötzlich fällt   auf   der   Hirsch.*
      suddenly falls   on   the   deer   (Chri.-file 1)
      'Suddenly he falls on the deer.'

(617) *der   Hund   lauft.   weil   Beien   auf   dem   Hund.*
      the   dog   runs   because bees   on   the   dog   (Chri.-file 1)
      'The dog runs because the bees (follow?) him.'

(618) *aber   in   der   sind   in   plötzlich.*   (Chri.-file 1)
      but   in   the   are   in   suddenly
      'But there inside, suddenly...'

Verb inflection. Christa produces finite main verb forms from the onset of the study. However, target-like forms alternate with target-deviant non-finite ones, a variation that can be observed until the final sample included in this study.

Examples (633)-(637) above and (619)-(620) below illustrate the diversity of options used already in file 1: main verb infinitives appear alone (cf. (633)-(634) above) or in combination with the copula form *ist* ('is') (example (619)). Further, some main verbs (e.g. *fällt* ('falls')) appear correctly marked for the 3rd person singular in some constructions (cf. example (616) above), but are erroneously used in other contexts (e.g. in constructions with conjoined subjects, cf. (620)).

(619)   *Hund   und   Junge   ruft   der   Frosch   ist   kommen*
        dog   and   boy   calls the   frog   is   come.INF
        'The dog and the boy call the frog to come.'   (Chri.-file 1)

(620)   *Hund   und   Jung   fällt   in   der   See.*
        dog   and   boy   falls   in   the   lake   (Chri.-file 1)
        'The dog and the boy fall into the lake.'

By assumption, Christa's L2 German structure at the onset of the study consists of an elementary structural domain, the VP. Grammatical processes like subject-verb agreement or verb raising run vacuous because the relevant functional projections are not yet available. Finite verb forms, where they are produced, represent unanalysed forms. The occasional use of the complementiser *weil* represents no sufficient evidence for the availability of an extended structure.

4.10.3 Further development

4.10.3.1 Word order variation and language contact

Evidence of a structural expansion of Christa's early VP grammar becomes available only as of file 4. Before, however, the data reveal a more liberal use of different word orders in file 2, including sentential arrangements that represent candidates for borrowing from DGS. Examples (621)-(622)) involve the basic SOV order of that language (note that the first example involves a finite, the second a non-finite verb form). Other cases (see example (623)) seem to involve a translation of a DGS (classifier) description into written German, whereby the DGS expression is analysed into meaning units that would be expressed simultaneously in DGS (note, though, that the figure-ground principle is not applied in this case). The sequential concatenation of elements in L2 German also reflect remaining lexical gaps at this stage (for example, the activity of sticking the head into the jar would involve the use of the verb *stecken* 'to stick'). Further, example (624) shows that she also uses the preposition *auf* ('on') to mark the relation between the verb and its complement. Recall that the use of *auf* to serve this function was also observed in the data of other participants in the study.

(621) *der   Hund   auf   der   Junge   warten.*   (Chri.-file 2)
the   dog   on   the   boy   wait
'The dog waits for the boy.'

(622) *auf   Wiesen   Sock Bieden   ruft.*   (Chri.-file 2)
on   prairie   (hive-bee)   calls
'(The dog) calls on the beehive.'

(623) *der   Hund   Kopf   im   Glas.*   (Chri.-file 2)
the   dog   head   in.the   glass
'The dog (sticks?) the head in the glass.'

(624) *Am   Morgen   beiden   such   auf   Frosch*   (Chri.-file 2)
at.the morning   both   search   on   frog
'In the morning, both look for the frog.'

If we look at the role of contact phenomena after the expansion of the VP grammar (as of file 4), we can see that the few constructions with verb drop produced in files 4 and 5 involve predicative constructions in which the copula is dropped (cf. (625) from file 4 and (627) from file 5) or expressions for which the target lexical devices are not fully mastered (cf. (626)). A note is due regarding the latter type of error involving a combination of a noun with a preposition (*bescheid auf* , 'information on') in the place of the target periphrastic noun-verb combination *bescheid geben* ('to let know'). Notice that in target German *Bescheid* (a noun) cannot be used as a verb unless combined with the function verb *geben* ('give'). The expression seems to represent a loan *calque* from the equivalent DGS agreement verb that is morphologically analysed and translated into a sequential expression in written German, whereby *auf* is used to mark the relation between the verb and its object. As the only two verbless clauses in file 5 contain the expression *sauer* (cf. (627)), it appears the *sauer* expression represents the last relic of this type of lexical borrowing (all other expressions that would appear with verb drop before, such as *Angst*, 'fright', or *da*+X, 'there+X', combinations, occur with a verb in this file).

(625) *Der   Jungen   böse   auf   seine   Hunde.*   (Chri.-file 4)
the   boy   angry   on   his   dog
'They boy is cheeky with the dog.'

(626) *er   bescheid   auf   Junge.*   (Chri.-file 4)
he   information   on   boy
'He informs the boy.'

(627) *Maivin   sauer   auf   Kläff*   (Chri.-file 5)
       Maivin   cross   on   Kläff
       'Maivin is cross with Kläff.'

4.10.3.2 Expansion of the VP structure

As mentioned previously, there is no evidence of the raising of *main* verbs to INFL until file 5. Before, phrasal verbs appear in their unanalysed form and adverbs occur preverbally as in examples (628)-(629), produced in file 3. However, periphrastic verb constructions with objects and adverbials inside the verb bracket appear 5 months earlier, that is, in file 4 (compare example (630)), providing evidence of a structural position above the VP. The assumption of the availability of the IP at this stage is further corroborated by the target-like placement of the negator after the copula in sequences like (631). Finally, main verb raising to INFL in file 5 is reflected in the target-like sentence final placement of separable prefixes of phrasal verbs, such as *an* ('on') and *unter* ('down') in examples (632) and (633) (note, though, that the verb does not correctly agree with the subject argument in example (632)).

(628) *Billy   runter   fallen.*   (Chri.-file 3)
       Billy   down   fall
       'Bill falls down.'

(629) *Dolly   weglaufen,   weil   Biene   Beiß   ihr.*   (Chri.-file 3)
       Dolly   away.go   because bee   bites   her
       'Dolly runs away because the bees bite her.'

(630) *Er   hat   ein   froschen   angenommen.*   (Chri.-file 4)
       he   has   a   frog   accepted
       'He accepted a frog.'

(631) *Es   ist   auch   nicht   da.*   (Chri.-file 4)
       it   is   also   not   there
       'He (the frog) is not there either.'

(632) *Maivin   zogen   /Hose/   schnell   an.*   (Chri.-file 5)
       Maivin   put   trousers fast   on
       'Maivin rapidly put on his trousers.'

(633) *Kläff   fällt   runter.*   (Chri.-file 5)
       Kläff   falls   down
       'He falls down.'

A task to be tackled: V2 constraint. While we may safely conclude that Christa's initial L2 German VP grammar has been expanded by an additional IP layer, the analysis of the data does not allow for a clear-cut conclusion concerning her acquisition of the target V2 constraint. Crucially, there is no evidence of target-like non-subject V2 constructions until the end of the recording time considered here. We noted previously on the predominance of V2 in Christa's narratives. A more detailed analysis of the V2 sequences identified reveals that these follow the SVX pattern (cf. Figure 4.21 which provides an overview of verb placement in main clauses, with a more differentiated account of the different verb second patterns observed, cf. also Table D-6 in Appendix D). In the whole corpus we find no instance of an XVS sequence, and only one instance of a verb subject pattern in the last file. Incidentally, the general adherence to the SVX pattern and the rare production of V3 constructions also reflect the general absence of narrative specifications about temporal relations in Christa's written productions. In the narratives of other participants, the adverb *dann* ('then'), used to indicate the succession of narrative events, occurs fairly frequently and it often appears in V3 constructions. Christa, however, only produces two sequences with *dann* in the whole corpus, namely one in file 2 and one in file 5, both of them V3 constructions. Hence, we can only conclude that while she produces only few errors regarding verb placement, her written productions do not provide sufficient information about her attainment of the V2 constraint.
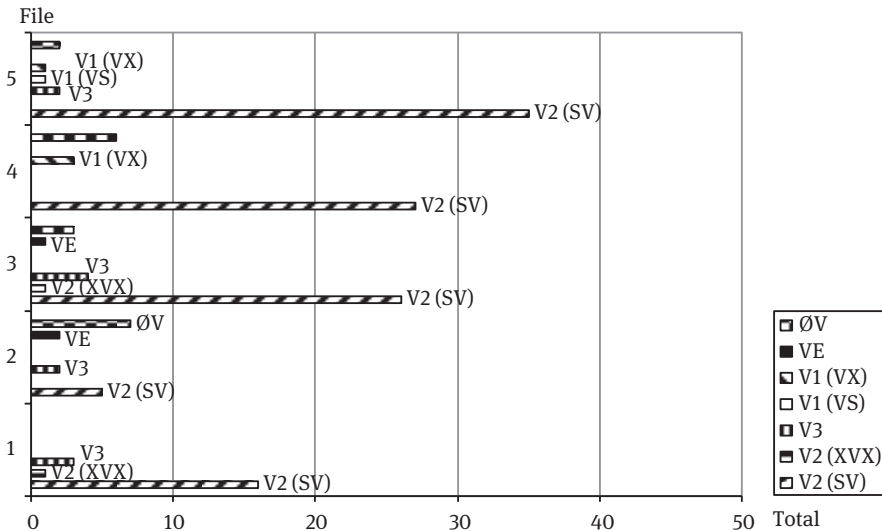
Figure 4.21: Main clause verb placement in Christa's narratives.

Question formation. Regarding question formation, the interrogative sequence in example (634), produced in file 5 is target-like, but patterns with the title of the picture story elicited (which she also uses as a title at the beginning of the file 5 narrative). Interestingly, Christa already used the same question twice earlier, in file 2 (see examples (635) and (636)), once with the verb in the target-like position and another time with a target-deviant verb placement. These observations lead us to conclude that there is no sufficient evidence in Christa's narratives to unambiguously establish whether the mechanisms for question formation are in place.

(634) *Maivin   rufe   in   ein   Loch:*
      Maivin   calls   on   the   hole
      Frosch   Wo   bist   du.   (Chr.-file 5)
      frog   where   are   you
      'Maivin is calling into the hole: "frog where are you?"'

(635) *der   Junge   rufe: Wo   bist   du*
      the   boy   call   where   are   you   (Chri.-file 2)
      'The boy calls, "where are you?"'

(636) *Beid   ruft   auf   Wiesen   wo   du   Bist*
      both   call   on   meadow   where   you   are   (Chri.-file 2)
      'Both call toward the meadow, "where are you?"'

Subordination. Finally, regarding complex clauses, (637) is a remarkable example in that it involves target-like verb final placement in an embedded clause and the use of the complementiser *bis* ('until'). As this is the only instance of an embedded clause with this word order, we can only speculate on the implementation of the head-final value of the IP and the availability of the CP layer at this stage.

(637) *der   wartet   bis   beide   schlafen   sind.*   (Chri.-file 5)
      the.one   waits   until   both   sleep   are
      'That one is waiting until both go to sleep.'

4.10.4 Verb inflection in Christa's narratives

We concluded in the previous section, based on our analysis of word order, that in Christa's narratives there is no evidence for the raising of main verbs to INFL before file 5. We will look now at inflectional morphology in Christa's written productions, keeping in mind that verbal inflection is commonly used as a diagnostic criterion to establish whether grammatical processes like subject-verb agreement and verb raising are operative.

Figure 4.22 provides an overview of the relative frequency of target-deviant verb forms and verb drop in Christa's narratives (cf. also Table E.6 in Appendix E). We can see that verbless clauses occur fairly infrequently in Christa's written productions, with the exception of file 2. In contrast to the low frequency of verb drop and the overall tendency of a decrease in the frequency of this phenomenon, marked fluctuation in the proportions observed for verb inflection errors does not allow for a conclusive interpretation of Christa's development over time. Infinitive forms and what we classified as other erroneous forms (such as default forms marked with a final –*e* or the erroneous choice of the 3rd person singular with 3rd person plural subjects and *vice versa*) occur with a similar frequency in files 1 and 5. Infinitives predominate in file 3; in files 2 and 4, however, erroneous forms other than infinitives exceed erroneous infinitives in number. Among these errors we find the incorrect choice of 3rd person verb endings with the plural pronoun *beide* ('both') (compare example (638)). At times, Christa produces target-like and target-deviant forms of the same verb in the same file, as is illustrated in examples (639)-(640) which involve two forms of the verb *beissen* ('to bite'). Further, we also remarked upon separable verbs appearing in their unanalysed form (cf. (641)) or without the separable prefix (cf. (642)) prior to file 5. Example (643), produced in file 5 and repeated here for convenience, is a remarkable sequence with a target-like distribution of (finite) main verb and separable (non-finite) verb parts (the main verb appearing before the adverbial). Note though that the choice of the verb form (3rd person plural, imperfect tense) is target-deviant. The apparent discrepancy indicates that although the structural relationship between the two positions verbs might appear in is established, the "spell-out" of this relation is not yet (fully) mastered.

(638) *Beide brachte eine Frosche nach Hause.*   (Chri.-file 5)
       both brought a frog to home
       'Both brought a frog back home.'

(639) *Ein Hamster beiß auf Maivin Nase.*   (Chri.-file 5)
       a hamster bite on Maivin nose
       'A hamster bites Maivin's nose.'

(640) *Alder beißt auf Maivin Kopf.*   (Chri.-file 5)
       Alder bites on Maivin head
       'Alder bites Maivin's head.'

(641) *#Billy anziehen sehr schnell*   (Chri.- file 3)
       Billy put.on very fast
       'Billy dresses up quickly.'

(642) *Der   Jungen   zieht   sich   schnell.*   (Chri.-file 4)
       the   boy   dress   himself fast
       'The boy gets dressed quickly.'

(643) *Maivin   zogen   /Hose/   schnell   an.*   (Chri.-file 5)
       Maivin   put   trouser fast   on
       'Maivin quickly put his trousers on.'
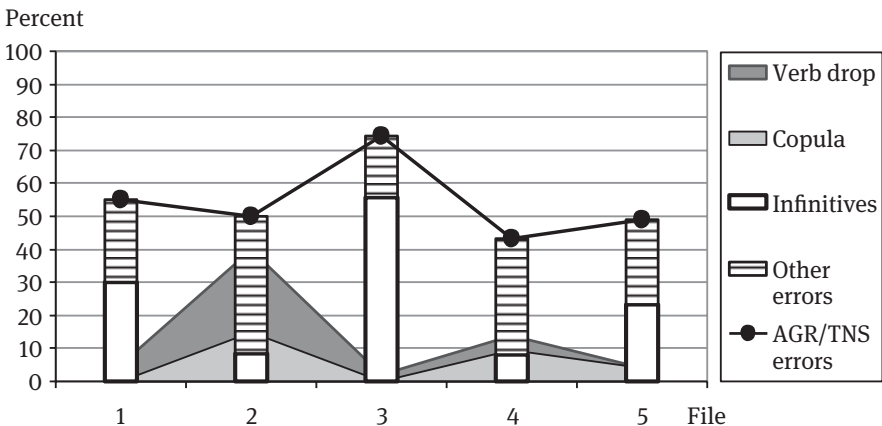
Figure 4.22: Verb inflection errors and verb drop in Christa's narratives (AGR/TNS errors = all verb inflection errors, further distinguished into infinitives and other inflection errors; verb drop = proportion of propositions appearing without a verb; copula drop = percentages in relation to total verb drop).

4.11 Discussion

Throughout the preceding sections we have discussed the main results obtained in our analysis of the participants' written productions with a view to determining their command of L2 German at the onset of the study and ensuing progress in their attainment of the target grammar. We have also sought to identify the scope and status of language contact phenomena in the written German productions. For this dual purpose, we have used the diagnostic criteria established in section 4.2.4 and the descriptive framework of the main properties of German and DGS elaborated in section 3.1 and 4.1 respectively.

   We turn next to a more global evaluation of the insights obtained in the light of current hypotheses in the domains of developmental linguistics and bilingual-

ism research.[6] Our focus will be on the major developmental milestones identified and the scope of intra-individual variation observed for each developmental stage, including potential candidates for language mixing. As we proceed we will see that the individual developmental profiles sketched also provide evidence of variation at the inter-individual level: participants vary as to how far they advance during the two years covered in this study indicating that their development proceeds at a different pace.

The section is structured as follows. We will focus first on the participants' use of elementary structural domains and the spectrum of variation observed at the VP level (section 4.11.1). Subsequently, we turn to evidence for structure-building and the expansion of the VP by an additional structural layer (section 4.11.2). Finally, we will discuss the participants' attainment of V2, and the expansion of the IP by an additional structural layer, the CP (section 4.11.3). We will also delve on the role of language contact at each of these developmental stages. For ease of reference, the sketch of the acquisition tasks elaborated in section 4.2.4 is provided here again in Table 4.19.

Table 4.19: Acquisition of German: linguistic areas and related structures, processes, and properties (dotted lines indicate areas at the focus of the analysis).

Area	Processes / properties	
Syntax-discourse interface	– *point-of-view* (complex clauses, direct / indirect quotation) – XP or subject-drop in sentence-initial position – co-reference	
Syntax	– interrogation, subordination – XP topicalisation (V2), finiteness distinction (verb raising), feature checking – projection of categorial-thematic structure	(CP-level) (IP-level) (VP-level)
Morphology	– inflection morphology (person, number, tense, mood)	
Lexicon	– distinction of thematic (main) / non-thematic (copula, auxiliary, modal) verbs	

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6 As indicated previously, a preliminary summary of the findings obtained was advanced and discussed in Plaza-Pust (2008). In the present work, we have further elaborated and expanded the assumptions put forward in that publication.

4.11.1 Exploiting elementary structural domains: variation at the VP level

In our elaboration of the participants' written German profiles we focused first on the determination of the characteristics of the learner grammars at the onset of the study. One major conclusion that can be drawn based on the analysis of the first sample is that learners first establish an elementary structural domain which allows for (a) the accommodation of basic sentential formats that mimic German main clause surface order SVX, and (b) the adjunction of functional elements such as *wh*-words or complementisers. In terms of structure-building these elementary patterns indicate that the early learner grammars are best described as VP grammars: grammatical processes such as verb raising are not operative (or run vacuously) because the relevant functional projections are not available.

