Time Management

Edited by Todor Stoilov

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Meet the editor

Professor Todor Stoilov is a researcher in the Institute of Information and Communication Technologies, affiliated to the Bulgarian Academy of Sciences. He graduated in "Control engineering" in Technical University of Sofia. Professor Todor Stoilov scientific career consists of Ph.D since 1979; in 1999 he defended the highest "Doctor of Science" degree. Since 2000 he is a full professor in Bulgarian Academy of Sciences. He has published four monographs and more than 300 scientific papers and articles. His current research interests address domains like optimization, resource allocation, hierarchical control, management of information, transport, financial systems.

Contents

Preface

The lack of time is worldwide dispersed phenomenon and it takes different forms in all human being activities: industrial management, education, administration, personal duties etc. The time management can be assumed as a process for achieving personal goals and tasks.

It is easy to claim that the time allocation is a key factor for achieving every personal goal. Thus, it is important task to identify common requirements, constraints and relationships, which deal with the allocation if time per activities, concerning different domains of the society.

This book does not claim that it contains keys for solving the problem of optimal time management. However, this book is an attempt to summarize the current achievements and technologies, which are used for planning and managing activities nowadays, having in mind that all of them are functions of time.

The content of the book tries to summarize the understanding of the time management, accommodated in the corresponding papers. It illustrates by success stories the importance and viability of the time management. Illustrations with formal models for optimal management of time are given. Several cases for time allocation between sport and academic duties are provided.

The book is a collection of results from a wide range of specialists, competing with the time requirements. The diversity of the cases concerned is a prerequisite to wide the potential audience of readers, which face the problem of lack of time in their everyday activities.

Finally, I would like to add my personal conclusions about the preparation of this publication. The book is published under the framework of Open Access distribution. This will give the opportunity for broad access of the scientific community worldwide. I am grateful to the INTECH publishing department for their kind support and assistance, which help me for the preparation and edition of this book.

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Part 1

Survey: Time Management

What Do We Know About Time Management? A Review of the Literature and a Psychometric Critique of Instruments Assessing Time Management

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1. Introduction

Lack of time is a common complaint in western society. In response, there has been a proliferation of "… books, articles, and seminars on time management, along with their assertions, prescriptions and anecdotes" (Macan, 1994, p. 383). But what exactly *is* time management? Despite the epidemic of time management training programs (Quirk, 1989), there is currently a lack of agreement about the definition of time management and a dearth of literature summarizing time management across disciplines. Furthermore, Hellsten (2005) has argued that there is a lack of a theoretical model of time management. Although self-report instruments purporting to examine time management exist in several disciplines, to date, there has been no published psychometric review or comparison of these instruments for assessing *generic* time management.

2. Purpose

The purpose of this chapter is to examine the existing time management literature. More specifically, the purpose of this chapter is: (a) to describe the current state of time management and the rationale for time management training including the populations for whom recent time management literature is written; (b) to comprehensively review existing published and peer-reviewed literature relating to the concept of time management in order to delineate the skills and behaviors associated with time management identified in the education, industrial, administrative, management, coaching, and sport and exercise psychology domains; and (c) to identify and critically examine commercially available and research-based instruments examining time management.

3. Methodology

Due to the threefold purpose of this chapter, three separate but related review stages were utilized. First, in order to describe the current state of time management, a critical and rigorous review of the current research literature was conducted. The review focused on

the time management skills and behaviors identified in the education, industrial, management, administrative, coaching, and sport and exercise psychology domains. Articles were located using both database searches (e.g., ERIC, ProQuest Education, PSYCHINFO, etc.) and manual reviews of references. Keywords used in the search included time management, time management skills, time management behaviors, time management training programs, planning, scheduling, and organizing. The search located 84 empirical peer reviewed papers as well as generic and popular books and articles on time management. The initial search focused on literature published in the English language prior to December 2005.

Second, in order to ensure the review was current, a second review following the process specified above but restricted to published journal articles since the year 2000, was repeated in September of 2011. Using the keywords *Time Management*, 993 journal articles were identified. Of these articles, 35 abstracts were initially selected for closer review. Of the 35 abstracts identified, 12 articles were deemed relevant. Hand searches of the reference list of these 12 relevant articles identified an additional 4 relevant articles. Thus, the second review added 16 articles to the 84 previously identified in the first review for an overall total of 100 empirical peer reviewed papers and generic and popular books and articles on time management. Of the 16 articles identified in the second review, 2 were classified as popular literature with the remaining 14 articles classified as research articles.

The third review stage involved a literature review of existing instruments assessing time management in the industrial, administrative, management, education, coaching, and sport and exercise psychology domains. Sources of the review included database searches, cross-referencing of journal articles, and hand searches of relevant journals. Similar to the reviews of time management skills and behaviors, the references for each article found during the database search were reviewed for additional articles that by their title, use within the article, or by referencing appeared to be related to time management for exercise. Key words used in the review included time, time management skills and behaviors, time management questionnaires, and time management instruments. Sixteen commercially available instruments were identified that used *time* or *time management* as descriptors and ten additional research studies involved the development of a time related assessment instrument. Each of the identified instruments were then critically reviewed following the work of Hellsten (2005) including assessment of the psychometric characteristics and utility of the instruments to assess time management skills and behaviors.

4. Results

4.1 What is time management?

Time management has been described using many different terms including spontaneity, balance, flexibility, and having control over time (Lakein, 1973). Time management has also been characterized as a habit developed only through determination and practice (Simpson, 1978), as prioritizing and respecting those priorities (Soucie, 1986), and as setting priorities and scheduling tasks (Jordan et al., 1989). Time management can also be considered as the process by which an individual more effectively accomplishes tasks and goals (Schuler, 1979), a process by which an individual obtains control over the timing and the content of

what he/she does (Oncken & Wass, 1985), and as what can be accomplished with time (Mackenzie, 1972, 1975, 1990).

In order to utilize time effectively, individuals must first be able to predict how much time is needed for the activity (Kelly, 2002). An individual will become effective in using their time only when the individual clearly knows what they want to do, what they need to do, and for which specific target date (Soucie, 1986). Individuals need to become more disciplined in their use of time by respecting their established priorities while minimizing distractions from others as well as from situations that have the ability to displace priorities in terms of time and energy (Soucie, 1986).

According to Crutsinger (1994), time management involves determining what one should do by setting goals, deciding which events are the most important and realizing that other activities will have to be scheduled around them (prioritizing), making decisions about how much time to allow for certain tasks (time estimation), adjusting to the unexpected (problem solving), reconsidering goals and priorities on a regular basis (evaluation), and observing patterns and trends in behavior.

There is debate over exactly what skills and behaviors constitute effective time management. For example, Shipman (1983) identified six principles for effective time management. These principles included being aware of self, structuring time appropriately, setting goals and priorities, increasing personal efficiency and effectiveness, scheduling time for activity, and scheduling relaxation time. Time management behaviors have more recently been characterized as making lists, organizing, goal setting, keeping and routinely evaluating one's schedule, and breaking down tasks into simpler parts (Kelly, 2002).

Empirical research investigating the effects of time management behavior has identified three broad clusters of behaviors. These behaviors include setting goals and priorities, engaging in the mechanics of time management, and having a preference for organization (Adams & Jex, 1999; Macan, 1994, 1996; Macan et al., 1990). However, seven time management skills or behaviors can be considered essential to effective time management due to their repetitive prominence in the literature: (a) time analysis, (b) planning, (c) goal setting, (d) prioritizing, (e) scheduling, (f) organizing, and (g) establishing new and improved time habits (Barkas, 1984; Feeny Jonson, 2002; Hellsten & Rogers, 2009; Jorde, 1982; Lakein, 1973; Mackenzie, 1972, 1975, 1990; Morris, 2001; Woolfolk & Woolfolk, 1986). Although, time management documentation activities such as making lists, writing down goals, and utilizing calendars have been identified by many authors as necessary for effective time management, they tend to cross all seven skill areas. Table 1 provides a summary of the characteristics of time management behaviors and skills as identified by empirical research and popular books, articles, and multimedia on time management.

4.2 Who uses time management?

Industry initiated the examination of time management and time management training. However, there is much literature examining time in the education domain, specifically in reference to time and schools (e.g., Knight, 1989), time and school learning (e.g., Anderson, 1984; Bloom, 1965; Carroll, 1963), time management and study skills for students or student athletes (e.g., Carney, 1988; Crutsinger, 1994; Danyluk, 1985; Garcia-Ros et al., 2004; Gibbs,

1993; Ho, 2003, Keim & Strickland, 2004; Mpofu, D'Amico, & Cleghorn, 1996), and time management for educators (e.g., Cemaloglu & Filiz, 2010, Collins, 1987; Feeney Jonson, 2002; Jorde, 1982; Kearns & Gardiner, 2007; Kozoll, 1982; Morris, 2001; Wachter & Carhart, 2003).