In general terms, the elementary structures found in the present data collection pattern not only with basic sentential formats of L1 learners but also with basic constructions of L2 learners of German which shows that the task of structure-building is common to learners in different acquisition situations (cf. section 2.3). Beyond this general conclusion, however, the detailed analysis of the early written German productions also reveals that participants in this study differ in two respects, namely, regarding (a) their more or less liberal use of sentential arrangements at this stage and (b) their borrowings from DGS. We turn to a discussion of these findings in the next section.

4.11.1.1 On the (questionable) use of a basic pattern: early SVX

In our discussion of the main developmental milestones in the acquisition of German (cf. section 4.3) we remarked upon an initial stage (VP stage) at which learners produce elementary structures, whereby the relative order of the elements might vary because grammatical processes run vacuously at this stage. At the same time we also acknowledged that, regarding verb placement, studies into L1 acquisition of German agree in the observation of a higher proportion of verb final structures (compare example (644), repeated here for convenience).

(644) *Julia   EIS   essen*   (Tracy 1991: 195)
      Julia   ice-cream   eat

Turning to the evidence obtained in our study, it becomes apparent that some of the early productions we assume to be based on VP grammars differ in two respects from the early utterances of L1 German learners, that is, (a) in the use of a rather rigid word order, and (b) in the low frequency of sentence-final verb placement. Indeed, although some early narratives reflect a rather creative use of different word order patterns, the potential of free word order at the VP stage is not

exploited by all learners. Word order in Simon's narratives, for example, follows the SVX schema across the board (disregarding sequences with verb drop). Interestingly, this word order pattern is reminiscent of the early productions of L2 German learners with an L1 Romance. Because the VP-headedness parameter in Romance languages is fixed to the head-initial value, it is commonly assumed that the learners' Romance L1 and their L2 German input (containing surface V2 clauses) conspire during the initial stage, reinforcing the initial preference of SVX formats. By contrast, learners with an SOV L1 language have been found to initially produce verb-final structures (compare example (645), also repeated here for convenience).

(645) *hier   jacke   ausmachen*   *(Changsu, #150)*
       here   jacket off-make   (Vainikka & Young-Scholten 1994: 280)
       'here (you) took (your) jacket off.'

Given that DGS is an OV-language (cf. section 4.1.1.) the question arises as to why there is no reinforcing effect from the L1 that would be reflected in the participants' preference of SOV orders. Put differently, is there no interaction between these two languages at this level? To answer this question, we have to acknowledge that a substantial amount of the German input these learners are exposed to is provided in the context of a formal teaching/learning situation. So the question to ask is rather: what are the characteristics of this input that would affect the early productions in such a way that they are more similar to the utterances of L2 German Italian learners than to L1 monolingual learners?

In this respect, it is important to note that the teaching of German, at least at the beginning, is oriented towards the inhibition of the learners' creativity by focusing on the learning of the canonical surface SVO order. Indeed, in the domain of deaf education in Germany, including bilingual education programmes, there is a general consensus that the mastery of this basic sentential format represents an essential step in that it allows learners (a) to produce elementary structures that conform to the surface canonical order of the target language and (b) to develop an awareness about the necessary differentiation of German and DGS (cf., for example, Schäfke 2005: 292, and Plaza-Pust 2016 for a critical appraisal of Schäfke's assumptions).

From a psycholinguistic point of view, however, the advantages attributed to this didactic approach might be called into question: learners are encouraged to use a syntactic format without the necessary grammatical processes that would generate it yet in place. For those learners that start out with this sentential format we do not only acknowledge that their early patterns differ from those of L1 learners; from a developmental perspective, we also advance that learners who adhere to the SVX pattern are prone to erroneously set the VP headedness

parameter to the head-initial value. Learners who do so are then confronted with the task of restructuring their learner grammar in a way that is more similar to L1 Romance learners attaining L2 German than that of L1 monolingual German learners. Several learner errors observed in this study, particularly concerning verb placement, corroborate this assumption. We will come back to this issue below.

Against this backdrop, the participants' production of target-deviant structures they do not encounter in their German input, marked by the formal teaching/learning situation, deserves special attention: these constructions might provide further insights into what is actually attained or "within reach" in structural terms.[7] Following this line of reasoning, variation in learner data can be taken as an indication of underlying language learning processes. We turn next to a discussion of what the data reveal in this respect.

4.11.1.2 Basic building blocks and verb drop

In our analysis we remarked repeatedly on participants' productions that consist of a combination of elements that have a propositional meaning but lack a verb form. Simon, for example, adheres to the SVX pattern at the onset of the study. He produces several constructions with the expletive form *ist* ('is'), such as the interrogative in (646). However, in the same narrative, we also found evidence of verbless sequences following the pattern SPrepX (cf. (647)), or question answer pairs with verb drop (cf. (647)).

(646)   *Max   rufen   wo   ist   Toin.*   (Sim.-file 1)
         Max   call   where   is   Toin
         'Max calls, "where is Toin?"'

(647)   *Max   auf   Hirsch.*   (Sim.-file 1)
         Max   on   deer
         'Max (?) on the deer.'

(648)   *Was   da   ein   Toin*   (Sim.-file 1)
         what   there   a   Toin
         'What is there? A Toin (= name of the frog).'

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7 Cf. also Berent (1996: 650) who remarks on the difficulties of establishing a developmental sequence in such circustances which are, however, common to other learners of a second language in a formal context (see, for example, Diehl et al. 2000: 72 with respect to the acquisition of L2 German by L1 French students in a formal setting).

Christa, Hamida, Muhammed, and Fuad also use elementary SVX structures *and* sequences in which elements are combined without an overt verb. Verb drop at this early stage of the L2 written German development commonly occurs in constructions that would require the use of the copula. Typically, verbless sequences involve existential "da+X" patterns (cf. example (651). Note, though, that such elementary formats would be unexpected if participants had a command of the target main clause SVX format, which leads us to the question of the origin of target-deviant verb drop. Because DGS knows no copula and "DA X" patterns are target-like in that language one possible assumption would be that copula drop in the written German narratives results from DGS borrowing.

In our view, caution is due in the interpretation of the phenomenon as a candidate for language mixing. One crucial point pertains to the nature of the participants' learner grammar at this stage. Based on the diagnostic criteria established in section 4.5.4, learner grammars at this stage, characterised by the absence of evidence for verb raising and the finiteness distinction, are best described as VP grammars. In other words, from a structure-building perspective, the production of SVX patterns cannot (and should not) be equated with the attainment of the main clause structure. Copula drop at the VP stage comes as no surprise given that elements at this stage are optionally realised. It is indeed a common phenomenon in early productions of learners in other acquisition situations. Examples of L1 (649) (Tracy 1991: 156) and L2 learners of German in a formal setting (650) (Diehl et al. 2000: 75) strike us in their similarity to example (651), produced by Fuad in file 1. Verb drop in hypotactic combinations of several propositions, however, represent potential candidates for language mixing, as is explained in the following section.

| (649) | *da* | *nase* | | | *Stephanie, 1;4.1* |
| | there | nose | | | (Tracy 1991: 300) |

| (650) | *Das* | *Wasser* | *kalt*. | | *Caroline C4/5, 4* |
| | the | water | cold | | (Diehl et al. 2000: 75) |

(651)	*Da*	*ein*	*veil*	*Frosch*.	(Fua.-file 1)
	there	a	many	frog	
	'There are many frogs'				

4.11.1.3 Candidates for cross-modal language mixing: Pooling of linguistic resources

L2 learners of a second language who are more advanced in their narrative development than young infants, have been found to concatenate elementary structures to express complex meanings despite remaining gaps at the structural and

lexical levels. Several examples in the participants' data indicate that they pool their resources in several ways, for example, through the use of functional elements, loan translations, or lexical and syntactic borrowing.

   Functional elements. The use of functional elements at a time when their associated grammatical properties are not yet attained can be taken as an indication that learners pool their linguistic resources during the early stages of their acquisition of German. Hamida's use of the complementiser *weil* ('because') in (652), for example, marks a difference to early verbless productions in child L1 acquisition. Indeed, in L1 German acquisition complementisers tend to appear late, often after the production of preconjunctional clauses (Rothweiler 1993). L2 learners, by contrast, have been found to use L2 functional elements such as complementisers at a time when they do not yet master the associated *target* grammatical properties. Typically this occurs after an initial stage at which functional elements are missing (cf. Klein 2000 for a concise summary of the so-called "basic variety" in natural second language acquisition situations). By assumption, L2 learners borrow these functional elements from their L1 which, applied to the situation of our participants, implies that they use these elements because they know them already in DGS. Following this assumption, learners are confronted with the task of learning the target *structural* properties associated with these items at a later stage (cf. also Plaza-Pust 2000 for a detailed discussion of the relation of lexical and syntactic learning). Consequently we assume that, at this early stage, functional elements are combined with elementary structural formats via adjunction (for further illustration compare the sketch provided in Table 4.20).

(652) *Der   #Jun# Junge   weg   weil   da   Eule.*
       the   boy   away   because there   owl   (Ham.-file 1)
       'The boy (goes) away because there is an owl.'

Table 4.20: Adjunction of functional elements at the VP stage.

	VP structures (*no evidence of grammatical processes*)				
– **adjunction of functional elements** → (Ham.-file 1)	*weil* *because*	*da* there	*Eule.* owl		
– copula drop (Fua.-file 1)	*Da* there	*ein* a	*veil* many	*Frosch.* frog	
– no verb raising (Fua.-file 1)	*Der* the *Law* Law	*und* and	*der* the *Kai* Kai	*sehr* very	*langweilen* be.bored

Word order. Other candidates for language mixing reveal a sophisticated borrowing from DGS. Consider, for example, (653) produced by Fuad in file 1. As we remarked upon before, the example involves the combination of two propositions, i.e. "there is a deer there" and "the deer has antlers on his head", arranged in a way that is reminiscent of DGS expressions following the figure-ground principle. Certainly, the introduction of the deer as a character through the verbless expression "*dann da ein Resch*" strikes us in its similarity to constructions used for referential establishment in DGS. Also, the relative order of the elements in the second proposition seems to be organised according to the figure-ground principle. Note that a target-like equivalent would involve the reverse order of 'head' and 'antlers', as illustrated in (654). Interestingly, the analysis reveals that elements are not only arranged according to the figure-ground principle in sequences with verb drop, as is the case of (653), but also in constructions with inflected main verb forms (for further illustration compare the sketch provided in Table 4.21). Example (655), produced by Hamida in file 1, is a remarkable example in this respect. Notice that this sequence involves a finite verb in sentence-final position, as it would be required in DGS. Further, *da* is also used to assign a location to a referent; hence *da* fulfills the function DET$_{LOC}$ would fulfil in DGS. The DGS construction provided in (656) illustrates how close the sequence produced by Hamida is to what we might consider to be the equivalent DGS construction.

(653)   *Dann   Da   ein Resch   auf den Kopf   mit   Geweih.*   (Fua.-file 1)
      then   there   a   deer   on   the   head   with   antlers
      'Then there is a deer there with antlers on its head.'

(654)   *Dann   ist   da   ein Reh   mit   einem   Geweih   auf   dem   Kopf.*
      Then   is   there   a   deer   with   a   antlers   on   the   head.
      'Then there is a deer there with antlers on its head.'

(655)   *Junge   deine   Hand   da   Frosch   sitzt*   (Ham.-file 1)
      boy   your   hand   there   frog   sits
      'The frog is sitting on the boy's hand.'

(656)   [- dom] CL:HAND$_A$
      BOY   HAND$_A$ [DET$_{LOC}$]$_A$ FROG   [+ dom] SIT$_{ON\text{-}A}$

Table 4.21: Language contact phenomena at the VP and the IP levels (figure-ground, verb placement).

	IP structures						
						verb position →**INFL**	
(Ham.-file 1)	*Junge*		*deine*	*Hand*	*da*	*Frosch*	***sitzt***
	boy		your	hand	there	frog	sits

	VP structures							
	← *verb position?*→							
(Fuad.-file 1)	*Dann*	*Da*	*ein*	*Resch*	*auf*	*den*	*Kopf*	*mit*	*Geweih.*
	then	there	a	deer	on	the	head	with	antlers
	'Then there is a deer with antlers on its head '							

Candidates for language mixing, involving the calquing of a complex sentential DGS constructions, are easy to spot because they involve a combination of propositions that are built in a way that is not possible in target German and has neither been found to occur in the data of early learners of the language. The situation is different in the case of two or three-word combinations with verb drop, as we learned previously, because such sequences occur also in the productions of other learners of German. So they cannot be unambiguously interpreted as candidates for language mixing. A similar case obtains with SOV sequences in the learner data. SOV sequences, such as the one produced by Christa in example (657), might be taken to reflect the borrowing of the head-final value of the VP headedness in DGS; but this interpretation must be qualified given that German is also an SOV language and sentence-final verb placement is a frequent phenomenon in child language acquisition (though not a target main clause word order). In any case, given the participants' initial adherence to a rather strict SVX pattern, the production of SOV, if only on an occasional basis, might be taken as an indication of underlying language learning processes: for one, learners do not encounter this type of clause pattern in their input.

(657) *der   Hund   auf   der   Junge   warten.*   (Chri.-file 2)
      the   dog   on   the   boy   wait
      'The dog waits for the boy.'

Loan translations. The analysis of the data reveals that cross-modal language mixing involves not only relexifications of DGS structural formats (e.g. figure-ground, SOV), but also loan translations of complex DGS meanings that would be simultaneously expressed in space. As we already advanced in Plaza-Pust (2008b) cross-modal translations are illustrative of the lexical and structural

adaptations of the expressions borrowed across modalities. Crucially, such adaptations are determined by the properties of the recipient language (in our case a learner variety of that language), as is the case in other types of borrowing (Winford 2003: 42f.). In the case of cross-modal language contact phenomena in the written language, such adaptations are determined by the limitation to use one modality of expression (unlike in spoken language production where signed elements might be combined with spoken ones). Owing to the difference in the predominant type organisation (simultaneous for DGS and sequential for German), cross-modal borrowing involves, at times, a sophisticated translation of simultaneous DGS expressions into sequential German expressions that goes well beyond a 1sign-to-1word translation. By assumption, sequences like (658), produced by Simon in file 3, involve such a subtle type of borrowing: a DGS classifier construction is analysed into meaning units or thematic roles; these elements in turn are mapped onto German lexical items and arranged *sequentially*. In our discussion of Simon's data we remarked on the sentence-final placement of the preposition *in* ('in') used to refer to the location of the THEME (= the head) in this verbless construction. The unusual (target-deviant) position of the preposition might be taken as an indication of a lexical gap in German, as it appears in the place of a verb that would express the dog's sticking his head into the jar (that is, *reinstecken*, 'to stick into'). Certainly, the sentence-final position would strike us as odd unless we consider DGS as a potential source of this order (verbs appearing in the final position in that language). Finally, the arrangement of "*Glas*" and "*Kopfen*" indicates that Simon adopts the figure-ground principle in this case, too, which can be taken as an additional indication of borrowing.

(658) *Der*   *Hund*   *Glas*   *den*   *Kopfen*   *in.*   (Sim.-file 3*)*
     the   dog   glass   the   head   in
     'The dog puts the head into a glass.'

Another potential candidate for borrowing is example (659), produced by Muhammed in file 3. In our discussion of Muhammed's data we remarked upon the arrangement of elements following the figure-ground principle (deer= ground, Paul= figure) and the repetition of the full NP referring to the ground. This latter aspect deserves further attention for two reasons. For one, because it reflects Muhammed's lack of the German pronominal system at the time. So overt reference to the same referent occurs through the repeated use of the full NP. Secondly, "*liegen mit Hirsch*" might be regarded as a calquing of the DGS spatial verb LIE$_{\text{ON DEER}}$ used in the expression of the spatial relation of the boy and the deer. Hence, it is plausible to assume that "*liegen mit Hirsch*" has the status of a complex verb expression and that as such, and "calquing" DGS, it appears in the right periphery of the sentence. Table 4.22 summarises our previous observations

concerning potential candidates for language borrowing involving loan transla-
tions of classifier expressions.

(659) *der   ein   Hirsch   Paul   liegen   mit   Hirsch.*   (Muh.-file 2)
    the   a   deer   Paul   lies   with   deer
    'Paul lies on the deer.'

Table 4.22: Language contact phenomena (figure-ground, classifier constructions).

	VP structures						
	DGS verb position →				***verb-final***		
spatial verb	*der*	*ein*	*Hirsch*	*Paul*	***liegen***	***mit***	***Hirsch.***
(Muh.-file 2)	the	a	deer	Paul	lies	with	deer
classifier construction	*Der*	*Hund*	*Glas*	*den*	*Kopfen*	***in.***	
(Sim.-file 3)	the	dog	glass	the	head	in	

Against this backdrop, the sequence in (660), produced by Hamida in file 1, could
be interpreted as a blend of a DGS and a German sentential format as the DGS-like
setting of the ground ("*Bei Wasser*") is combined with an SVX clause in which this
setting is repeated.

(660) *Bei   Wasser.   Der   Junge   sind   #verlorn#   verloren   in   Wasser.*
    at   water   the   boy   are   lost   in   water
    'The boy is lost in the water.'   (Ham.-file 1)

Modifying expressions. Finally, we might consider sequences like (661) and
(662), produced by Christa and Hamida respectively. These sequences are more
difficult to interpret. Notice that they involve SVX patterns with additional prepo-
sitional phrases, arranged in a target-deviant manner. At closer inspection, the
prepositional phrases that seem to be adjoined in a random manner, might be
interpreted as modifying expressions that relate to the previous noun (for further
illustration of this sophisticated arrangement of elements in a clause compare
Table 4.23). Following this assumption, a target-like equivalent of the proposi-
tions combined would require a juxtaposition of separate clauses or the subordi-
nation of a relative clause (as illustrated in example (663)). At this stage, however,
learners do not master either the lexical or the structural means necessary to
overtly express relations between propositions. As a consequence, they place
prepositional phrases in a DGS-like fashion right to the "ground" PP complement
of the main clause they refer to.

(661) *Der*　*Junge*　*klettern*　*im*　　*Baum*　*im*　　*eine*
　　　 the　　boy　　　climbs　　in.the　　tree　　in.the　 an
　　　 Eo　　*Eule*　*der*　*Junge*　*Ansgt*　　　　　　　(Ham.-file 1)
　　　　　　　owl　　the　　boy　　 fear
　　　 'The boy climbs up the tree, in which there is an owl. The boy is frightened.'

(662) *Hund*　*und*　　*ein*　*Junge*　*sehen*　*auf*　*dem*
　　　 dog　　and　　 a　　boy　　 see　　on　　 the
　　　 Glas　*in*　*ein*　*Frosch.*　　　　　　　　　　(Chri.-file 1)
　　　 glass　 in　 a　　frog
　　　 'A dog and a boy look into a glass (in which there is) a frog.'