Author	A	PL	GS	P	S	O	D	GH
Adams & Jex, 1999, 1997		√	√	√		√	√	√
Alay & Koçak, 2002			√	√	√		√	
Anand, 2007								√
Arnold & Pulich, 2004	√		√	√	√	√	√	√
Ashkenas & Schaeffer, 1985	√	√	√	√			√	√
Atkinson, 2001		√				√		√
Barkas, 1984	√	√	√	√	√	√	√	√
Blanchard & Johnson, 1981			√					
Bliss, 1976		√	√	√	√		√	
Bond & Feather, 1988		√						
Britton & Tesser, 1991			√	√	√		√	
Buck, 2003		√			√	√	√	√
Burka & Yuen, 1983			√		√		√	
Burt & Kemp, 1994		√	√	√		√	√	√
Calabresi & Cohen, 1968	√	√			√	√		√
Carney, 1982			√	√			√	√
Cealoglu & Filiz, 2010			√	√	√		√	
Collins, 1987		√	√	√	√		√	√
Claessens et al., 2004		√	√	√				
Corwin et al., 2001		√		√	√	√		
Crutsinger, 1994	√	√	√	√			√	√
Cuismano, 1999			√	√	√	√		
Danyluk, 1985	√	√		√	√	√	√	√
Delahoussaye, 2002				√			√	
DiPipi-Hoy et al., 2009		√		√	√	√		
Drawbaugh, 1984	√	√	√		√		√	√
Feather & Bond, 1983	√	√		√	√	√		
Feeny Jonson, 2002	√	√	√	√	√	√	√	√
Fitzgerald & Waldrip, 2004a	√	√	√	√	√		√	
Fitzgerald & Waldrip, 2004b		√	√	√		√		√
Foust, 2000	√	√	√	√	√		√	√
Francis-Smythe & Robertson, 1999		√	√	√		√	√	√
Gafarian et al., 1999	√	√		√	√	√	√	√
Garcia-Ros et al., 2004			√	√	√		√	
Geist, 2003		√	√	√		√		√
Gerdes, 2001						√	√	
Gibbs, 1993		√	√		√		√	√
Hellsten & Rogers, 2009	√	√	√	√	√	√	√	√
Hessing, 1994		√		√	√	√		
Ho, 2003	√	√			√			
Hoch, 2000					√	√	√	√

Author	A	PL	GS	P	S	O	D	GH
Jex & Elacqua, 1999		√	√	√		√	√	√
Jordan et al., 1989		√	√	√	√			√
Jorde, 1982	√	√	√	√	√	√	√	√
Kaehler, 2000		√						√
Kearns & Gardiner, 2007			√	√	√		√	
Kelly, 2002	√							√
Knight, 1989	√	√		√				√
Kotter, 1982		√	√		√		√	
Kozoll, 1982	√	√		√		√		√
Lahmers & Zulauf, 2000		√	√	√		√	√	√
Lakein, 1973	√	√	√	√	√	√	√	√
Landy et al., 1991	√	√			√	√	√	√
Lang et al., 1990					√			
Lay & Schouwenburg, 1993		√	√	√		√	√	√
Lindgren, 2004		√	√					
Macan, 1994; 1996		√	√	√		√	√	√
Macan et al., 1990		√	√	√		√	√	√
Mackenzie, 1972; 1975; 1990	√	√	√	√	√		√	√
McGrath & Rotchford, 1983					√		√	
Misra & McKean, 2000		√	√	√		√	√	√
Mpofu et al, 1996			√	√	√	√		
Morris, 2001	√	√	√	√	√	√	√	√
Mudrack, 1997		√	√	√	√	√	√	√
Orpen, 1993		√	√	√		√	√	
Osbourne, 1995								√
Perry, 1997			√	√				
Puffer, 1989		√	√		√		√	√
Quirk, 1989		√		√	√			√
Rice, 1984		√		√	√		√	
Schriber & Gutek, 1987	√			√	√	√	√	
Schuler, 1979	√		√	√				√
Shahani, Weiner, & Streit, 1993		√	√	√		√	√	√
Shipman, 1983	√		√	√	√		√	
Simons & Galotti, 1992		√	√	√	√			
Simpson, 1978	√			√				
Smith, 2002	√	√	√	√	√	√		
Smith, 1999	√	√	√		√			√
Soucie, 1986	√		√	√	√		√	√
Stevens & Pfost, 1984	√	√		√				√
Swart, Lombard, & de Jager, 2010		√		√	√	√	√	√
Taylor & Mackenzie, 1986				√	√	√	√	√
Topper, 2003			√		√		√	√
Trockel et al., 2000							√	
Trueman & Hartley, 1995, 1996			√	√	√		√	

Author	A	PL	GS	P	S	O	D	GH
van der Meer et al., 2010		√		√		√		
Wachter & Carhart, 2003		√				√		√
Weber & Vogel, 1977			√	√	√	√		
Wessman, 1973		√			√	√		
White, 2001				√				
Williams et al., 1995			√	√	√		√	
Winter et al., 1993		√		√	√			
Woolfolk & Woolfolk, 1986	√	√	√	√	√	√	√	√
Yoels & Claire, 1994					√	√		
Zampetakis et al., 2010		√	√	√	√	√	√	√
Zinatelli et al., 2002	√		√	√			√	
% of Articles Indicating Each Time Management Characteristic	**32.0**	**63.0**	**60.0**	**71.0**	**60.0**	**47.0**	**60.0**	**54.0**

Note. A refers to time analysis, time awareness, and time estimation. PL refers to planning. GS refers to setting goals. P refers to setting priorities. S refers to scheduling. O refers to organization including use of routines. D refers to use of time management documentation. GH refers to the establishment of good time management habits such as avoiding procrastination, delegation, and creating balance. √ indicates the time management characteristic was stated by the author. Bolded authors discussed all eight time management characteristics.

Table 1. Time Management Characteristics Identified by Empirical Research and Popular Literature.

Some of the populations identified as requiring time management training programs include adults performing job searches (Lindgren, 2004), first year university students (Ho, 2003; Swart et al., 2010; van der Meer et al., 2010), at risk university students (Zinatelli et al., 2002), online students (Bocchi et al., 2004), adults and college students with diabetes (Wdowik et al., 2001), adolescents with exceptionalities (DiPipi-Hoy et al., 2009), and student athletes (Keim & Strickland, 2004). Recent time management training programs are also taking advantage of technology for their delivery (e.g., Zinatelli et al., 2002). The focus of time management research has also expanded to include individuals from North America (e.g., Hellsten & Rogers, 2009), Europe (Garcia-Ros et al., 2004; van de Meer et al., 2010; Zampetakis et al., 2010), Africa (Mpofu, et al., 1996), and Australia (Kearns & Gardnier, 2007) and is cross-cultural in nature (e.g., Cemaloglu & Filiz, 2010; Garcia-Ros et al., 2004*)*.

4.3 Empirical studies of time management

Of the 100 located studies or articles involving time management, 38 were empirical studies involving qualitative or quantitative time management research. Five studies examined the time management behaviors and practices of specific populations using qualitative methodologies including the use of time diaries (Hessing, 1994; Ho, 2003; Kotter, 1980; Winter et al., 1993; Yoels & Clair, 1994). Twenty-seven studies examined time management behaviors or practices in relation to other variables such as academic achievement, stress, or creativity (Adams & Jex, 1997, 1999; Alay & Koçak, 2002; Anand, 2007; Britton & Tesser, 1991; Burt & Kemp, 1994; Cemaloglu & Filiz, 2010; Claessens et al., 2004; Francis-Smythe & Robertson, 1999; Garcia-Ros et al., 2004; Hellsten & Rogers, 2009; Jex & Elacqua, 1999;

Kearns & Gardiner, 2007; Lahmers & Zulauf, 2000; Lang et al., 1990; Lay & Schouwenburg, 1993; Macan et al., 1990; Misra & McKean, 2000; Mpofu et al., 1996; Mudrack, 1997; Shahani et al., 1993; Simons & Galotti, 1992; Swart et al., 2010; Trockel et al., 2000; van de Meer, et al., 2010; Williams et al., 1995; Zampetakis et al., 2010). One study (Trueman & Hartley, 1996) compared the effectiveness of time management skills between mature and traditional entry university students. Five studies examined the effectiveness of time management training programs (DiPipi-Hoy et al., 2009; Macan, 1994, 1996; Orpen, 1993; Woolfolk & Woolfolk, 1986). More than half of the studies examined a university or college student sample.

4.3.1 Qualitative time management studies

In reviewing the literature on time management skills and behaviors, five studies were identified which examined the time management behaviors of specific populations using qualitative methodologies. Two studies examined time management techniques in relation to home-based work (Hessing, 1994; Winter et al., 1993). Of these two studies, one study exclusively examined women (Hessing, 1994). Two studies examine university populations including the time management strategies of medical residents (Yoels & Clair, 1994) and the time management of undergraduate English project students (Ho, 2003). The fourth study examined the work habits of successful general managers (Kotter, 1980). There were several common time management techniques identified by these populations including time manipulation, planning ahead, task delegation, prioritization, synchronization and routinization of activities, reallocation of personal time, goal setting, agenda making, and the utilization of a time diary. Many of the strategies that were identified by the more unique samples of dual career women, medical residents, and home based workers parallel each other and the strategies identified by university student samples.

4.3.2 Quantitative time management studies

The literature search identified 27 studies that examined the relationship between time management behaviors and other variables such as academic achievement, stress, and creativity. Most studies were conducted with university or college student populations and most studies utilized some form of questionnaire or self-report measure to assess time management. Alternatives to self-report measures included self-reported time usage questions (e.g., how many hours during a typical weekday, do you…"; Anand, 2007) and observational checklists (DiPipi-Hoy et al., 2009). Results from these studies showed that self-reports of time management behaviors or skills were often related to academic achievement; effective time management lower stress and strain; good time managers preferred planning and organization; older subjects and women engaged more frequently in planning and time management behaviors; individuals who indicated that they set goals and priorities tended toward the Type A behavior pattern; and individuals who had previous time management training engaged more frequently in time management behaviors. In addition, inefficient time use, lack of control over time demands, and inadequate amounts of time appeared to have a negative impact on individuals' psychological resources.

When measured, perceived control of time was consistently identified as the strongest correlate of all the time management behaviors. This finding indicates the importance of

distinguishing between the different time management constructs (Macan et al., 1990). However, the awareness and documentation of time that are associated with time management strategies may lead some people to experience less perceived control over their time. Adams and Jex (1999) suggested that the actions of time management such as making lists and scheduling may lead some people to experience less perceived control over their time. When people are not meeting their time demands, uncompleted tasks and missed appointments on a schedule may lead to lower perceptions of control over time. Claessens et al. (2004) also demonstrated that planning behavior positively affected perceived control of time but stressed the importance of examining planning behavior and job characteristics.

4.3.3 Studies examining the effectiveness of time management

The empirical literature review identified five studies that examined the effectiveness of time management training programs. Three of the studies examined employed adults (i.e., Macan, 1994; 1996; Orpen, 1993) while Woolfolk and Woolfolk (1986) examined pre-service teachers and DiPipi-Hoy and colleagues (2009) examined adolescents with exceptionalities. The DiPipi-Hoy et al. (2009) study is unique in the population of study and the observational checklist method used to assess time management behaviors. Results suggested that participants increased their time management at work and generalized their skills to the community site following intervention (Di-Pippi-Hoy et al., 2009). Results of the two early studies (i.e., Orpen, 1993; Woolfolk & Woolfolk, 1986) which focused on the time management work by Lakein (1973) indicated that time management training has significant immediate and long-term effects on time management attitudes and behaviors and that those who receive time management training rate their time management effectiveness more highly than those who do not. In comparison, two later studies (i.e., Macan, 1994; 1996) which utilized the Time Management Behavior scale developed by Macan et al. (1990) found time management training to be only minimally related to subsequent use of time management behaviors. However, individuals who participated in a time management program did perceive more control over their time after the program. Perceived control over time was related to positive outcomes: Individuals who perceived having more control over their time reported fewer job induced tensions, fewer stresses, and greater job satisfaction than individuals who did not perceive themselves as having control over their time.

Furthermore, the 1994 study by Macan was the first study to empirically examine the relationship between time management behaviors and the Theory of Planned Behavior (TPB) by investigating the relationships between the elements of the TPB and perceived control over time. This model suggested that learning time management skills and consequently engaging in time management behaviors would lead to a greater perception of control over time. Support was found for the process model of time management.

4.4 Review of time management instruments

Sixteen commercially available instruments were identified that used time or time management as descriptors (Blewitt-Dombrowski, 1990; Canfield, 1976; 1981; Cooper et al., 1988; Crosby et al., 1985; Fimian, 1988; Kaplan et al., 1988; Kirkpatrick, 1995; Morreau & Bruininks, 1991; Parry, 1985; People Builders International, Inc.; 1993; Pintrich et al., 1991; Training House Inc., 1995; Weinstein, 1987; Weinstein & Palmer, 1995; Wonderlic Inc. &

Fasiska, 1993). Ten additional research studies involved the development of a time related assessment instrument (Bond & Feather, 1988; Britton & Tesser, 1991; Calabresi & Cohen, 1968; Gafarian et al., 1999; Hellsten & Rogers, 2009; Landy et al., 1991; Macan et al., 1990; Schriber & Gutek, 1987; Weber & Vogel, 1977; Wessman, 1973).

4.4.1 Review of commercially available time management instruments

The literature review identified 16 commercially available instruments through the *Buros Mental Measurements Yearbook*. The Buros Institute of Mental Measurements provides test descriptions and critical test reviews of commercially available tests. Test reviews are written by experts in the field who must hold a Ph.D. and have measurement expertise. These instruments self-identified time management as a potential subscale or scale. The instruments were all published between the years 1976 and 1995.

Seven of the instruments were developed for the employee/managers or organizational domain (Cooper et al., 1988; Crosby et al., 1985; Kaplan et al., 1988; Kirkpatrick, 1995; Parry, 1985; Training House Inc., 1995; Wonderlic Inc. & Fasiska, 1993). Five instruments were developed for students (Canfield, 1976; People Builders International, Inc.; 1993; Pintrich et al., 1991; Weinstein, 1987; Weinstein & Palmer, 1995). One instrument each was developed for teachers (Fimian, 1988), chronic psychiatric patients (Blewitt-Dombrowski, 1990), individuals with developmental delays (Morreau & Bruininks, 1991), and general adults (Canfield, 1981). Of the 16 instruments, four instruments were specifically written to assess time management (Canfield, 1976; 1981; Kirkpatrick, 1995; Training House Inc., 1995) with the remaining instruments having a time management subscale. However, none of the instruments developed specifically to assess time management were recommended. Of the 12 remaining instruments, only two were unconditionally recommended by reviewers (*Checklist of Adaptive Living Skills:* Morreau & Bruininks, 1991 and *Teacher Stress Inventory:* Fimian, 1988) but assessment of time management was not the primary focus of either instrument.

4.4.2 Review of research based instruments assessing time and time management

The review of the empirical literature identified three studies that utilized a study specific measure of time management (Kearns & Gardiner, 2007; Swart et al., 2010; van der Meer et al., 2010). None of the study specific time management instruments were described in sufficient detail to allow for use by others. The review also identified ten instruments from the administrative, management, health, and education domains that involved the assessment of time in some manner. Five of these instruments were designed to specifically assess time management (Britton & Tesser, 1991; Gafarian et al., 1999; Hellsten & Rogers, 2009; Macan et al., 1990; Weber & Vogel, 1977).

The Time Attitudes Questionnaire (TAQ: Calabresi & Cohen, 1968) is a 46-item self-report questionnaire concerned with time experience and time attitudes. Responses are measured on a 6-point Likert-type scale ranging from strongly disagree to strongly agree. During development, the TAQ was administered to 200 psychiatric patients and 308 college students and the data submitted to a factor analysis. Results of the factor analysis showed a four factor solution: (a) Time Anxiety (discomfort/anxiety about time, the need to control

time), $\hat{\alpha}$ = 0.79; (b) Time Submissiveness (conforming attitude toward time, emphasizing efficient use of time and the use of schedules), $\hat{\alpha}$ =0.56; (c) Time Possessiveness (possessive and greedy attitude towards time) $\hat{\alpha}$ = 0.47; and (d) Time Flexibility (accepting and flexible attitude towards time) $\hat{\alpha}$ = 0.52. Total TAQ scores were not calculated.