(663) *Ein*　　*Hund*　*und*　　*ein*　*Junge*　*schauen*　*das*　*Glas*　　*an,*
　　　 a　　　 dog　　and　　 a　　boy　　 look　　 the　　glass　　at
　　　 in　*dem*　　*ein*　*Frosch*　*ist.*
　　　 in　 which　 a　　frog　　 is
　　　 'A dog and a boy look into a glass in which there is a frog.'

From a developmental perspective, modifying structures combined with main clauses via adjunction might be attributed the status of precursor structures, to the extent that they potentially pave the way for more complex sentential structures. It must be noted, however, that the attribution of such a precursor status can only occur *a posteriori*, that is, on the basis of data that corroborate further progress. What do the data reveal in this respect?

Table 4.23: Potential precursors of relative clause structures.

								modifying expressions		
								(= precursors?)		
(Chri.-file 1)	*Hund* *und* *ein*	*Junge*	*sehen* *auf* *dem*					*Glas*	*in*	*ein*	*Frosch.*
	dog and a	boy	see on the					glass	in	a	frog
(Ham.-file 1)	*Der*	*Junge*	*klettern*	*im*				*Baum*	*im*	*eine*	*Eule*
	the	boy	climbs	in.the				tree	in.the	an	owl

If we look at Christa's narratives produced after file 1 we must conclude that we cannot attribute the status of precursors to the early PP structures because Christa's later narratives do not contain any evidence for the development of subordination. By the end of the study, Christa does not use the option of PP-adjunction anymore. What we observe instead is a tendency to produce a series of full main

clauses, in which reference to the same referent occurs via repetition of the full NP (compare example (664), produced by Christa in file 5). This way of stringing together main clauses reflects a development that departs from the initial adjunction of related propositions. Only the use of the personal pronoun in (664c) can be interpreted as a first indication of the use of linguistic devices for the purpose of cohesion.

We are left with the question of why the potential implicit in those early structures that appear to be candidates for language borrowing is not exploited any further. Once again, we can only speculate on the impact of the teaching/learning situation and assume that the sophisticated nature of the structures is not recognised as such. What is more, the question arises as to whether the input these learners are exposed to really is sufficiently rich so as to promote the acquisition of relative clauses early on.

(664) a. *Der   Jungen#n#   und   seine   Hund   beobachten   ein*
           the   boy   and   his   dog   observe   a
           Froschkind.
           frog.child
           'A boy and a dog observe a little frog.'
       b. *Ein   Froschkind   stizt   ins   Glasflaschen.*
           a   frog.child   sits   in.the glass.bottle
           'A little frog is sitting in a jar.'
       c. *er   hat   angst   vor   die   Menschen.*
           he   has   fear   of   the   human beings
           'He is afraid of human beings.'   (Chri.-file 5)

While our conclusions about the nature of the input must remain tentative at best, the data collected allow for the conclusion that the impact of the input must be relativised in the face of the scope of inter-individual variation reflected in the data regarding the way complex meanings are expressed structurally.

If Christa resorts to a paratactic concatenation of propositions in her later narratives, Hamida's recount of complex narrative episodes reveal a rather creative, though not always target-like, use of available linguistic means, including occasional mergers of alternative sentential formats. This learner continues to use verbless clauses until the end of the recording time, but these do not include the type of adjoined prepositional phrases described previously. Unlike Christa, Hamida uses various linguistic means to create cohesion, including coordination with the conjunction *und* ('and') (cf. (665)), the expression of locative relations via the adverbial *da* ('there') (cf. (666)), and, occasionally subordination (cf. (667)). Relative clauses, however, are not produced by the end of the recording time. So,

once again, we are led to conclude that the early PPs cannot be attributed the status of precursors structures, but remain instances of language borrowing.

(665) *Am   Morgen   waren   Hund   ung   ein   Junge   sehen*
       in.the   morning   were   dog   and   a   boy   see
       und Plötzlich   eine Frosch   ist   weg   und #v# verschwinden   ist.
       and suddenly   a   frog   is   gone   and   disappeared   is
       'In the morning the dog and the boy suddenly see that the frog is gone,
       that he has disappeared.'   (Ham.-file 5)

(666) *Ein   Junge   oben   such   ein   Baum*   (Ham.-file 5)
       a   boy   above   search   a   tree
       da   ist   ein   Eulen.
       there   is   a   owl
       'A boy searches in a tree, in which there is an owl.'

(667) *Der Junge   und   der   Hund   schauen   auf   Frosch,*   (Ham.-file 5)
       the boy   and   the   dog   look   on   frog
       was   #Frosch#   er   gemacht.
       what   he   done
       'The boy and the dog observe what the frog is doing.'

4.11.2 Structure-building: variation and the dynamics of language development

Thus far we have seen that sign bilingual learners set out with elementary structural domains in their acquisition of L2 German grammar and that they creatively use the available linguistic means in their production of written narratives. We now turn to the potential development of the early "small" L2 grammars. What do the data reveal in this respect? Is there evidence of structure-building, in the sense of an expansion of elementary structures by an additional functional layer?

    In our detailed discussion of the data we remarked on the emergence of several phenomena that are commonly linked to a functional structural layer above the VP, that is, the IP. At the same time, we also noted that learner productions are characterised by variation. The alternate production of target-like and target-deviant structures can be taken as an indication that the expanded structure is not fully exploited "overnight". What we could see is that (a) verb raising may not apply across the board, (b) there is substantial variation in the area of verb inflection, and (c) learners use a diversity of sentential patterns, including DGS-like formats that do not conform to the target.

Certainly, the variation observed raises a number of questions concerning the nature of language development in this particular acquisition situation. For example, we may ask, why is the expanded structure not fully exploited once it becomes available? What can we glean from the variation observed about the underlying language learning mechanisms? Ultimately, we might address the fundamental interrogation of whether the acquisition of German in sign bilingual deaf learners differs qualitatively from the development of German in other acquisition situations. Before we turn to the endeavour of trying to answer these questions we must acknowledge that our study is only a small case study and that the questions we have raised are complex and deserve further examination in future studies. At the same time, as will become apparent in the following discussion, some important conclusions can be drawn on the basis of the present data that will take us a step further in our aim.

In our discussion we will focus first on what we consider to be fundamental signposts of a structural position outside the VP, namely, auxiliary and modal verbs. Subsequently, as the availability of two verb positions raises the question of the relation established between both, we will look at the evidence for verb raising and the finiteness distinction before we turn to subject-verb agreement and its morphological realisation in the form of verb inflection.

4.11.2.1 Signposts for the implementation of the IP: auxiliary and modal verbs

A diagnostic criterion commonly used to establish the nature of the structure available to L2 German learners is the production of periphrastic verb constructions with auxiliary and modal verbs. Recall that auxiliary and modal verbs are assumed to be base-generated in INFL. Hence, constructions with these verbs can be taken as an indicator of the availability of the functional category INFL. From a developmental perspective we might assume that complex verb forms act like signposts of an expanded structure for the language learner: these constructions involve two verbs distributed in two different positions of the clause.

The application of this criterion in the analysis of our data reveals two important findings. First, the timing of the emergence of complex verb forms with modal or auxiliary verbs is subject to individual variation. And, second, the use of these verb forms is subject to intra-individual variation as the forms produced are not always target-like; errors occur in the choice of the appropriate auxiliary or modal verb form, as well as in the choice of the appropriate main verb form. These are important findings, in particular, if we consider that all participants are attending the same bilingual programme. For one, variation at the inter-individual level revealing that learners progress at a different pace suggests that the impact of the input available in the context of a formal teaching/learning environment needs to

be qualified. In a similar vein, variation at the intra-individual level can be taken as an indication that there is more into language acquisition than the repetition "by rote" of explicitly taught grammatical structures as only those properties that are acquired will be productive.

Turning to the structural change (expansion by an additional structural layer, the IP) we assume to be associated with the emergence of auxiliary and modal verb constructions we noted in the analysis of the data that we need to be careful in our interpretation. Indeed, for some early constructions with modal verbs it is questionable whether they reflect the availability of a new structural layer. Instead we might assume that these verbs are adjoined to the available VP structure. Consider, in this respect Muhammed's examples repeated in (668) and (669). If we look first at the second example in (669), we can see that elements are arranged in a target-deviant manner in this sequence, in which the modal verb *kann* ('can') is followed by the negator and the lexical verb precedes the object. Because the target-deviant verb-complement order is reminiscent of the SVX schema we might conclude that "*kann nicht*", used as an unanalysed formula or idiomatic expression, is adjoined to the elementary sentential pattern. In line with this assumption, the modal verb in (668), too, appears to be combined with the main verb via adjunction.

(668) *Law   musst   suchen   der   ein   Frosch.*   (Muh.-file2)
      Law   must   search   the   a   frog
      'Law must look for the frog.'

(669) *kann   nicht   finden   der   ein   Frosch.*   (Muh.-file2)
      can   not   find   the   a   frog
      'He can't find the frog.'

Incidentally, the target-deviant head complement order that becomes apparent in these examples is strikingly similar to the word order observed in the early productions of L2 German learners in other acquisition situations. Indeed, as we can see in (670) learners with a Romance L1 produce constructions that parallel (668) above.

(670) *eine   person   muss   studieren   eine   sprache*   (L2 learner)
      a   person   must   study   a   language
      'you have to study a language.'   (Plaza-Pust 2000: 179)

Notice that sequences like (670) are commonly assumed to result from a temporary borrowing of the L1 VP headedness parameter value, which in the case of the L1 Romance learner is head-initial. The critical question to ask at this stage is why bilingual learners whose L1 DGS is an SOV language would produce a type of error

that is not compatible either with the German or the DGS structure. Taking up our earlier considerations concerning the learning tasks faced by those learners who start out with the SVX schema as their "base structure" of German, the data can be taken as an indication that these learners set the VP headedness parameter to the target-deviant initial value. The apparent coexistence of alternative structural formats as it occurs in (671), a complex clause in Maria's file 1, not only provides additional evidence for this assumption. It illustrates also the variation characteristic of reorganisation phases preceding the eventual implementation of the target option.

(671)   *Bello*   *und*   *Max*   *will*   *schlafen*   *zusammen,*   *weil*
        Bello   and   Max   wants   sleep   together   because
        Max   *und*   *Bello*   *mag*   *nicht*   *allei*   *schlafen.*
        Max   and   Bello   like   not   alone   sleep   (Mar.-file 1)
        'Bello and Max want to sleep together because they do not want to sleep alone.'

Evidence for the eventual implementation of a structural layer above the VP can be found in the written productions in the form of sequences with complex verbs in which objects, adverbials or negators appear inside the verb bracket (compare the example in Table 4.24). These structures clearly represent evidence for the availability of an additional IP layer: auxiliary or modal verbs appear in the left peripheral verb position, whereas lexical verbs appear in the right-peripheral verb position. The relative order of complement and main verb indicates further that the VP headedness is correctly set to the target head-final value.

Table 4.24: Example of a target-like distribution of finite and non-finite verb forms.

		IP structures		
	INFL (V+fin)	← two verb positions →		V (V-fin)
(Fua.-file 4)	*hat*	*auf*	*Peter*	*geschimpft*
Jason	has	on	Peter	told-off
Jason				

4.11.2.2 Discovering the connections: verb raising

Up until now we have discussed the potential evidence for the availability of an expanded structure by looking at complex verb forms. As learners realise that there are two verb positions they are confronted with the task of establishing the

nature of their relation. Notice that this will affect the status of verb raising and the finiteness distinction in the L2 learner grammars at this stage. To establish the status of verb raising and the finiteness distinction, we defined two criteria, namely (a) a distributional one (relative position of the verb and other constituents), and (b) a morpho-syntactic one (correlation of inflected/uninflected forms with sentence position). What do the data reveal in this respect?

As to (b), our analysis of the data revealed that the attainment of verb inflection morphology represents a protracted development (we will discuss this finding in more detail in section 4.11.2.3 below). Furthermore, we could see that learners alternatively produce finite and non-finite main verb forms in constructions that follow the SVX pattern. It is important to note in this context that the SVX format we identified as the initial default sentence pattern can be generated on the basis of a VP grammar. So, verb placement in sentence-second position cannot be taken as an (unambiguous) indication of verb raising to a higher structural position. The situation marks a difference to the analysis of the productions of monolingual L1 learners who have been found to have an initial preference for verb-final patterns. Though not unambiguous, their production of SVX formats, that is, sequences in which the verb appears in the left periphery, can be interpreted as evidence for the availability of a structural position in addition to the one available in the right periphery of the sentence. Therefore, as an additional diagnostic criterion we considered the criterion in (a), that is, verb placement in relation to adverbs and negators as an indicator of whether or not main verbs raise to a position outside the VP. This distributional criterion is also commonly used in other studies on child or adult acquisition of German (non-subject V2 as an additional criterion shall be discussed in section 4.11.3 where we focus on the attainment of the V2 constraint).

Summarising, the analysis of the data regarding verb placement in relation to sentence-internal adverbs and negators provides evidence for both inter- and intra-individual variation regarding (a) the structure available, and (b) the application of grammatical processes.

Muhammed and Fuad. In the written productions of Muhammed and Fuad, verb placement in INFL seems to apply only with auxiliaries and the copula verb *sein* ('to be') (compare Muhammed's file 5 example in Table 4.25, repeated here for convenience, in which subject and object appear inside the verb bracket, and the adverbial in sentence-initial position is integrated into the IP structure). Sentence-internal adverbs occur inside the verb bracket with auxiliaries and modals, and right of the copula which suggests that these non-thematic verbs are placed in INFL; with lexical verbs, however, these adverbs occur preverbally, as do negators, which suggests that these verbs remain in the VP (compare Muhammed's

file 4 examples in Table 4.25).[8] Consequently, there is a discrepancy between the structure used with non-thematic and the structure used with main verbs.

Table 4.25: Muhammed's distribution of non-thematic (copula, auxiliary, modal) verbs and thematic (main) verbs.

		IP structure					
		INFL (aux)	←two verb positions→				V (main verb)
(Muh.- file 5)	*Am Abend* at.the evening	*haben* have	*Max und* Max and	*Paul* Paul	*ein* a	*Frosch* frog	*geschaut.* looked.at

		VP structure					
(Muh.-file 4)		*Max* Max	*und* and	*Paul* Paul	*auch* also	*sagen* say	*Tschüß.* good-bye
(Muh.-file 4)		*Paul* Paul	*frech* cheeky			*sucht* search	
		weil because		*nicht* not			
		und and		*faul.* lazy			

Evidence for the use of both structural formats with lexical verbs can be found in Fuad's file 5. In this narrative the relative position of verbs and sentence-internal adverbials varies. Interestingly, we can observe this variation in constructions with the same verb (*rufen*, 'to call'), as is illustrated in examples (672)-(674). Clearly, this variation indicates that the more advanced structure is not only available for constructions with periphrastic verb forms. However, as both structures continue to be available they are used alternatively.

(672) *Tom immer ruft sagt:* "*Wo bist du Frosch!*" (Fua.-file 5)
        Tom always calls says where are you frog
        'Tom calls repeatedly, "frog, where are you?"'

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8 Interestingly, the failure of the verb raising to INFL in sequences involving the focus particle *auch* ('also') or the negator *nicht* ('not') has also been observed in monolingual acquisition of German and bilingual acquisition of German and English (cf. Tracy 2000: 25).

(673) *Tom*   *ruf*   *uberball in*   *den*   *Wald*   *und*
       Tom   call   everywhere   in   the   woods and
       Tim   *ruft* *auch*   *in*   *den*   *Wald*   (Fua.- file 5)
       Tim   calls   also   in   the   woods
       'Tom calls everywhere in the woods, and Tim too.'

(674) *Tim*   *weiter*   *ruft*   *auf*   *ein*   *Binenkrob*   (Fua.-file 5)
       Tim   further   calls   on   a   beehive
       'Tim continues to call on a beehive.'

Christa. Christa produces complex verb constructions with objects and adverbs appearing inside the verb bracket only as of file 4, which indicates that the IP is available at the time (cf. Christa's file 4 example in Table 4.26). Target-like constructions with the copula such as the one provided in Table 4.26 corroborate this assumption. Constructions with lexical verbs in Christa's narratives before file 4 do not provide any conclusive evidence about main verb raising. However, in Christa's file 5 separable prefixes of phrasal verbs correctly appear sentence-finally, which leads us to conclude that the expanded sentential format is used also with lexical verbs at the time. This assumption is corroborated by the occasional production of sequences with main verbs and sentence-internal adverbials as the one provided in Table 4.26.

Table 4.26: Christa's distribution of non-thematic (copula, auxiliary, modal) verbs and thematic (main) verbs.

	IP structure				
	INFL	← two verb positions →			**V**
[Chri.-file 4]	*Er* he	*hat* has	*ein* a	*froschen* frog		*angenommen.* accepted
[Chri.-file 4]	*Es* it	*ist* is	*auch* also	*nicht* not	*da.* there	
[Chri.-file 5]	*Kläff* Kläff	*steckt* sticks	*voll* fully	*in* in	*Glas.* glass	

Hamida. Word order variation in Hamida's narratives makes it difficult to conclusively establish the status of verb raising. Part of the difficulty is related to the coexistence of a head-initial and a head-final IP structure (we will discuss this variation at the end of this section). Sequences like (675), in which the sentence-

internal adverb appears after the main verb, suggest that main verbs raise into a position outside the VP in file 5.

(675) *Und auch eine Familie /von Frosch/ sagt auch #Tus# Tschü.*
and also a family of frog says also bye
'And the family of the frog also bids (them) good-bye.' (Ham.-file 5)

Maria. Maria's file 1 narrative provides evidence for the availability of a functional projection above the VP, the IP. Verb raising, as is documented in (676) and (658), in which sentence-internal adverbs occur postverbally, is operative from the onset of the study. Maria's development is characterised by a remarkable decrease of verb inflection errors in the course of the time span covered in this study (the error rate amounts to 11.6% in file 5), an early use of phrasal verbs with separable prefixes in the target-like sentence final position and an early integration of non-subjects into the V2 format. While the two latter properties initially coexist with alternative target-deviant patterns, the target-like option is eventually implemented by the time she produces the file 5 narrative (678).

(676) *Er läuft und der Hirsch läuft auch.* (Mar.-file 1)
he runs and the deer runs too
'He runs and the deer runs too.'

(677) *Dann der Hirsch lacht sehr laut.* (Mar.-file 1)
then the deer laughs very loudly
'Then the deer laughs out loud.'