The Ricks-Epley-Wessman *Temporal Experience Questionnaire* (*TEQ*) (Wessman, 1973) was developed with the view that, "the characteristic ways of experiencing and utilizing time vary greatly among individuals along dimensions that can be assessed and measured, and that these differences are meaningfully related to personality characteristics" (Wessman, 1973, p.103). The TEQ consists of 80 items with responses measured using a 7-point Likert-type scale ranging from *-3* to *+3*. The scale was originally administered to 110 predominantly male undergraduate students. Factor analysis resulted in four factors: (a) Immediate Time Pressure (lack of control vs. relaxed mastery and flexibility); (b) Long-term Personal Direction (continuity and steady purpose vs. lack of direction); (c) Time Utilization (efficient scheduling vs. procrastination and inefficiency); and (d) Personal Inconsistency (inconsistency vs. consistency and dependability). Total TEQ scores across the four factors ranged from -60 to +60 with a reported internal consistency (Cronbach's alpha) of 0.82.

The *Time Structure Questionnaire* (*TSQ*) is a self-report instrument developed to assess the degree to which individuals perceive their time to be structured and purposive (Bond & Feather, 1988). Originally, a set of 17 items based on Jahoda's (1981, 1982) analysis of the negative effects of unemployment on time structure was developed (Feather & Bond, 1983). Four factors underlie these items: (a) Engagement, (b) Direction, (c) Structure, and (d) Routine. The TSQ is the result of refining and improving this measure of time structure. The TSQ consists of 26 items, of which the majority were measured using a 7-point response scale ranging from *Yes, Always*, to *No, Never.* Three separate samples (ranging in size from 193 to 336 students) of introductory psychology students participated in the development of the TSQ. The responses of the first sample were factor analyzed resulting in 5 identifiable factors accounting for 41.3% of the total variance: (a) Sense of Purpose, (b) Structured Routine, (c) Present Orientation, (d) Effective Organization, and (e) Persistence. Factor analysis of both the second and third samples produced corresponding factor analytic structure. Total TSQ scores were calculated across the five factors and termed *use of time*. Mean scores on the total scale were: Sample 1, 122.6 (*SD* = 20.3); Sample 2, 117.6 (*SD* = 23.6); Sample 3, 124.8 (*SD* = 21.7). The inter-item reliabilities for use of time across the three samples were 0.88, 0.92, and 0.91 and a satisfactory level of stability was found for the total scale after a 15 week interval (test-retest reliability = 0.76).

Schriber and Gutek (1987) developed the *Time-At-Work* questionnaire to measure the temporal dimensions of organizational culture across different organizations. The instrument consists of 56 5-point Likert-type items. Participants consisted of 399 individuals from large organizations and 124 individuals from small organizations. Factor analysis results identified 16 factors accounting for 59.0% of the variance. However, 13 separate temporal dimensions were identifiable and substantively supported: (a) scheduling and deadlines, (b) punctuality, (c) future orientation, (d) quality versus speed, (e) allocation of time, (f) time boundaries between work and non-work, (g) synchronization/coordination of work, (h) awareness of time, (i) work place, (j) sequencing of tasks, (k) intra-organizational time boundaries, (l) autonomy of time use, and (m) variety versus routine. The number of

items associated with each domain ranged from 2 to 9 items and according to the authors, all domains had moderate reliabilities.

The *Time Urgency Scale* (*TUS*) was developed with the intention of assessing time urgency, time awareness, and time use (Landy et al., 1991). Time urgency refers to "accelerated pace" (Burnam et al., 1975) and is the tendency of an individual to consider time as a scarce resource and plan its use carefully (Landy et al., 1991). The TUS is a Likert-type self-report questionnaire consisting of 33 unique items based on the work of Edwards, Baglioni, and Cooper (1990). Initially, the TUS was developed using a sample of 190 undergraduate students. Factor analysis of this data resulted in an interpretable five factor solution: (a) Competitiveness ($\hat{\alpha}$ =0.81), (b) Eating Behavior ($\hat{\alpha}$ =0.89), (c) General Hurry ($\hat{\alpha}$ =0.81), (d) Task-related Hurry ($\hat{\alpha}$ =0.72), and (e) Speech Pattern ($\hat{\alpha}$ = 0.69). This data was supplemented by additional samples of 91, 178, and 213 professionals and samples of 64 and 642 students. Factor analysis of the additional samples resulted in the same five factor solution with similar internal consistency estimates. Furthermore, test-retest reliabilities conducted after four months on the subscale responses of 213 clerical workers were all high ranging from 0.70 to 0.95. Total TUS scores were not calculated.

In a related study, Landy et al. (1991) developed behaviorally anchored rating scales of time urgency. Factor analysis of this scale resulted in nine dimensions, five of which appear to pertain to time management: (a) Awareness of Time (how aware an individual is of the exact time of day), (b) List Making (if a person creates/maintains a to-do list during the day or week), (c) Scheduling (if an individual schedules activities and keeps to that schedule as well as whether an individual proportions time for particular activities), (d) Deadline Control (the extent to which an individual creates or is controlled by external deadlines), and (e) Time Savings (the extent to which a person engages in actions directed towards saving time). The remaining four dimensions assessed urgency behaviors including eating behavior, nervous energy, speech patterns, and tolerance of tardiness.

Of the five scales created purposively for assessing time management, the first instrument was developed by Weber and Vogel (1977). As part of a paper in recreation administration, Weber and Vogel (1971) developed a set of 20 self-report items intended to help administrators self-identify time management problems. Each item was measured on a 4-point Likert-type scale ranging from *consistently, always a problem* to *rarely or never a problem*. However, the instrument was not named nor were the psychometric properties assessed.

The *Time Management Behavior* (*TMB*) scale (Macan et al., 1990) was designed to assess the behaviors critical to the construct of time management as defined by the popular literature. Initially, 123 undergraduate students completed the 76-item TMB using a 5-point response scale ranging from 0 *seldom true* to 4 *very often true*. Following item analysis, all redundant and noncontributing items with item-total correlations of less than 0.29 were removed resulting in the 46-item TMB. An additional 165 students completed the 46-item TMB scale and factor analyses were initially conducted on each of the two samples. However, since the results were similar, the two samples were combined. Four factors accounting for 72% of the variance were retained: (a) Goal Setting and Prioritizing (eigenvalue = 7.04; $\hat{\alpha}$ =0.83; 15 items), (b) Time Management Mechanics (eigenvalue = 2.58; $\hat{\alpha}$ =0.62; 13 items), (c) Perceived Control of Time (eigenvalue = 2.08; $\hat{\alpha}$ =0.69; 13 items), and (d) Preference for Disorganization (eigenvalue =

1.26; $\hat{\alpha}$ = 0.60; 5 items). Total TMB scores were calculated and ranged from 0 to 185 with a mean score of 106.4 (*SD* = 22.1) and an internal consistency of 0.83.

The TMB (Macan et al., 1990) scale was used in its entirety in a study examining the relationship between academic stress to student anxiety, time management, and leisure satisfaction in a sample of 249 full-time undergraduate students (Misra & McKean, 2000). The alpha coefficients calculated in this study were higher than the original 1990 study for Mechanics ($\hat{\alpha}$ =.85) and Preference for Organization ($\hat{\alpha}$ =.80), and similar to the original study for Setting Goals and Priorities ($\hat{\alpha}$ =.84) and Perceived Control of Time ($\hat{\alpha}$ =.67).

A modified version of the TMB scale (Macan et al., 1990) was used to examine university students and the relationship between time management, trait procrastination, and academic behavior (Lay & Schouwenburg, 1993). Following factor analysis of the 25-item modified TMB scale, 22 items were retained across three factors (Mechanics of Time Management, *n*=8, $\hat{\alpha}$ =.79; Setting Goals and Priorities, *n*=7, $\hat{\alpha}$ =.83; and Perceived Control of Time, *n*=8, $\hat{\alpha}$ =.74). The three factors identified in this study were very similar to three of the four factors obtained in the original TMB scale study (Macan et al., 1990). The Preference for Disrganization subscale (Macan et al., 1990) was also translated into Greek and confirmatory factor analysis supported the 4-item structure (Zampetakis et al., 2010).

In 1994, Macan modified the TMB scale based on the results of an exploratory factor analysis of 353 employees responses resulting in a 29-item, three subscale version: Goal Setting/Prioritizing (*n*=10, Mechanics of Time Management (*n*=11), and Preference for Organization (*n*=8) (Macan, 1994). The Perceived Control of Time Scale was also included as a separate scale (*n*=5, $\hat{\alpha}$ =.68). Confirmatory factor analysis later conducted to test the underlying structure of the 33-item TMB scale using 522 employed adults (64% women) resulted in a three factor model (Adams & Jex, 1997). The three factor model was then compared to a two factor model and results showed that the three factor model was significantly better than the two factor model (χ^2 =130.29; *p* < .01). These results provide additional support for the underlying factor structure of the TMB (Adams & Jex, 1997). Despite the belief that time management is multidimensional (Macan et al., 1990), no comparisons between a three factor TMB solution and a model with a greater number of factors have been made. This is regrettable because an exploratory examination of the factor structure of the TMB scale with 453 American working adults identified five factors (explaining 59.3% of the variance; Mudrack, 1997).

The *Time Management Questionnaire* (*TMQ*: Britton & Tesser, 1991) is a 35- item instrument based on the time management model developed by Britton and Glynn (1989). This model separates time management into the following seven components: (a) Choosing Goals and Sub-goals, (b) Prioritizing Goals, (c) Generating Tasks and Subtasks, (d) Prioritizing Tasks, (e) Listing Tasks on a To-Do List, (f) Scheduling Tasks, and (g) Carrying out Tasks (Britton & Glynn, 1989). Ninety male and female undergraduate psychology students participated in the development of the TMQ. Each of the 35 items was answered on a 5-point response scale consisting of the responses *always*, *frequently*, *sometimes*, *infrequently*, and *never* with higher values on the scale corresponding to better time management practices. Results of a factor analysis identified 18 items with item-factor loadings of more than 0.40 across 3 factors: (a)

Short Range Planning (accounting for 16% of the total variance), (b) Time Attitudes (accounting for 11% of the total variance), and (c) Long Range Planning (accounting for 9% of the total variance). Total scores on the TMQ were calculated and ranged from 52 to 123 with a mean of 91.0 (*SD* = 14.0).

A modified version of the TMQ scale (Britton & Tesser, 1991) was used to compare the time management behaviors of British mature students to traditional-entry students (Trueman & Hartley, 1995; 1996). Factor analysis did not replicate the original three-factor structure. Instead, factor analysis of the shorter (14 item), modified scale resulted in a 5-item Daily Planning subscale ($\hat{\alpha}$ =.85), a 9-item Confidence in Long-term Planning subscale ($\hat{\alpha}$ =.71) and an overall scale ($\hat{\alpha}$ =.79). Another modified TMQ scale was translated into Greek in order to study the relationship between time management and creativity (Zampetakis et al., 2010). Ten items from the original TMQ scale (Britton & Tesser, 1991) used by Trueman and Hartley (1996) reflecting Daily Planning (5 items; $\hat{\alpha}$ =.82) and Long-term Planning (5 items; $\hat{\alpha}$ =.72) were selected for translation. Confirmatory factor analysis results supported the Daily Planning and Long-term Planning factors (Zampetakis et al., 2010).

The TMQ scale (Britton & Tesser, 1991) was also used in its' entirety in order to examine the Western process models of time management in an African culture (Mpofu et al., 1996). Factor analysis of the TMQ with a sample of 472 Shona speaking (Zimbabwe) teacher candidates replicated the original three factor model demonstrating some evidence of cross-cultural replicability (Mpofu et al., 1996). The original 18-item TMQ was also translated into Spanish and administered to 137 high school students (Garcia-Ros et al., 2004). Factor analysis of the Spanish TMQ scale reproduced the original TMQ scale structure of three subscales: Short-range Planning (7 items; $\hat{\alpha}$ =.81), Time Attitudes (4 items; $\hat{\alpha}$ =.64), and Long-range Planning (4 items; $\hat{\alpha}$ =.60). The Spanish TMQ was also submitted to a confirmatory factor analysis which confirmed the three factor model (Garcia-Ros et al., 2004).

The TMQ scale (Britton & Tesser, 1991) was also translated into Turkish (Allay & Koçak, 2002). Following factor analysis, the Turkish TMQ appeared to consist of three subscales: Time Planning (16 items, $\hat{\alpha}$ =.88), Time Attitude (7 items, $\hat{\alpha}$ =.66), and Time Consumers (4 items, $\hat{\alpha}$ =.47) (Allay & Koçak, 2002). The Turkish TMQ was then retranslated and modified (Cemaloglu & Filiz, 2010). Administration of the modified Turkish TMQ to 65 participants resulted in slightly higher internal consistency values: Time Planning (16 items, $\hat{\alpha}$ =.89), Time Attitude (7 items, $\hat{\alpha}$ =.67), and Time Consumers (4 items, $\hat{\alpha}$ =.56). The modified Turkish TMQ was then used to examine the relationship between academic achievement of university students and time management (Cemaloglu & Filiz, 2010).

The *Diabetes Time Management Questionnaire* (*DTMQ:* Gafarian et al., 1999) is a 49-item questionnaire designed to assess general time management skills and time management skills specifically relevant to compliance to a diabetes healthcare regimen. The 49 items were derived based on a review of the time management and diabetes education and compliance literature. Time management was believed to involve a set of complex skills including behavioral outcomes such as accomplishing tasks, making and following a schedule, using a daily planner, feeling in control of one's time, prioritizing tasks, problem solving, making lists,

delegating, breaking down tasks into small components, assertiveness, being organized, monitoring one's use of time, and engaging in self-reinforcement for task completion. Thus, each facet of time management was assessed with only a few items. Each item was assessed by the research team for content validity, redundancy, and clarity and only items with 100% agreement were retained. Each item was assessed using a 5-point Likert-type scale ranging from 1 O*ften* to 5 *Never*. Sixty individuals with diabetes ranging in age from 19 to 82 years (*SD* = 16.2) completed the scale. Mean scores on the DTMQ ranged from 49 to 245 with a mean score of 120.6 (*SD* = 21.2). Internal consistency of the DTMQ yielded a coefficient alpha of 0.82 and two-week test-retest reliability computed on 49 responses was high (r_{xx} = 0.81). Factor analysis of the DTMQ was not conducted (Gafarian et al., 1999, p. 590).

The *Time Management for Exercise Scale (TiMES:* Hellsten, 2005; Hellsten & Rogers, 2009) is a 32-item scale designed to assess time management skills specifically for exercise. The TiMES was developed using the TPB and based on the TMB scale (Macan, 1994). An iterative methodology incorporating both content related evidence of validity (i.e., expert judgments as to relevance and representativeness of items) and structural validity (i.e., factor analysis) was used to construct the TiMES (Hellsten & Rogers, 2009). The TiMES consists of 4 subscales: Exercise Importance (8 items; $\hat{\alpha}$ =.91), Exercise Documentation (8 items; $\hat{\alpha}$ =.91), Ability to Manage Time for Exercise (8 items; $\hat{\alpha}$ =.73), and Setting Exercise Goals (8 items; $\hat{\alpha}$ =.85). Each item was rated on a 5-point Likert type scale ranging from 0 *does not describe me at all* to 4 *describes me very well*. A total of 704 university students completed the TiMES and mean scores on the subscales ranged from 6.2 (*SD*=7.40) to 21.30 (*SD*=5.60) (Hellsten & Rogers, 2009). No stability reliability information was provided.

4.5 Critique of research based instruments assessing time and time management

The purpose of this critique is to critically examine and evaluate the ten time-related instruments in terms of validity and reliability. Each of the instruments was evaluated according to the minimum requirements of test development. These requirements include the instruments' theoretical framework, definition of the construct, and information on the psychometric properties of the instrument including validity, reliability, and item statistics (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999).

4.5.1 Validity

Validity is an overall evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of interpretations based on all assessments including questionnaires (Messick, 1989, 1995). This comprehensive view of validity integrates considerations of content, criteria, and consequences into a construct framework (Messick, 1995). Validation of an instrument calls for the integration of different sources and types of evidence (Cronbach, 1971). Therefore, for the purposes of this critique, validity will be differentiated into distinct aspects in order to critically examine the existing time management instruments. As validation is a continuing process (Messick 1995), none of the instruments reviewed are expected to be *fully* valid, but each instrument should possess some evidence of validity.

Theoretical framework. The construction of an instrument should begin with a theory about the behavior, which is derived from prior research (Cronbach, 1971). Thus, each of the instruments reviewed should be grounded in a theory of time or time management. Of the ten instruments identified, seven did not describe a theoretical framework for the instrument (i.e., Bond & Feather, 1988; Calabresi & Cohen, 1968; Gafarian et al., 1999, Macan et al., 1990; Schriber & Gutek, 1987; Weber & Vogel, 1979; Wessman, 1973). The remaining three instruments were based on different theoretical frameworks (i.e, Britton & Tesser, 1991; Landy et al., 1991). For example, the TUS was based on personality theory, specifically, the Type A behavior pattern (Landy et al., 1991), while the TMQ was based on research involving computer operating systems (Britton & Tesser, 1991). Latter research involving the TMB (Macan et al., 1990) did incorporate the TPB (Macan, 1994). The TiMES (Hellsten, 2005; Hellsten & Rogers, 2009) was developed based on the TMB scale (Macan, 1994; Macan et al., 1990) and thus also incorporated the TPB.