(678) *Sie wachen am Morgen auf.* (Mar.-file 5)
they wake at.the morning up
'They wake up in the morning.'

Implementation of the IP: proposal of a learning scenario. What do we learn from the variation observed concerning structure-building and the establishment of a derivational relationship between the different structural positions verbs might appear in? Against the backdrop of our previous observations, we would like to argue here that two phenomena conspire in the eventual implementation of the IP and related grammatical processes, namely, (a) the identification of two verb positions in constructions with complex verb forms, and (b) the analysis of

phrasal verbs and distribution of their components in the clause.[9] The learning scenario we have in mind might be sketched as follows (for further illustration cf. Table 4.27 including Christa's examples):

Elementary structures (unanalysed verb forms). Learners start out with elementary structures. Elements in clauses based on this structure are thematically related to each other. Learners might have a preference to place verbs in the right or left periphery. Complex verb forms cannot be accommodated in the elementary structural domain. Phrasal verbs at this stage appear in their unanalysed form (cf. example (i)). Non-thematic verbs (modals, auxiliaries) appear attached to the available structure via adjunction (as is the case in "kann-nicht + VX" constructions discussed above).

Analysis of complex verb forms (coexistence of analysed and unanalysed forms). Next, learners begin to use constructions in which the separable part of phrasal verbs appears in a postverbal position (cf. (vi)), which can be taken as an indication of the availability of two verb positions. The status of *runter* ('down') in (vi) is difficult to determine: is this element already analysed as a separable prefix of the verb *runterfallen*? Or is it rather attributed the status of an adverb that appears in postverbal position? Alternatively, we might speculate it is erroneously attributed the status of a preposition. Note that other prepositions, notably *auf*, also appear postverbally. Other examples show that learners continue to produce unanalysed phrasal verb forms. Some appear before the adverbial (cf. (v)) or a complement marked with the preposition *auf* (cf. (iv)). Other constructions with unanalysed phrasal verbs document the continuing use of elementary structures (compare examples (ii) and (iii)).

Identification/differentiation of verb positions. The distribution of verbal elements in constructions with complex verb forms (cf. (viii)) allows learners to realise that verbs might appear in two different positions in the clause. To accommodate these verb positions, elementary structures are expanded by an additional (functional) structural layer. For those learners who deal with the analysis of phrasal verbs long before they produce complex verb forms, as is the case of Christa, the acquisition of constructions with modal and auxiliary verbs coincides with the target-like distribution of finite and non-finite elements of phrasal

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9 Notice that phrasal verbs have also been found to act as "pioneers" in other acquisition situations, notably, in the acquisition of monolingual L1 learners of German. What marks the difference between the productions of the bilingual deaf learners and those of child L1 learners is that in the productions of the former unanalysed forms appear in the sentence-second position of SVX patterns, whereas they usually appear in sentence-final position in child L1 learners.

verbs, although some occasional errors, such as the drop of the separable prefix in (vii), might still occur.

Finiteness distinction. The convergence of the development of phrasal verbs and periphrastic verb forms, which involves the analysis of the components of these verbs into finite and non-finite forms respectively, is reflected in the use of a common structure for both types of verbs. Crucially, the sentence-second position in main clauses is attributed the status of the position in which finite verbs appear in (compare examples (ix)-(xi)).

Table 4.27: Sign posts for structure-building and the relationship of verb positions: phrasal verbs and periphrastic verb forms (examples from Christa).

	IP		**INFL**				**V**
VERB RAISING	**(main verbs)**		**finite verb**	**‹two related verb positions›**			**separable part**
[File 5]							
• phrasal	(xi)	*Kläff*	*fällt*				*runter*.
verbs		Kläff	falls				down
• lexical	(x)	*Maivin*	*zogen*	*/Hose/ schnell*			*an*.
verbs		Maivin	put	trouser fast			on
	(ix)	*Kläff*	*steckt*	*voll*	*in*	*Glas.*	
		Kläff	sticks	completely	in	jar	
VERB RAISING (aux/mod)			**AUX**	**← two verb positions →**			**Lexical verb**
[File 4]							
• periphrastic	(viii)	*Er*	*hat*	*ein*	*froschen*		*angenommen*.
verb		he	has	a	frog		accepted
forms (verb							
bracket)							
• phrasal verb	(vii)	*Der Jungen*	*zieht*	*sich*	*schnell.*		
(prefix is		the boy	dress	himself	fast		
dropped)							
VARIATION			**INFL**	**VP**			
[File 3]							
• unclear	(vi)	*Dolly*	*fall*	*runter*	*Wiesen.*		
status of		Dolly	fall	down	prairie		
separable							
part							

Table 4.27: continued

		IP	INFL			V
VERB RAISING		(main verbs)	finite verb	<two related verb positions>		separable part
• unanalysed phrasal verb with post-verbal adverb	(v)	*Billy* Billy	***anziehen*** put.on	*sehr* very	*schnell* fast	
• unanalysed phrasal verb with preposition	(iv)	*Am Abend Billy, dolly,* at.the evening Billy Dolly	***ansehen*** at.look	*auf* on	*Dill.* Dill	
				Am Dolly in.the	*Morgen Billy und* morning Billy and	***aufstehen*** up.get
• unanalysed phrasal verbs	(iii)		Dolly			
	(ii)		*Billy* Billy		***runter*** down	***fallen***. fall
ELEMENTARY STRUCTURES			***VP***			
[File 1] • unanalysed phrasal verb	(i)		*Am Abend ein Frosch **aussteigen** auf dem Glas* in evening a frog out.climb on the glass			

A final note is due in this context concerning the headedness of the IP. In our discussion of how learners expand their initial VP structure we have been concerned with the processes leading to the implementation of additional structural positions and identification of the nature of their relationship, which, in turn, reflect the application of grammatical processes such as verb raising. Thus far, we have not been explicitly concerned with potential learning problems pertaining to the task of setting the target-like value for the IP headedness. Recall that in the acquisition of German, which is a language that displays an asymmetry regarding verb placement in main and embedded clauses, the evidence regarding the headedness of the IP in the input is not as straightforward as in other V2 languages with a symmetric sentence structure (Yiddish or Icelandic, for example). In addition, because the participants of this study are acquiring two verb-final languages we

might expect a "conspiracy" between both, so that learners would set the IP to the head-final value, which would be reflected in a preference of verb-final structures. However, the analysis of the data reveals that this is not the case. Quite to the contrary, we observe a general lack of variation concerning the head-initial position of INFL, which is also reflected in the few complementiser introduced clauses produced at the time.

There is, however, one participant, Hamida, who seems to be dealing with two alternative structural formats that differ with respect to the headedness of the IP: lexical and non-thematic verbs appear either at the left or at the right periphery of the sentence in her written productions. In some cases (cf. (679)), Hamida's sequences appear to involve a blend of a head-initial and a head-final IP. It seems as if the L2 syntax is overgenerating by providing two positions for finite verbs to appear in.

	IP initial <			-------------------------------------->				IP final
	[XP		]$_{SpecIP}$ [X]$_I$	[XP	]	[XP		]	[X]$_I$
(679)	*eine*	*Hund*	***hat***	*ein*	*glas*	*auf*	*den*	*Kopf*	***sind***.
	a	dog	has	a	glass	on	the	head	are

'A dog has a glass on his head.' (Ham.-file 2)

Does this variation reflect a confusion regarding German word order? After all this variation is not apparent in the narratives of the other participants. However, if we consider the evidence gathered in the domain of child language acquisition, the diversity of main clause formats in Hamida's written productions is not so extraordinary. Recall that some L1 learners, as, for example, the child 'Max' produce a similar diversity of sentential formats, including V1, V2 and V-end (see section 4.5.2). Moreover, structural blends have also been found in the data of young children acquiring German in a monolingual (680)-(681) or bilingual context (682). Some authors have remarked on the coexistence of alternative structural formats that remain to be integrated (cf. Tracy 1991 with respect to the monolingual acquisition situation), viz. differentiated (cf. Tracy 1991, 2002; Döpke 2000 regarding the bilingual development). As the apparent alternation continues to occur until the end of the recording time, we cannot establish whether or not Hamida succeeds in this task.

(680)	*mach*	*ein*	*großen*	*PILZ*	*gemach*	(Julia 2;4 24)
	make	a	big	mushroom	made	

(681)	*Wo-s*	*die*	*laTERne*	*tracys*	*laTERne*	*is/*	(Julia 2;3 27)
	where-s	the	lantern	tracy's	lantern	is	

(Tracy 1991: 240, my transl.)

(682) *du   kannst   sitzen   vorn   hier   sitzen*
     you   can   sit   in front   here   sit
     'you can sit up here'   (Döpke 2000: 96, her transl.)

4.11.2.3 Signs of variation: verb inflection morphology

In our discussion of individual written German profiles, we paid special attention to subject-verb agreement in order to establish whether or not the mastery of verb inflection goes along with an increasing complexity at the syntactic level and the attainment of the finiteness distinction, as is usually the case in infants acquiring German as their mother tongue. Following the assumptions put forward in current linguistic theory (see section 2.1.2), the coincidence of both developments would be expected. Alternatively, if subject-verb agreement markings are not used as a cue in the endeavour of identifying verb positions and their relation, could it be that they are acquired as a result of the grammatical processes involved in structure-building?

One of the main conclusions that can be drawn on the basis of the analysis is that participants vary regarding their overall development in this linguistic area. What is common to all of them is that they do not master the German verb inflection paradigm at the onset of the study. For further illustration of these observations consider Figure 4.23, in which the results of the error measures for each participant are put together. In general terms, we can see that all participants continue to produce errors in the domain of verb inflection by the end of the study. However, we can see that whereas the overall proportion rises in the narratives of Simon, it remains at about the same rate in the final narratives of Muhammed and Christa. For three participants, namely, Maria, Fuad and Hamida we acknowledge a decrease of the overall error rate by the end of the study.

Frequency measures of learner errors, as the ones we have provided for each participant in this study, are valuable in that they allow to discern (a) the proportion of target-deviant forms in a file as well as (b) an overall trend in the learner's development in this area. However, a closer look at the type of errors produced allows for a more in-depth analysis of the nature of the deficits. In particular, we were interested in determining (a) the status of finite forms at the onset of the study, and (b) the typology of errors produced and the development over time.

Status of finite forms at the onset of the study. Turning first to the status of verb forms produced at the onset of study, we note that some participants already produce some target-like inflected verb forms. Consider, for example, Muhammed's file 1. In this narrative 8 verb forms are target-like, all of them appearing with the 3rd person singular –*t* ending. These forms make up a relatively high proportion of target-like forms, namely, 40%. Can we take this proportion

as an indication for a rule-based verbal inflection at this stage? To answer this question we need to look more closely at the verb forms produced by Muhammed at this stage. What we can see is that correct subject-verb agreement markings at this stage appear with a selection of verbs only. As we remarked previously, target-like inflection appears with the verbs *gehen* (> *geht*, 'goes'), *sagen* (> *sagt*, 'says') and *schauen* (> *schaut*, 'looks'). The other verbs used, that is, *fallen* ('fall'), *finden* ('find'), *klettern* ('climb'), *liegen* ('lie'), *nehmen* ('take'), *reinfallen* ('fall into'), *rufen* ('call'), *suchen* ('search'), *(weg)schenchen [>*wegscheuchen*]* ('shoo away'), *wünschen* ('wish')) appear in their infinitive form. In view of the discrepancy observed, it seems plausible to conclude that verb inflection is not a productive process at this stage. So, what is the status of correctly inflected forms? In our view these forms are stored as unanalysed units in the lexicon in addition to non-finite forms, commonly infinitives, that predominate at the time. We may conclude therefore that in the acquisition of German, verbal morphology may serve as a cue for the establishment of a (derivational) relationship between the different positions verbs may appear in (Roeper 1992: 351). However, the apparent dissociation of the acquisition of verb second and the correct morphological realisation of subject-verb agreement in some learners provides evidence against a uni-directional cause-effect relationship, as would be assumed within the lexical learning hypothesis (cf. Plaza-Pust 2000 for an extended discussion and also Hohenberger 2002: 141).[10]

Typology of errors and development over time. From a developmental perspective, we are interested to determine whether and how learners progress in the area of verb inflection. We noted previously that errors continue to occur by the end of the recording time, although with a similar or even lower frequency rate. Only for one participant, Simon, we observe a dramatic increase of errors toward the end of the study.

Given the theoretical underpinnings of the relation of verb raising and subject-verb agreement and finiteness, the apparent variability concerning inflectional morphology raises the question whether the mechanisms assumed to apply in young children's first language development are missing in this type of acquisition situation. In the domain of the acquisition of German as a first language, inflectional morphology has been assigned a triggering effect for V2 by some authors (cf. Clahsen 1988, 1992), while others have argued against this connection on theoretical and empirical grounds (cf. Prévost & White 2000; Jordens 1990, 2002). Indeed,

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10 On theoretical grounds, the apparent dissociation is also compatible with the variation encountered across V2 languages. As pointed out by Schaner-Wolles (1994: 216), Afrikaans is a V2 language without overt verbal inflection (cf. also Vikner 1995, 1998).

some children exhibit a liberal use of the different positions verbs may appear in and produce finite forms in sentence second and final position. While the latter phenomenon tends to predominate in the data, there is also evidence of non-finite forms appearing in V2 contexts, see examples (683) and (684).
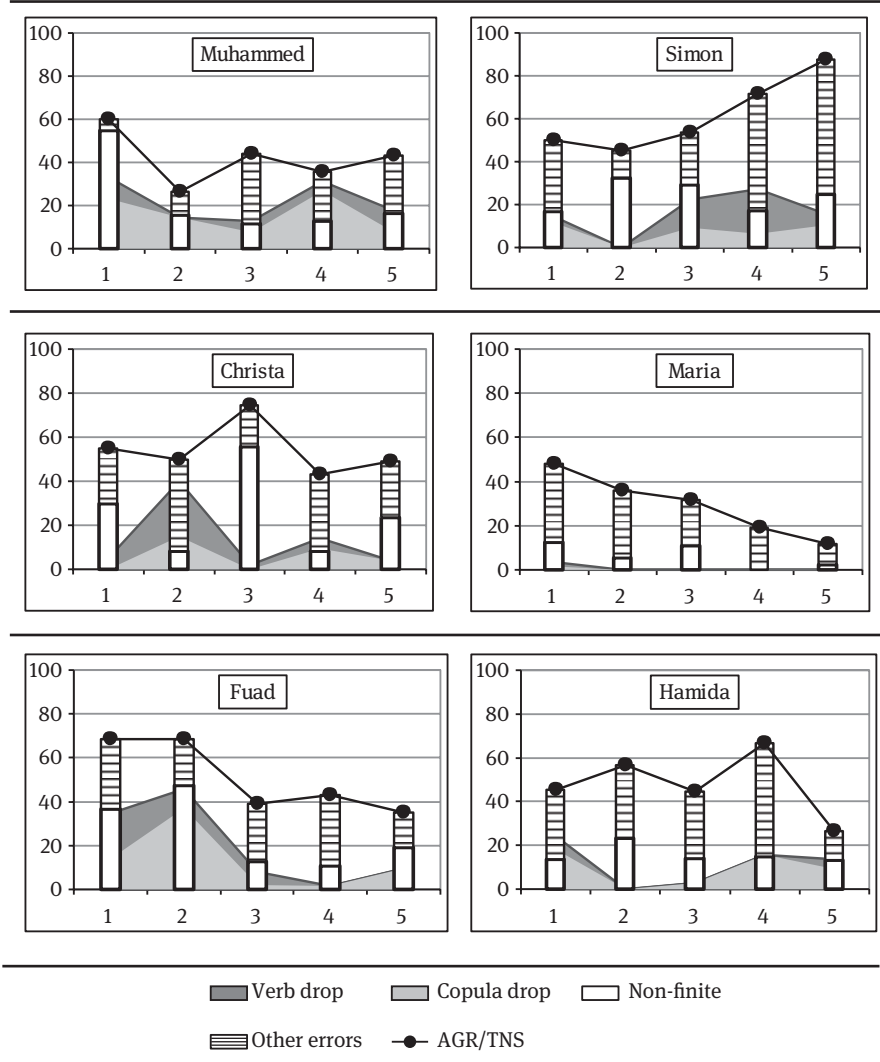
Figure 4.23: Proportion of verb inflection errors and verb drop in participants' files 1-5.

(683) *Mama   aufmachen*[-fin]   *de   Kran*   (J/2;4.20)
mommy   open   the   crane   (Schaner-Wolles 1994: 212)
'mommy is opening the crane'

(684) *Da   essen*[-fin]   *die   Kuh*   (J/2;5.7)
there   eat   the   cow   (Schaner-Wolles 1994: 212)
'the cow is eating there'

The persistent variation concerning the use of finite and non-finite forms in the data of the present study is reminiscent of the variable use of agreement morphology in adult second language acquisition. In this domain of research, the apparent optionality has been subject to a controversial debate (Plaza-Pust 2000). Basically, two assumptions can be distinguished. Following the Missing Inflection hypothesis, the variability results from "difficulties in identifying the appropriate morphological realization of functional categories" (Prévost & White 2000: 108). Learner errors would thus pertain to the surface morphological level in that they reflect a problem regarding "the mapping of abstract features to their surface morphological manifestation" (Prévost & White 2000: 108). Alternatively, variability is related to a lack of (cf. Meisel 1991) or erroneous specification (cf. Eubank 1992) of the relevant functional categories, an assumption dubbed "Impaired Representation Hypothesis" by Prévost and White (2000: 110).

In line with Prévost and White (2000: 125) we assume that those learners who established the IP in their learner grammars use non-finite forms as default forms in finite contexts as these learners provide evidence of a knowledge of finiteness and the relating syntactic processes (verb raising, V2). It is assumed therefore that these forms "behave syntactically like finite verbs" (Prévost & White 2000: 108). The data do not confirm the random use of these forms as predicted by the "Impaired Representation" Hypothesis. Finite forms do not appear in the right-peripheral position, with the exception of those learners, whose IP headedness is mobile, as is the case of Hamida. Additionally, we observe a developmental progression in the target-like use of finite forms.[11]

Indeed, a detailed analysis of the types of error produced makes apparent that errors that appear idiosyncratic at first sight represent recurrent phenomena. As we can glean from Table 4.28, which provides an overview of the error types

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11 As pointed out by Prévost and White (2000: 129) child first and adult second language acquisition coincide in the progressive replacement of default forms by target-like inflected forms. However, while children eventually give up the use of non-finite forms in finite contexts, adult L2 learners do not or not always do so, which marks a difference between both acquisition types. For a discussion of the potential reasons see Prévost and White (2000: 129 f.).

identified, the range of errors is limited. It is important to note that not all participants produce all types of error and that the frequency varies inter-individually.