Content validity evidence. The content aspect of construct validity includes evidence of content relevance, representativeness, and technical quality (Lennon, 1956; Messick, 1989) including specifications of the domain boundaries and expert panel judgments (Messick, 1995). In order to construct the initial pool of items, the boundaries of the construct domain to be assessed need to be formed, especially if the instrument is not grounded in a theoretical framework. Thus, the knowledge, skills, and other attributes that are representative of the domain need to be specified (Messick, 1989).

Although the majority of the instruments (i.e., Bond & Feather, 1988; Britton & Tesser, 1991; Hellsten & Rogers, 2009; Landy et al., 1991; Macan et al., 1990, Schriber & Gutek, 1987; Weber & Vogel, 1979; Wessman, 1973) specified domain boundaries, the boundaries differed. For example, the TMB was designed to assess "the behaviors critical to the construct of time management as defined in the popular literature" (Macan et al., 1990, p.761). These behaviors included setting goals and priorities, learning to say "no", making a to-do list, organizing, planning, delegating, and procrastinating (Macan et al., 1990). In contrast, the TAQ (Calabresi & Cohen, 1968) was designed to measure time attitudes and orientation to time but provides few boundary details. Similarly, although the DTMQ (Gafarian et al., 1999) is based on several elements of time management, the boundaries of time management were not set for this instrument. Gafarian et al. (1999) freely state that, "…the definition of time management has not been explicated." Lack of construct boundaries may pose a threat to the validity of the instrument through construct under-representation and irrelevance (Messick, 1989).

Item and scale content relevance. Following the definition of the construct of interest, a set of items is developed. The relevance, and thus the construct validity, of five of the scales for time management (i.e., Bond & Feather, 1988; Calabresi & Cohen, 1968; Landy et al., 1991; Schriber & Gutek, 1987; Wessman, 1973) may be threatened. Although these scales assess time in some manner, they were created for different purposes (i.e., measure time structure not time management), and therefore, not all of the content corresponds to the skills and behaviors that define time management.

Despite being developed for different purposes, there are similarities among these scales. For example, with the exception of the items comprising the time flexibility factor of the TAQ, the structured routine, effective organization, sense of purpose, and the persistence

items of the TSQ (Bond & Feather, 1988), the time utilization and long term personal direction items of the TEQ (Wessman, 1973), and the time submissiveness and time possessiveness items of the TAQ are similar. There are also similarities among subscales of instruments developed to measure other aspects of time and instruments developed explicitly for time management. The TMB has been shown to have concurrent validity through significant correlations with the TSQ (r =.69, p < .001) and the TEQ (r = .54, p < .001) (Shahani et al., 1993). Furthermore, the Setting Goals and Priorities subscale of the TMB (Macan et al., 1990) is significantly related to the structured routine, effective organization, sense of purpose, and the persistence factors of the TSQ, the time utilization and long term personal direction factors of the TEQ, and the time submissiveness, time possessiveness, and time flexibility factors of the TAQ (Shahani et al., 1993).

Expert judgment. Content relevance and representativenes of the items are traditionally appraised by expert professional judgment (Messick, 1995). The scale items need to meet the scrutiny and criticism of the experts (Cronbach, 1971) and consequently, the soundness of the instrument is no better than the writers and reviewers of the items (Cronbach, 1971). In five of the studies (Britton & Tesser, 1991; Calabresi & Cohen, 1968; Schriber & Gutek, 1987; Weber & Vogel, 1979; Wessman, 1973) the identity of the item writers were not revealed; in the remaining four studies (Bond & Feather, 1988; Gafarian et al., 1999; Landy et al., 1991; Macan et al., 1990) the research team was responsible for writing and modifying the items.

Furthermore, for the majority of the instruments (Bond & Feather, 1988; Britton & Tesser, 1991; Calabresi & Cohen, 1968; Macan et al., 1990, Schriber & Gutek, 1987; Weber & Vogel, 1979; Wessman, 1973) there was no reference to any type of expert review of the items. For both the behaviorally anchored TUS and the DTMQ, an expert review of items was conducted, but the reviewers were either the research team or undergraduate students (Gafarian et al., 1999; Landy et al., 1991). For example, in the adaptation of the TUS to a behaviorally anchored rating scale, undergraduate students were used as expert judges of relevant time urgency dimensions, response anchors, scaling, and content validity (Landy et al., 1991). It is questionable whether undergraduate students are subject matter experts in time urgency and thus the use of undergraduate students as expert judges may weaken the validity of the scale. The TiMES (Hellsten, 2005; Hellsten & Rogers, 2009) was the only scale to incorporate an extended expert review and analysis of judgments.

The DTMQ and the TiMES were the only instruments to explicitly address the technical quality and clarity of the items, "The research team reviewed each item for content validity, comprehensiveness, redundancy, and clarity. Those items meeting 100% agreement were retained" (Gafarian et al., 1999, p. 588). However, the use of the research team to judge the quality and clarity of the items developed may also be inappropriate as the judgments made may be biased. The TiMES (Hellsten, 2005; Hellsten & Rogers, 2009) included a technical review as part of the expert review of the items.

Structural validity. It is not enough that expert judgments are made to test whether the content is relevant to the proposed instrument use. There is also a need to examine the structural validity, or the underlying dimensional structure, of the instrument (Messick, 1995). Factor analysis is often used as a tool for gathering construct validity evidence (Messick, 1995). Validity evidence is gathered through a match between hypothesized and statistical factor loadings. Items that by hypothesis are indicators of a certain construct are

expected to show substantial loadings on the same factor. When an item loads on another factor, this shows that the indicator is impure (Cronbach, 1971). Of the ten instruments reviewed, eight were factor analyzed (Bond & Feather, 1988; Britton & Tesser, 1991; Calabresi & Cohen, 1968; Hellsten & Rogers, 2009; Landy et al., 1991; Macan et al., 1990; Schriber & Gutek, 1987; Wessman, 1973). However, the original factor analysis results of the TEQ and the TMQ instruments (Britton & Tesser, 1991; Wessman, 1973) may be unstable due to the number of items analyzed and sample size. In each case, a large number of items (k = 35 and k = 80) were analyzed using a small number of participants (n = 90 and n = 110) (Britton & Tesser, 1991; Wessman, 1973).

Time management appears to be a multidimensional construct (Macan et al., 1990), and thus any instrument assessing time management should include several subscales and subscale scores should be calculated (Mudrack, 1997). When a total score is used to represent time management, differential relationships among subscales and between subscales and other variables will be impossible to detect due to the aggregation of the subscales (Cronbach, 1971). Of the eight instruments that were factor analyzed, five calculated subscale and total time management scores (Bond & Feather, 1988; Britton & Tesser, 1991; Calabresi & Cohen, 1968; Macan et al., 1990; Wessman, 1973) while three instruments, the Time-At-Work questionnaire (Schriber & Gutek, 1987), the TUS (Landy et al., 1991), and the TiMES (Hellsten, 2005; Hellsten & Rogers, 2009) only provided subscale scores.

There have also been problems with the use of the subscale scores for some of the instruments. Specifically, in terms of the TMB scale, the composition of the subscales has not been consistent across researchers or studies raising concerns about the comparability of research findings (Mudrack, 1997). For example, Macan (1994) modified the TMB scale resulting in a 33-item, three subscale version. Similarly, in response to the fact that the original TMB scale (Macan et al., 1990) had relatively weak factor structure coefficients of less than or equal to 0.40, Lay and Schouwenburg (1993) used truncated 7-item versions of three of the TMB scales in their research.

In order to support a construct validity argument, confirmatory factor analysis should also be used to assess the model and the instrument. The TMB, TMQ, and the TiMES were the only scales to be factor analyzed using a confirmatory perspective. Furthermore, the time management literature has consistently suggested that time management is composed of at least three factors. For the eight instruments that were factor analyzed (Bond & Feather, 1988; Britton & Tesser, 1991; Calabresi & Cohen, 1968; Hellsten & Rogers, 2009; Landy et al., 1991; Macan et al., 1990; Schriber & Gutek; Wessman, 1973), all but one (Britton & Tesser, 1991) resulted in interpretable solutions of four or more factors. Although the concept of parsimony is integral to factor analysis, parsimony can also be dangerous and threaten construct validity.

Of the five scales that propose to assess time management explicitly (Britton & Tesser, 1991; Gafarian et al., 1999; Hellsten & Rogers, 2009; Macan et al., 1990; Weber & Vogel, 1979), not all of the scales include items that are representative of the whole domain of time management. According to popular research, time management behaviors and skills include awareness of time and self, planning, setting goals, prioritizing, scheduling, organizing, documentation, and establishing good time management habits (Barkas, 1984; Feeny Jonson, 2002; Jorde, 1982; Lakein, 1973; Mackenzie, 1972, 1975, 1990; Morris, 2001). Four of the scales

appear to assess the majority of these behaviors (DTMQ, Gafarian et al., 1999; TiMES, Hellsten & Rogers, 2009; TMB, Macan et al., 1990; and TMQ, Britton & Tesser, 1991) but each of the time management behaviors is only assessed using a few items. For example, the TMQ (Britton & Tesser, 1991) consists of three factors (short-range planning, time attitudes, and long-range planning) but assesses both setting goals and time management documentation with only two items. The use of only a few items to assess each time management skill and behavior may lead to an under-representation of the whole domain of time management. This source of instrument invalidity has serious adverse consequences and may negatively impact an individual's scores. Inaccurate scores, and inaccurate interpretations, should not occur because something relevant to the focal construct is missing (Messick, 1995).

4.5.2 Reliability

Evidence of reliability consistent with the construct's meaning is simultaneously evidence of construct validity (Mesick, 2000). One measure of reliability is internal consistency, which is an index of both item homogeneity and item quality (Crocker & Algina, 1986). When examinees perform consistently across items within an instrument, the instrument is said to have item homogeneity (Crocker & Algina, 1986). However, the amount, type, and quality of reliability evidence presented with each of the ten instruments were variable. For example, Weber and Vogel (1979), and Britton and Tesser (1991) did not did not present reliability evidence. Conversely, Wessman (1973), Bond and Feather (1988), and Gafarian et al. (1999) presented reliability evidence (in the form of Cronbach's alpha) for the total score but no evidence of subscale reliability. Conversely, Calabresi and Cohen (1968) and Schriber and Gutek (1987) presented only subscale reliability evidence in the form of Cronbach's alpha. Landy et al. (1991) (using coefficient alpha) and Macan et al. (1990) (using inter-item reliability) presented evidence of both subscale and total scale reliability. Hellsten and Rogers (2009) presented evidence of subscale reliability only.

Internal consistency coefficients should also be at least 0.70 in magnitude (Nunnally, 1978). The TAQ (Calabresi & Cohen, 1968), TMB (Macan et al., 1990), TUS (Landy et al., 1991), and Time-At-Work questionnaire all presented subscales with internal consistency coefficients less than 0.70. For both the TAQ and the TMB, three of the four subscales had moderate internal consistency estimates ranging from 0.47 to 0.69, while one subscale of the TUS had an internal consistency estimate of 0.69 (Calabresi & Cohen, 1968; Landy et al., 1991; Macan et al., 1990). The Time-At Work questionnaire reported internal consistency estimates ranging from the low 0.50's to 0.80. In addition, despite the higher internal consistency estimate of 0.82 presented with the 49 item DTMQ (Gafarian et al., 1999), the stability of the estimate is questionable due to a very small sample size ($n = 47$).

The stability of the test scores (test-retest reliability) may also be relevant to construct validation depending upon the theory defining the construct (Cronbach & Meehl, 1955). Test-retest reliabilities are important because the users of a time management scale will most likely be interested in tracking changes over time. If respondents do not respond consistently to the items or have different ideas about what independent performance is, it may be difficult to interpret what score changes mean (Haneghan, 1995). Three studies provided evidence of test-retest reliability (Bond & Feather, 1988; Gafarian et al., 1999; Landy et al., 1991). The estimates ranged in value from 0.76 to 0.95 with test-retest lengths of

4 months, 2 weeks, and 15 weeks, respectively. However, none of these studies provided a rationale for the test-retest time period chosen. As different test-retest estimates of reliability can occur with different use of time periods (Crocker & Algina, 1986), these results may be questionable.

4.5.3 Summary

Of the four instruments developed specifically to assess time management and which presented information regarding the scale construction process - TMQ, DTMQ, TiMES, and TMB - the TMB (Macan et al., 1990) and TMQ (Britton & Tesser, 1991) appear to possess the strongest evidence of reliability and validity for a general measure of time management. In comparison the TiMES (Hellsten & Rogers, 2009) appears to possess evidence of validity for the self-report of exercise related time management and the DTMQ (Gafarian et al., 1999) appears to possess content validity for time management for diabetes.

The TMB was created to assess the time management skills and behaviors referred to by the popular literature (Macan et al., 1990) and as such it appears to represent the majority of the domain of time management. The TMB also appears to possess adequate construct validity evidence for academic time management with undergraduate students. Despite the low subscale reliability estimates calculated from the original sample, latter studies employing the TMB have consistently shown higher subscale reliability estimates ranging from 0.77 to 0.94 (e.g., Lahmers & Zulauf, 2000; Macan, 1994; Misra & McKean, 2000; Shahani et al., 1993).While the TMQ (Britton & Tesser, 1991) possesses content validity for time management, the construct validity of this scale is threatened by construct under-representation and a lack of reliability evidence. However, the TMQ does appear to demonstrate evidence of cross-cultural replicability. Of the instruments identified by the literature review, only the TMB (Macan et al., 1990) and the TMQ (Britton & Tesser, 1991) appear suitable for direct import into a time management program or intervention study.

5. Conclusion

Despite the widespread use of the term time management, there is currently no universally accepted definition of time management and no agreement regarding the skills and behaviors that constitute time management. In order to address these limitations, this chapter provides the first comprehensive, cross-disciplinary review, summary, and psychometric critique of existing programs and instruments purporting to assess time management behaviors. According to the review, time management is most commonly defined by: (a) time analysis, (b) planning, (c) goal setting, (d) prioritizing, (e) scheduling, (f) organizing, and (g) establishing new and improved time habits.

The results of the review of time management show that the effective use of time has long been recognized as a crucial factor for success in many different fields and many practical techniques have been devised for improving time management (Puffer, 1989). Given the widespread use and acceptance of the value of time management behaviors (Jex & Elacqua, 1999), it is unfortunate that only a modest amount of empirical research has been conducted. Furthermore, research prior to 1990 tended to focus on measuring the effectiveness of time management training as a unidimensional construct. In general, results from empirical studies have shown that the use of time management behaviors leads to more effective

performance and that perceived control over time is a very important aspect to time management. Self-reports of time management have been shown to be related to academic achievement, age, and gender (Britton & Tesser, 1991; Lahmers & Zulauf, 2000; Simons & Galotti, 1992). Good time managers appear to prefer planning and organization (Williams et al., 1995). Individuals who have previous time management training also appear to engage more frequently in time management behaviors (Britton & Tesser, 1991; Hellsten & Rogers, 2009; Macan, 1994; 1996; Macan et al., 1990; Orpen, 1993; Simons & Galotti, 1992; Williams et al., 1995; Woolfolk & Woolfolk, 1986).

The critique of time management instruments suggests that although more research is needed, the TMB (Macan et al., 1990) and the TMQ scales (Britton & Tesser, 1991) appear to possess the strongest evidence of validity and reliability in measuring general time management skills and behaviors. Future independent research is needed to confirm the psychometric characteristics of the TMB and TMQ scales with a variety of populations and in a cross-cultural manner. Additional research is also required to further develop the theoretical model of time management as many time management programs and instruments have developed atheoretically. Future research should also begin to examine the literature of self-regulation and how this literature may apply to time management.

6. References

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Part 2

Formal Models for Time Management

Hierarchical Optimization for Fast Resource Allocation

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1. Introduction

Particular problem in the management of distributed systems is the optimal resource allocation among the subsystems. When several subsystems of the distributed system use or compete for the use of a common resource, the limited capacity of the resource can give rise to constraint system behavior. Respectively, the fast solution of the resource problems strongly influences the application area of their implementation in real live solutions. This situation occurs in every day situations: queue at a counter in supermarket; congestion in road traffic; products' delays in machines during their production process; messages wait for access to a common transmission channel and computer jobs for the use of set of processors.

The implementation of the optimization methodology in distributed and hierarchical systems resulted to development of multilevel optimization technique used to analyze decision making. In (Sandell at al., 1978) is presented a good survey of approaches and contributions in the area of large scale systems. The field of multilevel optimization has become a well known and important research field (Pardalos, 1997; Jorgen Tind , 1998).

Due to the complexity of the multilevel optimization problems both to their definition and solution, practical interest is driven to the bi-level programming, which constraints the decision making system to two hierarchical levels (Bard, 1999). The bi-level programming problem is a hierarchical optimization problem, where a subset of the variables is constrained to solution of given optimization problem, parameterized by the remaining variables. The hierarchical optimization structure appears naturally in many applications, when lower level actions depend on upper level decisions. The applications of bi-level and multilevel programming include transportation (taxation, network design, trip demand estimation etc.), management (coordination of multidivisional firms, network facility location, credit allocation etc), planning (agricultural policies, electric utility) and optimal design (Vicente, 1994).