Table 4.28: Error types in the domain of verb inflection.

Error		Examples						
Infinitive	(i)	*Markus*	***sehen***	*da*	*loch*			(Sim.-file 3)
		Markus	see	there	hole			
Copula with finite or infinitive form of lexical verb	(ii)	*der*	*Junge*	***sind***	***schlafen***			(Ham.-file 1)
		the	boy	are	sleep			
	(iii)	*Reh*	***ist***	***lacht.***				(Sim.-file 3)
		deer	is	laughs				
Default form (*-e* or -ø endings)	(iv)	*Marukus*	***schaue***	*auf*	*der*	*Hund.*		(Sim.-file 3)
		Marukus	look.at	on	the	dog		
	(v)	*Oh*	*wo*	*ist*	*Bubi*	***sage***	*Max*	(Mar.-file 1)
		oh	where	is	Bubi	say	Max	
	(vi)	*ein*	*Junge*	***heiß***	*Max.*			(Mar.-file 1)
		a	boy	is.called	Max			
Subject-verb person/number mismatch	(vii)	*Jason*	*und*	*Peter*	***hat***	***geruft.***		(Fua.-file 4)
		Jason	and	Peter	have	called		
Auxiliary with infinitive form of lexical verb	(viii)	*weil*	*Frosch*	***ist***	***verschwinden.***			(Ham.-file 3)
		because	frog	is	disappear			
	(ix)	*Dann*	*Junge*	***hat ##***	*Eule*	***angreifen.***		(Ham.-file 3)
		then	boy	has	owl	attack		
	(x)	*Der*	*Hund*	***hat***	*zurest*	***wachen.***		(Chri.-file 4)
		the	dog	has	first	wake.up		
Auxiliary with finite form of lexical verb	(xi)	*Dayel*	*und*	*Kalle*	***haben***	*ein*	*Frosch* ***schaut***	
		Dayel	and	Kalle	have	a	frog looks	(Muh.-file 3)
Modal with finite form of lexical verb	(xiii)	*Paul*	***will***	***schaut.***				(Fua.-file 3)
		Paul	wants	looks				
Modal – past participle	(xiiii)	*Jason*	*und*	*Peter*	***wollen***	***geschlafen.***		(Fua.-file 4)
		Jason	and	Peter	want	slept		
Past participle with auxiliary drop	(xiv)	*Der*	*Hund*	***gefreut***	*weil*	*(...)*		(Ham.-file 4)
		the	dog	happy	because			

Regular inflection with irregular verbs
  - main verbs
  - modal verbs
	(xv)	*Max*	***seht***	*da*	*ist*	*Bello.*		(Mar.-file 1)

		Max	sees	there	is	Bello		
	(xvi)	*weil*	*eine*	*Eule* ***wollt***	*schrech machen auf Jason.*			
		because	a	owl wanted	fright make on Jason			(Fua.-file 4)

Table 4.28: continued

Error	Examples					
Past participle formation	(xvii) *Jason* Jason	*und* and	*Peter* Peter	**hat** has	***geruft.*** called	(Fua.-file 4)

Furthermore, we might look at the erroneous verb forms in terms of the information they encode or fail to encode. Based on the assumption that the mastery of target-like inflection involves the interaction of several grammatical modules, errors reflect the remaining deficits in this respect. A differentiation of the errors along these lines derives a typology of target-deviant forms according to the type of information that is encoded (cf. also Table 4.29) (capital letters in brackets relate to the examples listed in Table 4.28, they are also included in Table 4.29):

Lexicon (no interface information) [A, B]:

Non-finite forms (infinitives) used as default forms are retrieved directly from the lexicon. They might appear in combination with expletive forms of the copula. The status of the copula is unclear (does it serve as a tense marker?).

Syntax-morphology interface (partial) [C, D]:

Default and mismatch errors occurring at a time when the finiteness distinction is available (distributional/syntactic criterion) reflect a deficit at the interface between morphology and syntax as person-number encoding is still problematic (subject-verb agreement/morphological distinctions).

Syntax-lexicon interface [E, F, G, H]:

Erroneous verb combinations of auxiliary and modal verbs with finite/ infinitive/ participle forms reflect the availability of the finiteness distinction but indicate that deficits remain at the level of the lexicon (selective properties) and morphology (participle formation). Target-like inflection of the finite verb parts indicates that subject-verb agreement is operative.

Morphology-lexicon interface [J, K]:

Failure to correctly inflect irregular verbs (finite forms or participles) reflects a rule-based verb inflection (morphology) but indicates a deficit at the interface between morphology and the lexicon.

In sum, the mastery of the target-like inflection morphology, on the one hand, and the choice of the correct verb form to mark grammatical relations involves several grammatical modules. Learners are tackling with the interfaces between these modules. In line with the dynamic model of development presented in section 2.2.3 we might assume that feedback processes are involved. Clearly, the development is not linear, but dynamic: orderly states are followed by chaotic, which in turn might precede further orderly states. By the end of the recording

time covered in this study, the eventual convergence with the target grammar has not been accomplished by the majority of learners. Only Maria seems to have reached an orderly stage in the sense outlined.

Table 4.29: Typology of verb inflection errors and information encoded from the different modules (ü= operative, è = problematic).

LEXICON ←→		SYNTAX ←→		MORPHOLOGY
✓ lexicon (unanalysed forms)	✓ lexicon	✓ lexicon	➜ lexicon (selective prop.)	➜ lexicon
➜ syntax	➜ syntax	✓ syntax (distribution)	✓ syntax AGR/TNS	✓ syntax
➜ morphology	✓ morphology	➜ morphology ➜ syntax-morphology interface	➜ morphology ➜ syntax-lexicon interface	➜ morphology ➜ morphology-lexicon interface
[B] cop.–infinitive − expletive copula forms − copula = tense marker?	[I] Aux drop − rule-based participle formation − undefined syntactic position for finite verbs	[D] AGR mismatch − finite, inflected forms	[E, F, G, H] aux / modal – lex. verb − aux – infinitive − aux – finite v. − mod – finite v. − mod – participle	[J] irregular infl. − lexical specifications
[A] infinitives − unanalysed forms − one lexical entry		[C] default forms − first signs of morphological analysis		[K] irregular p.-part. − lexical specifications

4.11.2.4 Inter-modal go-betweens: language borrowing and the unclear role of LBG

Candidates for language mixing at the time when learners are dealing with the implementation of the IP reflect learners' pooling of resources.

Agreement: overgeneralisation of "auf". Verb raising to INFL is tied to the feature checking (agreement, case-marking). As mentioned previously, the participants' overt marking of subject-verb agreement varies throughout the recording time. With respect to the relation of the verb and its complement arguments, the data reveal that during the phase in which grammatical processes relating to the IP become available there is a remarkable increase of constructions with the preposition *auf* ('on'). The diversity of constructions involving this preposition is

illustrated in the sequences produced by Fuad in file 3, repeated here for convenience (685)-(687).

(685) *Paul   fällt   auf   dem   Boden*   (Fua.-file 3)
       Paul   falls   on   the   floor
       'Paul falls on the floor.'

(686) *Tom   mag   auf   #Frosch#   Frosch   und #ac#*
       Tom   likes   on   frog   and
       auch   #Hu#   Paul.   (Fua.-file 3)
       also   Paul
       'Tom likes the frog and Paul, too.'

(687) *Paul   schusbe   auf   dem   dünne   Baum*   (Fua.-file 3)
       Paul   push   on   the   thin   tree
       'Paul pushes the thin tree.'

As we can see, *auf* is correctly used to case mark the object with verbs that subcategorise for this preposition (685). However, examples (686) and (687) suggest that *auf* serves a more general function, namely, the one of marking the relation between transitive verbs and their objects. It is interesting to note in this context that the use of *auf* in the sense outlined previously is also remarked upon in the study on written German skills of bilingually educated deaf students in Hamburg (cf. Schäfke 2005: 273, Günther et al. 2004: 241f.), which provides additional support for the assumption that patterns of mixing relate to the language systems bilingual children learn (Genesee 2002: 187). In other words, language mixing is not a random, but a systematic phenomenon.

By assumption, as we advanced in Plaza-Pust (2008b) three phenomena conspire in the use of *auf* as a free morpheme to express this grammatical relation, namely, (a) the borrowing of DGS PAM which is commonly translated as AUF (686), (b) the analysis of the morphological components of agreement verbs in DGS and subsequent translation into German through the use of the German case-marking preposition *auf* (687), and (c) the remaining gaps regarding the German case-marking and determiner system.

While a detailed discussion of the acquisition of the case and determiner system is beyond the scope of this study, it is worth mentioning that the data gathered show that this area, like the domain of inflectional morphology, remains to be mastered by the end of the recording time. Participants use articles, but errors in case and number indicate that the choice occurs randomly. It seems plausible to assume therefore that the use of *auf* to overtly express the relation of the

verb with its complement is used to fill the gap regarding the target morphology.[12] Having said this, however, we must also take up our previous observations in chapter 3, dedicated to the participants' DGS competence, in which we remarked upon a generalised erroneous use of PAM with a target-deviant word order (basically, PAM seems to prompt the choice of an SVX format) (cf. section 3.11.1.1).

Hence, it seems, borrowing occurs in both directions as in either language the respective element is associated with properties of the other language. Given the advanced level of DGS of the participants in this study this is a somewhat surprising finding. While we cannot ultimately determine the origins of this phenomenon we might speculate on the influence of *third* factor, that is, the third code these bilingual learners are exposed to, namely, LBG. Could it be the case that AUF (with the corresponding mouthed element) is used in the communication via this signed system as a hybrid element that eventually influences the status of both PAM and *auf* in DGS and written German respectively? Unfortunately, we have to leave this question unanswered because we have no reliable data on the LGB input and output in the communication of the participants with their interlocutors. It is interesting to note, though, that the feedback obtained from some members of the teaching personnel basically confirms the use of this element as a case marker by teachers and students.

Determiners: "da". In a similar vein, though less consistently, the adverb *da* is used with the function the determiner DET$_{EXIST}$ (often notated as DA) would fulfil in DGS (that is, the establishment and maintenance of reference). Consider, for example (688), produced by Muhammed in file 4, in which *da* appearing to the right of the subject mimics referential establishment as it would occur in DGS. In this case, too, it seems, an element of the host language is used to serve a function it would fulfil in the source language.

(688) *Paul   da   auch   fallen   in   Wasser.*   (Muh.-file 4)
        Paul   there   also   falls   in   water
        'Paul also falls into the water.'

Copula drop. The range of variation produced during the reorganisation phase tied to the implementation of the IP includes verbless clauses which would

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12 As we remarked upon in Plaza-Pust (2008), *auf* serving the function of an overt case marker is reminiscent of the function served by the preposition *of* in English (compare "Poirot is envious *of* Miss Marple" in which the preposition assigns accusative case to *Miss Marple*, cf. Haegeman 1994: 173). Moreover, as *auf* is available in German, learners are easily tempted to overtly mark grammatical relations at this stage which is in line with the insights gathered in other acquisition situations in which learners temporarily make these relations transparent (A. Hohenberger, pers. communication).

require the use of the copula verb *sein* ('to be') in German, a phenomenon that was already remarked upon in our discussion of the learners L2 grammar at the VP stage. Recall our call for caution in that context owing to the observation that copula drop also occurs in the early productions of other learners of German. Presently, as copula drop continues to occur at a time when more advanced structures are available we are confronted once again with the task of determining the origin of this persistent phenomenon.

Summarising, our analysis of copula drop at this stage reveals that this phenomenon typically occurs (a) in clauses with the adverbial *da* ('there') or prepositional phrases and (b) in predicative constructions. At closer inspection the following scenarios become apparent:

Copula drop in predicative constructions. One participant, Christa, provides no evidence of a productive use of the copula in predicative constructions. Christa uses the suppletive form *ist* ('is') as of file 2 in combinations with *da* ('there'), *das* ('that'), *wer* ('who'), and, in file 4, with the expletive *es* ('it') (see example (689)). However, she consistently drops the copula with predicative adjectives (compare (690)).

(689) *es   ist   nicht   da.*   (Chri.-file 4)
       it   is   not   there
       'It is not there.'

(690) *Der   Jungen   böse   auf   seine   Hunde.*
       the   boy   angry   on   his   dog
       'The boy is angry with his dog.'   (Chri.-file 4)

Copula drop after overgeneralisation. Another participant, Simon, initially uses the copula in a range of target-like contexts, including predicative constructions, but also in combination with main verb infinitives. The alternation of sequences with and without a copula involving the same items as illustrated in (691) and (692) occurs as of file 3, in which the rigid SVX sentential pattern is given up and the incidence of verbless clauses increases.

(691) *Die   Eule   sauer   auf   der   Jungen.*   (Sim.-file 5)
       the   owl   angry   on   the   boy
       'The owl is angry with the boy.'

(692) *Der   Junge   ist   sauer   auf   Reh.*   (Sim.-file 5)
       the   boy   is   angry   with   deer
       'The boy is angry with the deer.'

Alternation of copula drop and target-like copula sequences (copula drop after target-like use). The drop of the copula alternates with the target-like use and is

restricted to certain contexts, in particular, constructions involving *(nicht) da* or *weg* ('(not) there'; 'gone'), as is the case in the narratives of Fuad (693) and Hamida (694).

(693) *Tom steht auf dem /großen/ Stein dann weg Eule*
     Tom stands on the big stone then gone owl (Fua.-file 5)
     'Tom stands on a big rock. Then the owl is gone.'

(694) *Plötzlich nicht da.*   (Ham.-file 5)
     suddenly not there
     'Suddenly he (the frog) is not there anymore.'

Clearly, what these scenarios indicate is that the drop of the copula at the VP stage, which is ambiguous regarding a potential influence from DGS given the lack of functional elements in the learner grammars at that stage, needs to be distinguished from the persistent drop of the copula at later stages. Participants produce these verbless clauses *and* target-like constructions in which they demonstrate their knowledge of a variety of contexts the copula is used in German. Thus, copula drop at this stage is indicative of a coexistence of diverse grammatical options that might be reinforced by the grammatical properties of DGS which lacks copula verbs. As pointed out by Tracy (2000: 25), for those errors that are also attested in monolingual acquisition of German the question arises as to whether bilingual children might take more time in "correcting misanalyses", especially in the case where the other language reinforces the erroneous hypothesis (cf. also Müller 1998).

    Lexical borrowing. Participants produce a series of verbless clauses containing expressions like *Angst* ('fear') (695) or *bescheid* ('information') (677) which are indicative of language mixing at the lexical level: both languages include lexical elements to express 'to be frightened' or 'to let sb. know', but the lexical overlap is only partial as German, unlike DGS, does not have a verb to express the meanings, but uses periphrastic verb-noun combinations instead (i.e. "Angst haben", "Bescheid geben"). The use of "Angst" or "bescheid" as predicates in clauses like (695)-(677) is thus indicative of the borrowing of these expressions from DGS and the lack of the target idiomatic expressions.

(695) *der Junge Angst*   (Fua.-file 2)
     the boy fear
     'The boy is frightened.'

(696) *er bescheid auf Junge.*   (Chri.-file 4)
     he information on boy
     'He informs the boy.'

It is interesting to note that this type of lexical borrowing is also observed in the narratives analysed by Schäfke (2005: 271) and Günther et al. (2004: 240f.); compare the following example (697) of a participant in their study, Thomas, who also draws on DGS. The example is remarkable in that "Bescheid" appears with the infinitive marker –*en* and is combined with the preposition "auf" (example from Günther et al. 2004: 240).

(697)	*ambert*	*beseiden*	*auf*	*andere*	*Schaf:*
	Lambert	information	on	other	sheep:
	Meine	*Mutter*	*hat*	*Wolf*	*geklaut.*
	my	mother	has	wolf	stolen

Code-switching. By assumption, learners also resort to a pragmatically driven type of mixing which would be reflected in the use of DGS-like constructions for narrative purposes. (698), produced by Fuad, seems to involve the type of role shift characteristic of storytelling in a sign language like DGS in that it mimics the thoughts of the story character.[13] However, the non-manual components used to signal the change of perspective in DGS (e.g. eye gaze, body shift) are not "translated".

(698)	*Tom*	*klar*	*jetzt*	*nach*	*Haus*	*mit*	*Frosch*	*und auch*	*Paul.*
	Tom	of course	now	to	home	with	frog	and also	Paul

'Tom (thinks) "of course, now we go home with the frog and Paul."'

(Fua.-file 3)

4.11.2.5 Individual variation in the implementation of the IP

Summarising, the variation observed in the transition from the VP to the IP grammar involves the coexistence of alternative structural patterns that are indicative of a reorganisation of the learner grammars. A similar variation was not observed in the case of Maria: Instead, the analysis of the data suggests that the IP is already established in her learner grammar at the onset of the recording. Whether or not her previous development involved a similar transition stage cannot be decided here. At the other end of the spectrum of individual variation, we are confronted with the written productions of Simon in which we find no evidence of variation along the lines described previously: this learner does not produce inflected verb forms, neither does he use periphrastic verb construc-

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13 Note that this phenomenon needs to be distinguished from the expression of direct speech which the participants in this study almost always correctly signal via quotation marks and correspondent introductory expressions like "the boy says…".

tions, and adverbs and the negator appear in the preverbal position in the narratives produced toward the end of the recording time.

4.11.3 V2, CP and the restructuring of IP

As outlined in section 4.5.2, beyond the implementation of the new structural layer on top of the VP, learners face the task of acquiring the target V2 constraint. Further, target-like question formation and the production of complementiser introduced subordinated clauses involve the projection of an additional structural layer, the CP. Following the asymmetry hypothesis of German sentence structure (section 4.1.4), finite verbs in embedded clauses are raised to a head-final IP so that their features be checked. On their way to the attainment of the full sentential structure, learners are thus confronted with the task of implementing an additional layer (the CP) and a head-final IP to accommodate the structural asymmetry of main and embedded clauses. What do the data of our participants reveal in this respect? Summarising, what our discussion of the individual developmental profiles showed is that by the end of the recording time not all learners have established the full sentential structure (CP) and only some of them adhere to the target V2 constraint.

4.11.3.1 Variation in the left periphery

One more time, the implementation of a target property, i.e. V2, is preceded by a phase during which we observe the coexistence of target-like and target-deviant properties. The production of target non-subject V2 clauses by Muhammed, Maria and Hamida is preceded by an increasing production of target-deviant V3 constructions resulting from the adjunction of non-subject XPs, mostly adverbial phrases, to the sentence-initial position (recall that V3 structures resulting from sentence-internal adverbials appearing between the subject and the verb are interpreted differently, as they reflect the non-application of verb raising). The subsequent "integration" of these elements into the sentential IP structure derives target-like non-subject initial V2 formats. This option, however, seldom occurs to the immediate exclusion of target-deviant V3. While the apparent alternation of V2 and V3 ceases to occur in Maria's file 5, and Muhammed only produces one V3 structure with the adverb *dann* in file 5, V2-V3 variation continues to occur in Hamida's last file, which is the reason we can only speculate on the eventual implementation of V2 in her case.

The apparent coexistence of alternative structural formats prior to the implementation of V2 is not only remarked upon in other studies on DGS-German

bilinguals (cf. Schäfke 2005: 285), it has also been found to be characteristic of the development of L2 German by adult learners (section 4.5.2, Plaza-Pust 2000). Further, we also remarked on recent evidence of variation in the monolingual acquisition of German which contradicts previous assumptions about the absence of such target-deviant formats in L1 learners. We may conclude therefore that variation regarding V2 is not exclusive to the acquisition situation discussed in this study but is rather tied to reorganisation in learner grammars.

4.11.3.2 Subordination and question formation

The expansion of the available structural format by the projection of the CP layer is commonly tied to the production of embedded clauses introduced by a complementiser and target-like question formation.[14] Consequently, in our analysis of the data we looked at the incidence of complex sentential structures and question formation. Now both phenomena, as became apparent in the discussion of the participants' developmental profiles, occur fairly infrequently in the data. Recall that for some participants we concluded that there was no sufficient evidence to conclusively establish the status of subordination and question formation in their learner grammars.

Subordination. Turning to subordinated clauses, it is interesting to note that the complementiser *weil* ('because') is produced early on. Typically, it appears in combination with verbless clauses at the time when the IP is not yet available, as is the case in Hamida's file 1 or Fuad's file 1. By assumption, at this stage, *weil* is adjoined to the available VP structure (recall our previous comments regarding the use of functional items despite the lack of the associated target grammatical properties). Upon the availability of the IP, word order in *weil*-introduced clauses mirrors main clause word order, which suggests that the CP is projected on the basis of the available head-initial IP. Note that in target German *weil* is the only complementiser that allows for main clause word order, but this option is restricted to SVO order. Evidence of target-like sentence final verb placement in embedded clauses is rare in the narratives collected as is the use of complementisers other than *weil*. Some learners use *wh*-word introduced embedded clauses in which the order is the same as in the equivalent direct questions or involves the drop of the auxiliary as is typical of Hamida's productions at the time. Fuad produces one *dass*-introduced embedded clause in file 4, but word order suggests that the IP is head-initial in this case, too.

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14 For proponents of the symmetric structure of German, the production of non-subject initial V2 clauses also involves the availability of a CP.

In summary, only Maria appears to have implemented the full CP structure in her learner grammar: non-subject V2, question formation and target-like embedded clauses are productive in her data. One learner, Simon, does not produce any evidence of the availability of these grammatical processes. For all other learners we can only speculate on the availability of a CP layer: *weil* remains the only complementiser used productively and question formation is restricted to the pattern "*wh*-word + *ist*". If *weil*-introduced clauses involve a CP we assume this is added to the head-initial IP available. This sentence structure not only resembles that of symmetric V2 languages like Yiddish and Icelandic (cf. Vikner 1995), it is also attested in the learner grammars of adult learners of L2 German (cf. example (699)) (Plaza-Pust 2000: 244f.). Recall in addition (cf. section 4.3.3) that individual variation has also been found to occur occasionally in the productions of children acquiring L1 German. Embedded clauses with complementisers other than *weil* exhibit target-like word order in Christa and Fuad. Yet the few instances produced are insufficient to establish whether the IP in CP structures is set to the head-final value in their learner grammars.

(699) *wenn* *dies* *geht* *kaputt* *das*   (L2 learner) (ibid. 245)
       if   this   goes   broken   this
       'If it gets broken, this.'

Question formation. The lack of the mechanisms necessary for target-like question formation is reflected in the predominance of formulaic questions such as *wo ist* ('where is') and *wer ist* ('who is'). Christa and Fuad produce questions with the second person suppletive form of the copula verb *sein*. As the question is the same as the title of the story and no other instances are produced we can only speculate on whether the necessary mechanisms are productive. It seems plausible to assume, however, that they are "within reach".[15] Only Maria produces yes-no questions which provides further evidence that the mechanisms necessary for question formation are productive (compare example (700) repeated here for convenience).

(700) *möchst* *du* *mit* *uns* *zu* *Hause* *gehen?* *sagt* *Tom.*
       want   you   with   us   to   home   go ?   says   Tom
       'Do you want to come home with us?'   (Mar.-file 5*)*

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15 This holds especially in the case of Fuad who produces the first instances of non-subject V2 in file 5. Note, however, that Christa does not produce such sequences in the narratives collected.

4.11.3.3 Language mixing

The observation that the type of structures borrowed basically reduces to DGS-like idiomatic expressions once the IP is established is indicative of the circumstance that borrowing at the structural level is not required at this stage. The only mixed grammatical property that continues to prevail in the stories at a more advanced level concerns the overgeneralisation of *auf*, a phenomenon that comes as no surprise given the continuing lack of the target agreement and case marking paradigms. Further, the use of verbless clauses at this stage shows (a) that previous, more elementary grammars continue to be available and (b) that lexical gaps are filled by borrowing expressions from DGS.

5 Sign bilingualism as a challenge and as a resource

As we set out to conclude the present study on sign bilingualism we are left with an intricate picture of this particular type of bilingualism, still largely unknown to the wider scientific community, that reveals itself as an extraordinary domain of research. Sign bilingualism, as we have learned throughout the preceding chapters, is not only an intricate phenomenon to investigate because it involves languages with different modalities of expression but also because its development and maintenance depends on a complex interaction of internal and external factors.

5.1 Toward a cross-disciplinary view of sign bilingualism

With the present work we have sought to contribute to a better understanding of this type of bilingualism that is neither territorial nor commonly the result of parent-to-child transmission by adopting a cross-disciplinary perspective. We have elaborated on the main theoretical issues in the domains of bilingualism, education and language acquisition in order to obtain further insights into the factors that shape the development and maintenance of sign bilingualism.

In the first part of the study (chapter 1) we discussed the main hypotheses about bilingualism as a societal phenomenon. We identified the variables that distinguish different types of bilingualism at the societal level, and the types of language planning measures that may be adopted in a given social space. This provided us with the necessary framework to identify the factors that determine the development and maintenance of sign bilingualism at the societal level. We dedicated the remainder of the chapter to education, the key domain of language policy. We examined the main aims of bilingual education and the spectrum of its variation before we turned to bilingual models of education catering for deaf children, focusing first on the developments leading to the implementation of sign bilingual education programmes from a historical perspective before subjecting variation in sign bilingual education to a critical appraisal. The second part of this work concerned the evolution of sign bilingualism from a developmental linguistics perspective (chapters 2-4). We elaborated on the theoretical framework required for the investigation of the bilingual acquisition of a sign language and an oral language in deaf learners (chapter 2) and discussed the main findings obtained in our longitudinal investigation of the acquisition of DGS and German in bilingually educated deaf students (chapters 3 and 4).

All in all, the cross-disciplinary study of sign bilingualism reveals how a complex interaction of sociolinguistic, educational and psycholinguistic factors shapes the linguistic profiles of deaf individuals. In many respects, as becomes apparent throughout the chapters of this work, sign bilingualism represents not only a challenge but also a resource.

5.2 Sign bilingualism as a challenge

Over the last decades, the vitality of sign languages and, by extension, sign bilingualism, has been marked by seemingly contradictory processes (chapter 1). Changes in the area of information and communication technologies as well as an increased social and economic mobility have affected the life style and the social behaviour of deaf individuals, providing new opportunities for communication and congregation. Changes in the educational area, notably the general trend toward the preference of integration over segregation, have reduced the relevance of educational institutions for the intra-generational transmission of sign languages. Further, developments in the medical sciences and hearing aid technology have affected the size of the population of sign language users. Factors like these are indicative of the vulnerable dimensions of a type of bilingualism that is neither territorial nor commonly the result of parent-to-child transmission. Other developments, by contrast, make apparent how the vitality of a language can be enhanced through the empowerment of its users.

The gradual self-assertion of deaf individuals in the last decades of the 20th century has led to an increased perception of the deaf community and sign language in the society at large. The recognition of the deaf community as a linguistic minority group involves a change in the status attributed to a group hitherto characterised as a disability group. Historically, these developments are tied to the insights obtained into the nature of sign languages in linguistic research and to sociopolitical developments leading to the empowerment of linguistic minorities. Deaf activism has gained momentum in the course of the last years. The symbolic value of sign language as a marker of social identity lies at the centre of the notion of the deaf community as a linguistic minority group, and solidarity, based on the concept of attitudinal deafness, underlies the development of the more global concept of Deafhood.

The status of sign languages, their provision and use have been affected by activities of different stakeholders involved in sign language planning (section 1.2.3). The codification of the language, the elaboration of teaching/learning materials and the training of sign language teachers and interpreters are among the tasks that need to be tackled to raise the status of the language and to promote its

inclusion in the education of deaf students. Among the most controversial activities are those that affect the development of the language. Although standardisation processes commonly follow from a functional expansion of the language, which creates a demand for the development of new terminology and registers, communication problems may arise in diverse situations, materials developed might not be effective and ethical dilemmas need to be confronted in the choice of a particular variety of the language. Part of the shortcomings encountered are related to the circumstance that the measures adopted are seldom elaborated and implemented through a coordinated action of all relevant stakeholders.

Despite the more local variables that distinguish the situation of sign languages and their users in diverse countries, there is agreement that both top-down and bottom-up activities are needed for the maintenance of sign bilingualism and its recognition on a par with other types of bilingualism. Furthermore, we have argued in favour of a sustainable type of planning in terms of a holistic approach that would be characterised by coordinated action and involvement of all actors, taking into consideration also the broader socio-political context.

5.2.1 The changing status of sign language in deaf education

External factors, notably education, gain a crucial significance in the path toward bilingualism of deaf individuals. Because of the rather infrequent parent-to-child sign language transmission pattern and the unequal accessibility of the languages involved supportive measures are necessary for the promotion of either language in deaf learners. The bilingual promotion of deaf students is a relatively new phenomenon in deaf education. First established in the 1980s, sign bilingual education programmes have been implemented in various countries throughout the last decades. Today, sign bilingual education, though consolidated as an option in the education of deaf students, continues to represent the exception rather than the norm. The inclusion of sign language remains controversial and vulnerable to developments in the sociopolitical and medical areas.

To understand the relevance of sign bilingual education programmes as well as the factors that work against a more widespread distribution of the bilingual option in deaf education it is necessary to examine the developments leading to the implementation of these programmes in the late 20th century. Further, current challenges and future perspectives need to be elaborated on the basis of a critical appraisal of how sign bilingual education is put into practice.

Deaf education, as historical records make apparent, has been divided from its beginnings between the aim of catering for the specific needs and abilities of deaf children and the objective of remedying hearing loss (cf. Plaza-Pust 2016).

Over the centuries, views about deaf individuals and their education have changed, influenced by developments in the society at large pertaining to (a) changes in the understanding of the relation of the individual and the surrounding society, affecting also conceptions of disability, as well as to (b) socio-economic and socio-political changes leading to the establishment of educational institutions in charge of children's socialisation into a common cultural world.

By the end of the 19th century, as became apparent in our sketch of the main developments in the history of deaf education, education reached many more deaf children than it had been the case ever before. Other changes pertained to the people and institutions in charge, the languages used for instruction and the language skills promoted. In our discussion of the main changes in the evolution of deaf education we remarked on two major shifts of perspective. Beginning with a focus on the teaching of the written language, the early history of deaf education is marked by a change of perspective upon the dissociation of deafness and dumbness toward an emphasis on speech and spoken language development in deaf students. The second major shift of focus from vision to audition is reflected in the orientation toward unisensory (auditory-verbal) approaches to deaf education. The recognition that only few deaf individuals suffer a complete hearing loss, and advances in the development of hearing aid technology furthered the spread of auditory-verbal approaches.

A second major strand pertains to the changing status of signs and sign language in the teaching of deaf students. Manual means of communication, in particular in the form of manual alphabets, had been used by the first known teachers of deaf students. Later, sign language was considered as the natural language of deaf individuals by de l'Epée and the professionals who worked in his tradition. However, the use of sign language in the teaching of deaf students was rejected by advocates of the oralist approach, for whom deaf education was exclusively oriented toward the promotion of the spoken language.

Manualism and oralism, the two educational philosophies that emerged as of the late 18th century and were discussed throughout the 19th century continue to determine the field of deaf education today. The resolution passed at the congress held in Milan in 1880, in which the use of signs in the education of deaf students was rejected, paved the way for the predominance of oralism which prevails today. Throughout the 20th century, the oralists' rationale and infrastructure, covering the medical and educational areas, have worked towards the exclusion of sign language in deaf education, thereby denying the majority of deaf individuals the opportunity to become bilingual and to develop dynamic and diverse affiliations in distinct communities, as it is known to be the case of other bilingual individuals. What is more, unisensory approaches have gone so far as to deprive deaf children from the maximal use of all their senses by exclusively promoting their

listening potential. The use of sign language is rejected upfront by pointing to alleged negative effects it would have on the development of deaf children in different domains: sign language would not only affect deaf children's social development (by alienating them from the hearing society), and their oral language development (because it would become their predominant means of communication), but also their brain organisation (owing to the competition of resources in the processing of visual and auditory input). Although these arguments are empirically unfounded, they continue to be used in the ongoing campaigning against a bilingual promotion of deaf students (cf. Plaza-Pust 2016).

As for the outcomes of monolingual oral education, there is a continuing discrepancy between the expectations raised at the programmatic level and the results obtained (cf. Plaza-Pust 2016). Despite rather modest results, the monolingual oralist rhetoric continues to perpetuate the myth of a deaf child that can be turned into a hearing child through oralist education and medical intervention. Despite the ideological power of oralist discourse, the longstanding monopoly of monolingual oralist education was broken in the late 20th century with the implementation of sign bilingual education programmes in several countries.

Before we turn to bilingual education conceptions a note is due on so-called total communication approaches which involve the use of (natural and artificial) signs in combination with speech, to represent oral language elements. By emphasising the relevance of communication for the child's emotional, cognitive, linguistic, and social development, the TC approach constitutes a child-centred approach that departs radically from monolingual oralist approaches exclusively oriented toward remedying hearing loss. With a focus on the communicative needs and abilities of deaf children, the core tenet of this educational approach, as the notion of total communication suggests, is that all means of communication should be used in the interaction with the deaf child. Advocates of the TC approach justify the use of signs as a means to improve communication in the classroom. Further, the simultaneous use of signs in combination with speech is assumed to make it easier for the deaf child to learn the oral language, and, hence, to enhance deaf children's literacy skills. It is also assumed to help improve parent-child communication, in particular, between hearing parents and their children.

It is important to note that the TC approach, though multisensory, is monolingual in orientation as the attainment of the oral language is the main objective. From the perspective of developmental linguistics, it is important to consider the discrepancy between the benefit attributed to simultaneous communication (to enhance the attainment of the oral language) and the function it ultimately serves, namely, that of a hybrid communication medium. This discrepancy makes apparent that communication systems are often confounded with natural lan-

guages, in particular, in the educational domain, where the lack of success of this method is generally attributed to inconsistency and variability in the use of mixed systems. From a developmental linguistics perspective, however, the incongruity of the input learners are exposed to raises concerns about the learning problems this might pose. Signed systems do not simply duplicate the spoken language in another modality. Not only are these systems inconsistent with the way spatial languages work. What is more critical is that their use leads to paradoxical learning situations as it requires knowledge of the languages whose acquisition they are supposed to enhance.

5.2.2 Modelling bilingualism and deafness in education

The (re-)introduction of sign language in deaf education as of the late 20th century is related to broader social developments pertaining to such diverse issues as the status of linguistic minorities and language rights, models of disability, and equity of access in education. Changes in the attitudes towards these issues in the society at large, in turn, affected the views of deaf individuals about their bilingualism and their language rights.

Based on the distinction of bottom-up, top-down, and holistic language planning scenarios elaborated in section 1.2.3, our comparison across countries regarding the agents involved and the activities taken in the development and establishment of bilingual education programmes reveals that in the majority of cases the inclusion of sign language is the result of bottom-up activities. Sweden marks an exception as the top-down model of language planning adopted in that country resulted in the institutionalisation of bilingual education of deaf students. Pilot programmes such as the ones established in Montréal or Berlin also represent exceptional cases in that bottom-up and top-down activities are combined. To the extent that such experimental programmes have to fulfil a political mandate to undertake concomitant research they might contribute to a more balanced information flow in the research-policy-practice axis, which in turn might work toward the eventual consolidation of the bilingual education option and its improvement.

Turning to sign bilingual education models, it is important to note that the inclusion of sign language in a bilingual approach to deaf education does not represent a monolithic phenomenon as might be expected given the specific acquisition situation of deaf learners. Notice that sign bilingual education is also used as a general notion in the scientific community and by deaf activists and related interest groups to refer to the bilingual promotion of deaf learners, whereby sign language is attributed the status of the primary language.

The systematic study of sign bilingual education, its status, distribution, and main components reveals that it is rather characterised by variation concerning when, where and how deaf learners are exposed to sign language and oral language (section 1.3.2). As it turns out, sign bilingual education programmes vary along the components identified also for other types of bilingual education, namely, (a) status of the languages, (b) language competences envisaged, (c) institutional placement, (d) students enrolled, and (e) allocation of the languages on the curriculum. Furthermore, we found that the scope of variation observed in sign bilingual education, as in other types of bilingual education, reflects different objectives and language planning models, with different actors involved in the design and in the planning of deaf education.

In our critical appraisal of the main variables determining bilingual education, we paid special attention to the status attributed to sign language. Based on the insights obtained in the area of developmental linguistics (relevance of natural input during the sensitive period, developmental sequence of sign language acquisition comparable to that observed in spoken language acquisition), there is general agreement at the theoretical level that sign language be promoted as early as possible as a primary language. However, there is substantial variation at the level of practice regarding this important requirement. While measures are taken to ensure an early exposure where sign bilingual education is institutionalised, the requirement of an early exposure is often not met in those social contexts where medical advice and early intervention continue to be predominantly oralist. Further, bilingual programmes are usually unequally distributed at the level of a country or region, and often regarded as the last resort option for students that fail in oral programmes. Consequently, what is envisaged as the primary promotion of the natural language of deaf learners often winds up in a delayed acquisition of the language in a formal environment. Variation in the exposure to the language is also determined by the type of educational placement at which sign bilingual education is offered. Students in interpreted education settings often learn the language while using the language to learn; other deaf children attending co-enrolment classes are native users of the language and do not receive additional instruction in the properties of their L1, which differs from the contrastive teaching approach adopted in the context of bilingual education programmes offered at several special schools.

Variation in the status attributed to the spoken language vis-à-vis the written language reflects diverging views about written language acquisition, on the one hand, and socio-political expectations, on the other hand. The latter are often oriented toward emphasising the role of speech in the surrounding society. Unfortunately, comparative research that would provide further insights into the models

of written language acquisition adopted by professionals and the methods they use for its teaching continues to be scarce.

Variation in the importance attributed to the bicultural component of sign bilingual education affects not only the identity of the students but also the role assigned to deaf teachers as role models (linguistically and culturally). The little attention paid to this important dimension of sign bilingualism reflects a generalised view that regards sign language primarily as a teaching tool.

With regard to variation in the type of educational placement at which bilingual education is offered we remarked on the generalised trend toward mainstreaming in most countries of the Western world. This is not to say that the more general question about the right shelter for sign bilingualism in education would have been conclusively established. Indeed, many issues remain unresolved regarding the socialisation of deaf students, their acquisition and use of the two languages, the qualification of teachers and interpreters involved in this type of education to meet the linguistic, cognitive and learning needs of deaf students. Clearly, the increasing heterogeneity of the deaf student population faces educational institutions with the challenge of catering for individual needs while ensuring equity of access for all. Because linguistic preferences cannot be determined *a priori*, catering for diversity should be conceived of in a dynamic manner, allowing for linguistic profiles to change over time. On this view, deaf children are exposed to a rich linguistic environment including the use of sign language and oral language early on. Clearly, such an approach differs radically from a consecutive adoption of different methods depending on the children's response, which often renders bilingual education a last resort option. Unfortunately, this practice is advocated by an increasing number of scholars in the field of deaf education in the current discussion about how to cater best for diversity.

In summarising, the spectrum of intervention types available throughout the world can be seen on a continuum that ranges from a monolingual (oralist) to a (sign) bilingual model of deaf education, with several intermediate options characterised by the use of signs as a supportive means or the teaching of sign language as a second language. While this situation reflects an increasing diversification of options in deaf education, we also have to acknowledge that the spectrum of options is not equally accessible at the level of a country or a region. What is more, many deaf students are confronted not only with changes in educational placement but also in educational method in the course of their school lives. From the perspective of language planning, this variation reflects the continuing lack of a coherent policy. While shortcomings at this level are often associated with a lack of recognition of the respective sign language, we also noted that the legal recognition of national sign languages in several countries has often wound up in a paradoxical situation, whereby the right of language choice is granted,

however, without a stipulation that the necessary measures be taken to make the choice possible.

From a language planning perspective, we argued in favour of a holistic model that would involve all stakeholders (i.e. administration, speech therapists, teachers, parents, deaf associations, interpreters) with the aim of guaranteeing an alignment of research, policy and practice to ensure that all necessary measures be taken (such as, teacher training, the creation of materials specifically devised for sign bilingual learners, definition of a bilingual methodology specifically devised for the promotion of sign language-oral language bilingualism). Coordinated action, as we believe, is a requisite for an effective use of the human and financial resources available. Yet, as the present study makes apparent, this holistic type of language planning is virtually non-existent when it comes to the education of deaf students. Demands, measures, and expectations of the different parties involved vary substantially. It becomes apparent also that language choice does not only involve a decision about the opportunity to become bilingual, but that it is also crucially associated with expectations of academic achievements and social integration. The spectrum of options in deaf education, much like the continuum of bilingual education options targeting hearing students, is the result of various conspiring factors. Models of bilingual education, as we learn from sociolinguistic research, reflect different values attributed to bilingualism. Between the two extreme views of bilingualism as a resource and bilingualism as a problem, there is a continuum of views on advantages and challenges associated with the acquisition and use of more than one language, which is reflected in turn in a variety of education conceptions that range from a monolingual orientation to a promotion of the two languages.

While this observation holds equally of deaf education, it is important to acknowledge that the scope of variation encountered here is determined not only by the problem-resource continuum that characterises views about bilingualism but also by variation in the conception of deafness, with a primarily pathological and a primarily socio-cultural view at the two ends of a continuum. The intersection of these two continua (cf. Figure 5.1) derives a broad spectrum of views about bilingualism and deafness. In our view, part of the remaining shortcomings we identified in our critical appraisal of bilingual education programmes result from the adoption of positions that acknowledge the use of sign language as an educational tool but do not envisage full bilingualism as an educational objective.

In this respect, we noted that the goal-oriented argumentation in favour of the inclusion of sign language (as a means to improve deaf children's social, emotional, cognitive and academic development) has proven to be fruitful to the extent that it contributed to the establishment of bilingual programmes despite the predominant trend towards mainstreaming in oral only contexts. At

the same we remarked that the eventual success of these programmes depends on a well-defined conception of sign bilingual education that takes the bilingual development of deaf students, *qua* bilingual communicators, seriously. Put bluntly, it is not sufficient to regard bilingualism as a means and sign language as an educational tool for the teaching/learning of the oral language. Where bilingualism is regarded as a temporary phenomenon deaf students' bilingualism is deprived from the multiple meaningful dimensions that make up the concept of sign bilingualism as a resource. In this respect, research needs to inform policy and practice, also, as we pointed out, about the potential remaining shortcomings, for it is only by providing critical feedback that those circumstances could be tackled that might prevent it from being implemented in a better way.
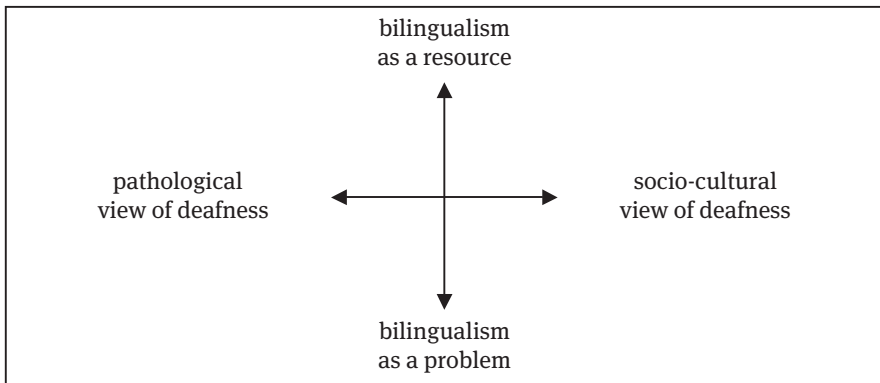
Figure 5.1: Intersection of views of bilingualism and of deafness.

5.3 Sign bilingualism as a resource

Over the last decades research conducted on language development in diverse acquisition situations, including situations of language contact, has contributed to a better understanding of how inborn language knowledge interacts with the linguistic environment in the learner's development of the target grammar. While there is a progressive convergence of the different lines of research dedicated to child monolingual, bilingual and adult second language acquisition of hearing learners, studies dedicated to deaf children's linguistic skills continue to be based for their greater part on the view that language development in this population represents an idiosyncratic phenomenon owing to hearing loss. Hence it comes as no surprise that many myths continue to abound about language acquisition

in deaf learners, ranging from the hindering effect attributed to sign language on oral language development to the lack of interaction between two languages considered to be too far apart owing to their difference in the modality of expression.

However, as we believe, circumstances that determine language development in deaf learners, though different in many respects from the (idealised) typical language learner, do not justify its study as an isolated phenomenon. Commonalities and differences between bilingual language acquisition in deaf learners and other types of bilingual language acquisition can only be identified by embedding research on deaf learners into the broader context of developmental linguistics research. The assumption implies that the investigation of deaf learners' language acquisition, the challenges they face in the course of their development, their errors and their achievements, needs to be footed on a sound theoretical framework that defines the nature of the knowledge attained and the way it is acquired, allowing also for a differentiation of the factors (internal and external) that might affect the developmental process. Only where this requirement is fulfilled will it be possible to determine whether or not sign bilingual deaf learners profit from their bilingualism, using the linguistic resources available to them in a creative manner, as it has been shown to be the case in other types of bilingual language acquisition.

5.3.1 The dynamics of (bilingual) language acquisition

The investigation of bilingual language acquisition in deaf learners requires the elaboration of a theoretical framework that accounts for what is acquired (language knowledge) and how this is achieved (learning mechanisms). We have argued that the model that accounts best for the nature of the knowledge acquired is the one developed in the framework of the generative paradigm (section 2.1). This model seeks to provide an adequate description of possible human grammars by fulfilling the dual requirement of accounting for all possible human languages (universal principles) and by complying with the learnability criterion (limited range of variation across languages).

As for the developmental *process* and the question of how to account for the transition of one developmental stage to the next (*developmental problem*) (cf. section 2.2) we have maintained that language development is characterised by structure-building processes, that is, elementary structures are progressively expanded, in accordance with the input and the available language knowledge. Furthermore, we have argued, based on a dynamic understanding of the organisation of language we elaborated in earlier work (Plaza-Pust 2000), that changes in grammars do not occur instantaneously but are bound to reorganisa-

tion phases. These are typically reflected in the alternate production of target-like and target-deviant properties prior to the eventual implementation of the former (cf. section 2.2.3). On this view, learner errors provide important insights into the dynamics of language development.

Research on bilingual hearing learners has shown that language development in this acquisition scenario does not differ qualitatively from language development in a monolingual language acquisition situation. While there is a general consensus that bilingual learners develop two distinct language systems early on, evidence of language contact phenomena indicates that bilingual learners might pool their resources temporarily (section 2.3.2). The sophisticated combinations of two distinct grammars in mixed utterances is commonly taken as an indication that bilinguals (tacitly) know, by virtue of their innate language endowment (i.e. UG), that grammars are alike in fundamental ways. Furthermore, language mixing has been found to involve specific properties of the languages involved and to occur during specific phases in the bilingual development, in particular, during reorganisation phases. As learners acquire the properties of the target languages, language mixing may take over other (pragmatic) functions.

While these observations have been found to hold of bilingual language acquisition in hearing learners of diverse language pairs, including learners of a sign language and an oral language, the question of whether they would equally hold of bilingual language acquisition in deaf learners remains virtually unexplored. Studies on sign bilingual deaf learners have been primarily conducted from an educational linguistics' perspective. Scholars have been concerned with the potential impact of sign language competence on literacy development with a view to determine whether bilingual education is of benefit to deaf students. Because of the continuing campaigning against sign bilingual education, the focus on demonstrating a positive link between the two languages comes as no surprise. However, as we remarked, the assumption of a facilitating effect of sign language based on statistical measures revealing correlations between skills in the two languages remains tentative. Without a theoretical model that would explain the links identified, the nature of the interaction (elements linked, direction of the relation) remains unaccounted for.

To date, only little is known about language *development* in bilingual deaf learners, the scope of the developmental asynchrony in the bilingual acquisition of a sign language and an oral language, and the role of language contact phenomena. Studies have been concerned with the acquisition of sign language or oral language but have not considered the parallel development in both languages. Evidence of language mixing in learner productions has been addressed in relation to the input bilingual deaf children are exposed to, however, without taking their grammatical development in either language into consideration.

The research concomitant to the bilingual programme established in Hamburg provided evidence of cross-modal language contact phenomena in the written productions of the bilingual students investigated. Language mixing was found to represent a temporary phenomenon. Learners were assumed to benefit from their more advanced knowledge of sign language by temporarily filling remaining structural gaps in their written language. However, as the development of grammar was not at the focus of that research it did not delve into establishing whether language mixing involves specific language properties at specific points in the development, or whether the interaction is bidirectional.

Our longitudinal study represents a first attempt at contributing to a better understanding of the dynamics of bilingual language acquisition in deaf learners. Based on quantitative and qualitative analyses of the signed and written data produced by bilingually educated deaf students in Berlin we established individual developmental profiles that provided information on the participants' competences at the onset of the investigation and the progress they made in the time span covered by the study. The developmental profiles established allowed us to capture the scope of individual variation regarding the progress made in the attainment of the languages. It also allowed us to determine the range of variation at the level of individual learner grammars, in particular, during reorganisation phases. Furthermore, the diagnostic criteria elaborated allowed us to discern the learners' progress in their attainment of multiple dimensions of complex grammatical phenomena in DGS, some of which go beyond syntax proper. This is in line with a view of grammar as a modularly organised complex system that interacts with various other domains through multiple interfaces.

5.3.2 On the orchestration of linguistic devices in the acquisition of DGS

Sign language productions of bilingually educated deaf students have seldom been subjected to qualitative analyses that would provide a detailed picture of the structural knowledge attained. Commonly, general evaluations attribute bilingual students full competence in the language. The theoretically founded approach proposed in this work allowed for the scrutiny of empirical data with a view to assessing the learners' command of the target grammar and to tracking down the origin of potentially remaining gaps. It is important in this context to acknowledge that caution is advised in research on the acquisition of a language whose grammatical description is ongoing, as it is the case of DGS. Nevertheless, although interpretations of the data might remain tentative at times, the findings obtained contribute to the overall objective of obtaining a better understanding of the language, its acquisition and use.

We remarked previously that only few studies are available on the acquisition of DGS. First insights into structure-building in infant native signers with a focus on their acquisition of verb agreement have been obtained in a longitudinal study conducted by Hänel (2005, cf. Plaza-Pust 2016 for a discussion). The DGS competence of bilingually educated deaf students in Hamburg was assessed in a rather global manner, as text production skills in written language were at the focus of the studies conducted by Schäfke et al. (2004). The present study therefore represents a first attempt at assessing bilingual deaf learners' competence in DGS and in written German.

Now, the participants in this study are all children of hearing parents who have been exposed to DGS or signed German early in their lives, but nevertheless with some years of delay when compared to native signers exposed to the language from birth. So, although participants were of an advanced age when we started to record data, whether or not they had a command of the full structure of DGS could not be presupposed with certainty. Also, because they used signed German (LBG) in their everyday communication within and without the school premises, a lack of differentiation between DGS and LBG could not be ruled out.

The developmental profiles established for each participant revealed that all participants had a command of the full sentential structure at the onset of the study and that grammatical processes associated with the functional IP and CP levels were operative, including verb inflection, signalling and marking of referential shift, subordination and question formation. Further development in the participants' command of the language in the course of the time span covered by the study was observed in their use of the linguistic devices available for narrative purposes. For example, changes concerning the use of complex constructions (their variety, their frequency) were found to be reflected in the level of narrative complexity: the expression of temporal and causal relations as well as the use of complex clauses to recount the protagonists' emotions and thoughts derived more structured and more detailed retellings of the picture story.

Further, our analysis revealed that not all dimensions that are pertinent to a linguistic use of the sign space were mastered by the participants at the onset of the study; however, they all made substantial progress in their ability to integrate the information from different levels of linguistic analysis in the time span covered by the present investigation.

For example, we remarked on the participants' command of verb inflection at the onset of the study. However, full mastery of verb inflection, and several other grammatical phenomena in DGS (cf. section 3.1), involves not only the morphosyntactic but also the discourse level of linguistic analysis (apart from the lexical, involving the distinction of plain, agreement and spatial verbs). Recall that the choice of referential loci to mark agreement is modelled also by dis-

course requirements for the purpose of creating cohesion. Indeed, a consistent use of loci in the sign space is crucial for an appropriate understanding of the narration produced. In this respect, we found participants to differ. Individual variation can be seen on a continuum, with learners who use referential loci in a contrastive and consistent manner early on at one end of the spectrum (the case of Muhammed, for example). At the other end of the continuum, we would see learners who mark verb agreement and referential shifts locally, at the sentential level, without paying too much attention to discourse requirements for the creation of cohesion (the case of Hamida, for example).

In a similar vein, we found participants to differ in the choice of linguistic forms for the introduction, reintroduction or maintenance of reference. The challenge here lies in the selection of overt reference forms vis-à-vis null elements, a choice that is bound not only to grammatical constraints, but also to discourse requirements as these elements fulfil different narrative functions depending on the discourse context they appear in. In this respect, our analysis reveals that null elements occur with a high frequency in the narratives of all participants. Further, we remarked on the referential ambiguity that arises through the choice of null elements in those narrative contexts where characters that have been out of narrative focus for some time are reintroduced as protagonists of a new narrative episode. As for the participants' development in their choice of reference forms, the data document substantial progress in learners like Christa for whom we initially found a relatively high proportion of null subjects serving the function of reintroduction of referents. In more general terms, as variation in the choice of reference forms has also been observed in the narrative development of hearing learners acquiring spoken languages, we might conclude that irrespective of the modality of expression chosen, the disambiguation of reference forms is equally a task in signed and spoken narratives.

The progressive integration of information from different levels of linguistic analysis also becomes apparent in the participants' expression of spatial relations as they narrate the protagonists' locations and movements. In this case, too, we found that participants differ in the degree of detail they provide which reflects not only differences in narrative style, but also in the ability to integrate morphosyntactic, syntactic and discourse information. Recall that the target-like expression of spatial relations involves the appropriate selection of inflected spatial verb forms, word order, and h2-classifiers to background information.

All in all, the protracted development we observed in our data regarding the orchestration of linguistic devices for narrative purposes is well in line with the findings obtained in investigations on the acquisition of other sign languages, in which development of narrative skills is reported to continue at least to adolescence. It is important to note, however, that the available knowledge about nar-

rative development in sign language learners continues to be fragmentary, with information available only on selected properties of individual sign languages. At the theoretical level, too, more research is needed that would provide further insights into the functions served by linguistic devices in diverse discourse contexts. Beyond the theoretical interest there is also an applied dimension, as information about the differential use of the language is also urgently needed in the training of the teaching personnel involved in sign bilingual education.

We know from studies on spoken language acquisition in hearing learners that grammatical properties are neither acquired instantaneously nor are they attained *en bloc*. This holds equally of the development of narrative skills. Indeed, full mastery of the orchestration of linguistic devices for narrative purposes has been documented to be the result of a protracted development also in hearing learners. As pointed out by Berman (2004: 265), "[i]n learning how to tell a story, as in other domains, acquisition is not an "all-or-nothing" leap from no knowledge to full knowledge. Rather, it involves partial knowledge and reorganization and integration of prior knowledge across different domains." In addition, we also need to consider that the ability to construct a well-organised narrative text not only develops late, but has also been found to be manifested better in some narrative contexts than in others (Berman 2004: 265). In this respect, more research is needed to establish the potential scope of variation regarding the use of linguistic means in different discourse contexts (for example, by contrasting data from personal experience accounts and story retelling corpora).

5.3.3 Climbing up the structure tree in the acquisition of German

In contrast to the relative paucity of research on the acquisition of DGS, the main developmental milestones in the acquisition of German are well-documented for a variety of acquisition situations (section 4.2). However, whether the developmental sequence identified for the acquisition of German holds equally of (monolingual or bilingual) deaf learners' development remains unexplored. The situation is not unique to the German context but holds equally of other oral languages even though deaf learners' skills in some oral languages have been assessed in standardised tests (the case of English or French, for example). As statistical studies are not designed to provide a qualitative account of structure-building in the written language they contribute little to our understanding of written language development.

Apart from a lack of empirical data, research on bilingual deaf learners' acquisition of the oral language is also marked by a lack of a consensus concerning the status of the written language vis-à-vis the spoken language. Indeed,

the fragmented picture that emerges in the literature about (monolingual and bilingual) deaf children's attainment of the written language reflects a lack of agreement about whether what is defined as written language can be conceived of independently from speech. The issue is crucial for an appropriate understanding of the acquisition of the written language by deaf children whose acquisition of the spoken language is bound to be delayed if not truncated owing to their hearing loss.

Based on the Interdependence hypothesis of the spoken language-written language relation (section 2.4.2.1) we have argued that deaf learners can attain the written language as a second language. By attributing an equal status to spoken language and written language, and assuming that the nature of their relation is reciprocal (rather than unidirectional), the Interdependence hypothesis allows for the conception of alternative routes in their acquisition, regarding not only the order of acquisition, but also preferences in the processing routes (phonemic, graphemic or both).

We argued further that phonological awareness, the *metalinguistic* skill regarded by most scholars in the field as the key skill for a successful literacy acquisition, might not only be a requisite for but also an outcome of written language development. Crucially, we assume that written language comprehension and production involve the orchestration of several skills (section 2.4.3) and that apart from the mastery of the writing system, learners who acquire the written language as a second language without or with only partial knowledge of the spoken language it relates to are confronted with the task of acquiring a grammar, its units and the principles that underlie their combination. Whether or not deaf learners attain the target structure in a way similar to their hearing peers is one of the key empirical questions we addressed in our analysis of the written narratives collected in our longitudinal investigation.

The developmental profiles we established for each participant on the basis of the diagnostic criteria elaborated reveals that sign bilingually educated deaf children, too, expand their initially elementary syntactic structure progressively, which is in line with the Structure-building hypothesis. However, we also acknowledged substantial variation among participants regarding their structural competence at the onset of the study (variation ranges from elementary to full structures) and the progress they make in the time covered by the study (for one participant, Simon, we found no evidence for a structural expansion).

By combining qualitative analyses of the data with quantitative measures of selected phenomena we have been able to assess the scope of variation and its potential role in the organisation of the participants' multilingual knowledge. We remarked on the lack of variation in the data of some of the participants at the onset of the study. Their adherence to a rather rigid sentential pattern con-

trasts with the behaviour of monolingual learners of the language, who tend to produce a variety of word orders, with some preference for verb-final structures. We assume that this difference in the linguistic behaviour results from a didactic focus on the attainment of a surface (main clause) SVX word order. We have argued that the benefit attributed to the mastery of such a fixed sentential format needs to be qualified from a developmental perspective as it might mislead rather than help learners in their attainment of the target word order. Learners who start out with the assumption that German is an SVO language will be confronted with the task of revising their assumptions about the order of elements in the left periphery (target V2 constraint) and the verb-complement structure (target verb bracket) much like L2 learners of German who initially adopt their L1 SVO structure (the case of L1 Romance learners). Several errors documented in the data corroborate this assumption.

The preceding observations also underline the relevance of an early provision of a rich and complex input (including main clauses with periphrastic verb forms, complex constructions with subordinated clauses) that makes it easier for the learner to discover the relationships between the different elements in the clause and the asymmetric structure of German main and embedded clauses. We remarked further that the participants' production of target-deviant structures they do not encounter in their German input deserves special attention because these errors provide further insights into the underlying language learning processes and the nature of the learner grammars.

Striking similarities to productions of other L2 learners of German become apparent already at an early stage, at which only elementary (VP) structures are available. Participants produce hypotactic combinations of several sequences, using also functional elements, such as complementisers, despite their lack of the target grammatical features. By assumption, participants in this study, like other L2 learners of German with a more advanced level in their L1 narrative development, tend to use linguistic means available via their L1 to express complex meanings.

Furthermore, we have seen that the apparent coexistence of alternative grammatical options provides important insights into the dynamics that characterise the organisation of language knowledge. Progress in language acquisition, as becomes apparent in different acquisition situations, is bound to variation and the resolution of conflict situations resulting thereof. It must be pointed out, however, that caution is advised in the interpretation of variation in learner data because it can only be established *a posteriori* whether it represents a temporary phenomenon preceding the eventual implementation of the target option.

At the level of word order, variation in the written productions of the participants in this study initially pertains to the relative order of the verb and the com-

plement in constructions with periphrastic verb forms and phrasal verbs, before the target complement-verb order is eventually implemented. The situation is more complex regarding the attainment of the V2 constraint which involves various grammatical phenomena (verb raising, topicalisation, case marking). In this respect it became apparent that the inclusion of new target-like grammatical features associated with the V2 constraint does not occur to the immediate exclusion of the previously available target-deviant ones. This is reflected in the production of V3 patterns that result from the adjunction of non-subject constituents in the left periphery. Interestingly, the variation observed in the left periphery patterns well with the alternate use of V2 and V3 patterns documented in studies on other learners of L2 German.

In order to determine whether grammatical processes associated with an expanded sentential structure (including functional layers) were operative we used distributional (verb placement) and morphological criteria (verb inflection). At first sight, the analysis of the written narratives regarding verb inflection reveals a picture that is reminiscent of the findings obtained in previous descriptive studies in that error frequency rates are high. However, our analysis also makes apparent that there is variation at the individual level. While all of our participants produce errors at the onset of the study and continue to do so by the end of the study, they differ in the frequency of the errors produced. Whereas the overall proportion of errors raises in the narratives of Simon, it remains at about the same rate in the final narratives of Muhammed and Christa. For three participants, namely, Maria, Fuad and Hamida we acknowledge a decrease of the overall error rate by the end of the study.

With respect to the nature of the deficits observed, we remarked that the range of errors observed is limited and that it is developmentally constrained. We have also seen that variation in the use of finite and non-finite forms in sentential contexts that would require overt marking of subject-verb agreement does not represent a phenomenon that is unique to this type of acquisition situation, as substantial variation is also typically encountered in the productions of L2 learners of German. In line with current assumptions in L2 acquisition research, we have argued that the apparent optionality in the marking of subject-verb agreement reflects difficulties in the morphological realisation of abstract features, rather than the lack of functional categories.

We have expanded on this hypothesis by suggesting that the different types of errors identified reflect remaining deficits regarding the information encoded, whereby target-like inflection is assumed to involve the interaction of several grammatical modules (the lexicon, morphology, syntax). Errors produced at a time when the distributional evidence indicates that verb raising is operative suggest that deficits remain at the interface between morphology and syntax as

person-number encoding remains problematic. Other errors indicate remaining gaps in the knowledge about the selective properties of the verbs (e.g. auxiliary selection) and morphological rules (participle formation). A rule-based verb inflection with irregular verbs indicates a deficit at the interface between morphology and lexicon.

While the eventual integration of information from different levels of linguistic analysis was not accomplished by most participants by the end of the recording time covered in the study, the productions of one learner, Maria, reveal that she has a command of verb inflection at the time. We are left therefore with a picture of deaf learners' attainment of the target inflectional morphology that is definitely less idiosyncratic than traditional analysis made us believe. In addition, striking similarities become apparent between deaf and other L2 learners of the language.

In summary, by the end of the recording time, not all learners have gone all the way in the development of the target German grammar. With the exception of one participant, the developmental profiles established provide evidence for the structural expansion of elementary grammars and for grammatical processes associated with an expanded sentential structure. In Simon's written productions, by contrast, we found no conclusive evidence for an evolution along these lines. Individual variation between the other participants pertains to the progress they make in the course of the study as some participants, for whom we found evidence for the implementation of the IP, do not produce evidence for the availability of the CP (that is, target-like complex clauses or interrogative clauses). Also, only some of the participants adhere to the V2 constraint by the end of the recording time. Nevertheless, the analysis of the data allows for the conclusion that participants in this study "climb up" the structure tree much like other L2 learners of German. This is an important conclusion given the myths that surround the acquisition of written language by deaf students.

5.3.4 Pooling of resources in the organisation a multilingual competence

In a study dedicated to bilingual language acquisition scientific interest pertains not only to the development of either language, but also to potential developmental asynchronies in the attainment of the properties of the target languages, and the role of language contact phenomena in learners' productions.

With respect to the first issue, the comparison of the participants' developmental profiles in DGS and German reveals that variation in the attainment of the target structure is more pronounced in German than in DGS. As for the relative progress they make in either language, we could see that while participants are

still dealing with the attainment of the target syntactic structure in German at the end of the recording time, they have already accomplished this task at the onset of the study in DGS. Individual variation in the command of this language, as we learned, pertains to properties involving the syntax-discourse interface. Taken on the whole, however, the signed narratives collected document a sophisticated command of DGS that is creatively used for narrative purposes. The apparent asynchrony in the development of the two languages comes as no surprise given the circumstances that determine this type of bilingual language acquisition. However, the theoretically founded assessment of the participants' competences allowed for a precise evaluation of the developmental asynchrony between the two languages. This type of assessment is not only of interest from the perspective of developmental linguistics. It is also of relevance for the elaboration of didactic conceptions that aim at promoting deaf students' bilingual development. By being knowledgeable about the competences available in either language, more specific measures can be devised to promote the students' attainment of the target language skills.

Turning to language interaction in the course of the bilingual development, we have remarked on the consensus in the broader field of bilingualism research that exposure to two or more languages does not wind up in linguistic confusion. Bilingual language acquisition is rather characterised by a separate development of two independent systems (section 2.3). Language separation in the course of the bilingual development, however, does not exclude the possibility of a temporary interaction of the two languages, which would be reflected in developmentally constrained language contact phenomena.

The analysis of the participants' development of DGS and written German provides further support for the assumption that his holds equally of bilingual language acquisition in deaf learners. Bilingual deaf signers, too, develop two separate systems early on. This finding deserves to be emphasised against the backdrop of the variety of languages and codes deaf learners are exposed to. Crucially, despite of exposure to and use of a sign language and a signed system, that is, two codes that use the visual-gestural modality of expression, we found no indication for a confusion. DGS is clearly distinguished from oral language, be it in its written, spoken or manual form.

Cross-modal language contact phenomena occur in the data collected in this study. However, the overall frequency of these phenomena was found to be low. As prejudices against language mixing as an instance of confusion continue to abound in the field of deaf education, it is important to emphasise that the phenomena observed are developmentally constrained. Crucially, we have seen that language contact phenomena involve specific grammatical areas in both languages, and that the type of constructions mixed changes as learners proceed

in their development of the respective language. Once the target grammatical properties are established, mixing takes over other (pragmatic) functions. The bidirectional nature of the relation reflected in the evidence of language mixing in the signed and in the written productions is well in line with current assumptions about bilingual learners' pooling of resources. Also, the low incidence of language mixing observed patterns well with the general picture obtained in bilingual language acquisition research. We have argued that evidence of cross-modal language mixing can be taken as an indication that sign bilingual learners, too, (tacitly) know that languages are alike in fundamental ways, irrespective of the modality of expression.

Turning to the candidates for language contact phenomena documented in the data collected, we have seen that they include borrowings at the levels of the lexicon and syntax. At the level of syntax, we paid particular attention to the relative order of complements and verbs as DGS and German differ with respect to the relative position of object complements (or other modifying constituents) and verbs in main clauses.

As for DGS, the analysis reveals that the target constraints on word order in DGS were mastered by all participants with the exception of Fuad. Because this participant produces target-deviant verb-complement sequences alongside target-like sequences at the onset of the study we assume that both values of the VP headedness parameter coexist in his learner grammar before he eventually fixes the parameter to the target value. Target-deviant SVX patterns produced occasionally by other participants typically involve elements that are also used in signed German (LBG) for the expression of grammatical relations. This is the case of constructions with the auxiliary PAM, produced with a target-deviant word order across the board, with no indication of subsequent development toward the target. By assumption, the target-deviant word order is adopted from LBG, in which the sign PAM, glossed AUF, is used as a preposition to mark the relation between the verb and its complement in SVX sentential formats. Interestingly, the function served by this preposition in LBG is also reflected in written German productions of some of the participants, in which the preposition *auf* is used as an overt case marker at a time when the target case system is not yet mastered.

Other language contact phenomena involving the use of LBG elements include constructions with IST, a sign created to express the German copula form. This LBG sign occurs in constructions that appear to be used as unanalysed formulae. Christa's file 1 interrogative sequences, for example, include this element in combination with the interrogative marker WHERE, a phenomenon that disappears by file 3. Other hybrid patterns that are neither compatible with DGS or German involve the use of the sign HAVE in combinations with predicative adjectives or the use of BEFORE to mark past tense.

Turning to candidates for borrowing in written German productions, we remarked upon the phenomenon of verb drop. At the early stage of elementary grammars, verb drop was found to occur in sequences that would require the copula in target German, such as existential "*da+*X" patterns. We have argued that copula drop in the early productions of the participants is an ambiguous phenomenon. Because DGS knows no copula and "DA X" (DET$_{EXIST}$ X) patterns are target-like in that language, copula drop represents a candidate for language mixing from that language. However, the optional realisation of elements at the VP stage has been found to occur also in other acquisition situations, which suggests that we are dealing with a developmentally constrained phenomenon. A different situation obtains in the analysis of copula drop at later stages of development, that is, at a time when functional elements are available to the learners. As sequences with copula drop alternate with target-like constructions at a more advanced stage, we assume that the variation observed reflects the availability of various structural options. Copula drop as an option, though target-deviant, might be reinforced by DGS. Such a reinforcing effect of the other language in bilingual learners has also been observed in the development of bilingual learners in other acquisition situations.

At the level of word order, we found occasional candidates for language mixing. Elements in some constructions appear to be arranged in accordance with the figure-ground principle. Some sequences appear to follow the verb final order of DGS. In general, however, we found no reinforcing effect of DGS on the attainment of the underlying SOV order in German, which we assume to be also an effect of the early focus on the surface SVX pattern remarked upon previously. Lexical borrowing from DGS becomes apparent in some verbless clauses that involve expressions which would require the use of periphrastic noun-verb combinations in German. The drop of the verb in these constructions reflects the partial overlap with equivalent DGS expressions at the lexical level.

A more subtle type of language mixing concerns the use of *da* ('there') serving the function DET$_{LOC}$ would fulfil in DGS (that is, to assign a location to a referent) or the translation of simultaneously expressed complex DGS meanings (as is the case of complex classifier constructions) into sequentially expressed German propositions. We remarked on the relevance of paying attention to the German elements used in such translations as they reflect remaining lexical and structural gaps in the host language (the use of full NPs in the expression of spatial relations following the figure-ground principle, for example, reflects the lack of the pronominal system at the time). We also noted that some target-deviant sequences that represent candidates for borrowing deserve further scrutiny because of their pioneering potential in the development of the target structure. This potential could be exploited in the teaching/learning of the language pro-

vided it is acknowledged. Combinations of propositions including the adjunction of prepositional phrases to the right of the noun they modify, for example, appear to involve borrowing from complex structures of DGS. Such borrowings could serve such a pioneering function when interpreted as precursors in the development of relative clauses. The observation that participants in this study tend to produce series of main clauses, rather than complex sentential constructions at later stage might serve as an indication that they did not exploit the potential implicit in these constructions any further.

Summarising, the sophisticated nature of structural and lexical borrowing provides intriguing insights into the multilingual knowledge developed by learners acquiring two languages of different modality of expression. Clearly, this difference does not prevent them from creatively using their linguistic resources. Only the type of mixing we have attributed to the use of LBG raises the question about the alleged benefit attributed to the use of a hybrid system. While the hybrid type of contact phenomena we observed might serve the function of a relief strategy in the absence of target grammatical properties, caution is advised in the interpretation of phenomena that might indicate that learners are misled in their attainment of some grammatical properties. Clearly, more research is needed about the characteristics of the communication in LBG to determine the potential influence of this system on the learners' development in either language.

5.4 Concluding remarks

We close this work on sign bilingualism by underscoring the effort of all those involved in the development and provision of sign bilingual education programmes, underlining at the same time the relevance of envisaging a holistic model of language planning that would allow for a better coordination of the actions taken and the information shared along the research-policy-practice axis to promote this particular type of bilingualism. Many of the remaining shortcomings of bilingual education, as we believe, could be overcome by a better alignment of the activities of the different stakeholders involved.

As the acquisition situation of deaf learners continues to be vulnerable to dramatic changes in the socio-political, educational and medical areas, the sophisticated nature of the multilingual competence that becomes apparent in the data of the bilingual deaf signers investigated in this study deserves to be emphasised. All participants in this study are born to hearing parents. Their mastery of DGS clearly is the result of an educational environment that provided them the opportunity to learn and use a language that is fully accessible to them, and hence the language they can use not only to unfold their full expressive potential, as

becomes apparent in the narratives collected in this study, but also to manipulate knowledge, a fundamental asset not only in their academic life, but also for their participation in the society at large. While DGS is clearly in the lead in terms of the more advanced knowledge that is acquired earlier in this language than in the oral language, we should not underestimate the participants' development in their written German. Although the input available in this language is severely limited, and progress in some learners represents a protracted development, the same learning processes that underlie the acquisition of the language in other learner types are at work in their attainment of the target grammar.

In view of the insights obtained about the dynamics of sign bilingualism at the individual and societal levels, we are left with the hope that the line of research we have pursued in this work, cross-disciplinary in perspective, and theoretically founded, is developed further in future studies, contributing not only to a better comprehension of language acquisition and use in deaf individuals but also to the broader endeavour of obtaining a better understanding of how the multilingual potential of the human mind unfolds in interaction with the linguistic environment in other language contact situations.

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