The paper considers problems, motivated by the optimal allocation of heterogeneous (vector) resources in the optimization problems of subsystems in bi-level hierarchical system. This chapter works out a model implementing predictive coordination strategy with

non-iterative influences for fast resource allocation as important management policy in hierarchical and decentralized systems.

2. Multilevel systems' theory and noniterative coordination

The Multilevel theory develops decomposition approaches for solving both mathematical programming and variation problems allowing the original complex optimization problem to be reduced to set of low order optimization sub-problems. The solution of the complex problem is found as vector of the sub-problems solutions. The local sub-problems are influenced (coordinated) by the coordination problem to generate the components of the global solution of the original problem. This approach is a natural extension of the multilevel optimization modelling. Such methodology, consisting of decomposition to sub-problems and coordination among them, leads to the model of hierarchical multilevel systems operation (Mesarovich et al., 1970).

Two main coordination strategies have been worked out (Aliev&Liberson, 1987; Mesarovich et al., 1970; Mladenov et al., 1989): goal coordination and predictive coordination. The "goal" coordination influences the local performance indices of the sub-problems. The "predictive coordination" assumes constant values for the global arguments or for parts of the global constraints. The coordinator performs all these influences by iterative manner insisting multiple data transmissions from the lower levels to the coordinator and vice versa, spending time for calculations and data transmissions and preventing the reactions of the hierarchical system in real time.

The coordination in bi-level hierarchical systems consists of iterative data transfer between the levels, Figure 1. The coordinator defines a coordination parameter λ, which influences the subsystem optimization sub-problems. With λ, the optimization sub-problems $Z_i(\lambda)$, $i=1,n$, representing the subsystem management become well defined. For given λ, the subsystems solutions are found. Next, the solutions $x_i(\lambda)$, $i=1,n$ of $Z_i(\lambda)$, are sent back to the coordinator. The last, having evidence of the subsystem reactions $x_i(\lambda)$, $i=1,n$, improves the coordination from λ to λ^*, $\lambda^*=\lambda^*(x_i(\lambda))$, $i=1,n$, by means the local subsystems to find the global optimal solution. Next λ^* is returned to the subsystems for implementation.
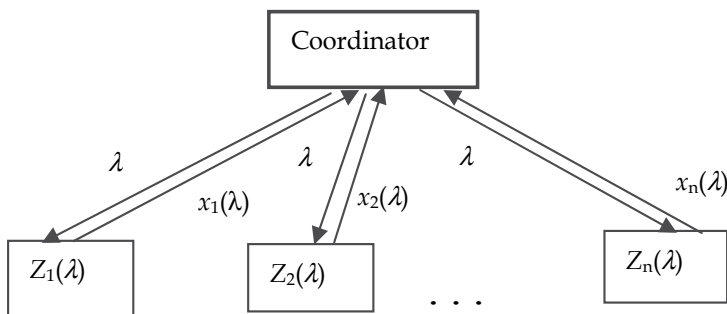

Fig. 1. Bi-level hierarchical system.

When the coordination parameters λ influence the performance indices of the subsystems, this coordination is called "goal coordination". If the coordination influences the constraints of the subsystems, this coordination is "predictive" one. In that manner, an iterative communication-computing sequence is performed till finding an optimal coordination λ_{opt}, which results in optimal local solutions $x_{iopt}(\lambda_{opt})$, $i=1,n$.

Thus, the multilevel system operates on optimal manner by solving a global optimization problem. The iterative coordination results in management delays which do not allow the hierarchical system to cope fast environmental changes. To overcome the iterative multilevel management the non-iterative coordination has been worked out (Stoilova&Stoilov, 1995; Stoilov&Stoilova, 1999). It reduces the information transfer between the system's levels, applying 'proposition - correction' protocol. The local subsystems solve and send to the coordinator their propositions $x(0)$ found with lack of coordination. The coordinator modifies $x(0)$ towards the global optimal solution x^{opt} and transmits it to the subsystems for implementation. The operation of the hierarchical system with non-iterative coordination strategy consists of two steps:

- the coordinator sends to the subsystem initial coordination λ_0;
- using λ_0 the subsystems solve their problems and evaluate the propositions $x(\lambda_0)$;
- the coordinator corrects $x(\lambda_0)$ to the global optimal x_{opt} or evaluate the optimal coordination λ_{opt} without iterative computations;
- the subsystems evaluate/implement $x(\lambda_{opt})$.

This non-iterative concept can be applied both for "goal" coordination strategy and for "interaction prediction" strategy. The non-iterative coordination has been developed for the case of goal coordination principle where the coordinator influences by the coordination variables the goal functions of the subsystems (Stoilov and Stoilova, 1999). This influence changes the performance indices of the local sub-problems, by means to coordinate the local optimizations and to find the solution of the global optimal problem, solved by the whole hierarchical system. For the predictive coordination the coordinator uses constraints or part of them as coordination influences in the local sub-problems. Assuming constant values for the parts of the constraints, the coordinator "predicts" and coordinates the solutions of the local optimization sub-problems (Stoilova&Stoilov, 2002; Stoilova, 2010). This chapter applies "predictive coordination strategy" in multilevel systems for fast solution of resource allocation as management policy by solving appropriate optimization problem.

3. Resource allocation by predictive coordination

The scenario of the resource allocation problem, which is under consideration, concerns the case when the hierarchical system operates on steady state with available resources C and a request arise to allocate additional resources d. The problem of the fast management and optimal resource allocation is how to distribute these additional recourses, having information from the current system behavior with amount of resources C. The trivial case is to resolve the optimization problem of resource allocation with new amount of global resources $C+d$. It is worth to find control policy, which deals only with the allocation of the new extra amount d of the available resources.

The optimization problem is stated in the form

$$\min\left\{\frac{1}{2}x^T Q x + R^T x\right\}$$

(1)

$$Ax = C + d \,,$$

where C (the current available resources) and d (new amount of resources, which must be allocated per subsystems) are given vectors.

For convenience it is supposed that the hierarchical system has two subsystems and the initial problem (1) becomes

$$\min\left\{\frac{1}{2}\begin{vmatrix} x_1^T & x_2^T \end{vmatrix}\begin{vmatrix} Q_1 & 0 \\ 0 & Q_2 \end{vmatrix}\begin{vmatrix} x_1 \\ x_2 \end{vmatrix} + \begin{vmatrix} R_1^T & R_2^T \end{vmatrix}\begin{vmatrix} x_1 \\ x_2 \end{vmatrix}\right\}$$

(2)

$$A_1 x_1 + A_2 x_2 = C_1 + C_2 + d = D \,.$$

The optimization problem (2) for the bi-level hierarchical system is

Subproblem 1   Subproblem 2

$$\min\left\{\frac{1}{2}x_1^T Q_1 x_1 + R_1^T x_1\right\}; \quad \min\left\{\frac{1}{2}x_2^T Q_2 x_2 + R_2^T x_2\right\}$$

$$A_1 x_1 = Y_1 \qquad\qquad A_2 x_2 = Y_2 \,,$$

(3)

where $Y_1 + Y_2 = C_1 + C_2 + d = D$,

$$Q_{1|n_1 x n_1}; \quad R_{1|n_1 x 1}; \quad A_{1|m x n_1}; \quad x_{1|n_1 x 1}; \quad C_{1|m x 1}; \quad Y_{1|m x 1}$$

$$Q_{2|n_2 x n_2}; \quad R_{2|n_2 x 1}; \quad A_{2|m x n_2}; \quad x_{2|n_2 x 1}; \quad C_{2|m x 1}; \quad Y_{2|m x 1} \,.$$

The hierarchical system follows the algorithm, Figure 2:

- the subsystems solve their sub-problems assuming resources C_1 and C_2 defined by the steady operation ;
- the decisions $x_1^{opt}(C_1)$ and $x_2^{opt}(C_2)$ are sent to the coordinator;
- the coordinator determines the new resource allocation Y_1 and Y_2 , satisfying $Y_1 + Y_2 = D = C_1 + C_2 + d$. Y_i is the common resource of subsystem i , which is a sum of available resource C_i plus a part of d of the additional resources.

By changing Y_i, the solution x_i of the subproblem i is an inexplicit function $x_i(y_i)$.

If analytical relations can be derived for these functions, the decision making for the resource allocation can be considerable accelerate. Even for the case of nonlinear optimization problem, such an approximation can benefit the decision process.

$$Y_1 + Y_2 = C_1 + C_2 + d = D$$

$$Y_1 \qquad\qquad x_1^{opt}(C_1) \quad x_2^{opt}(C_2) \qquad\qquad Y_2$$

$$\min\left\{\frac{1}{2}x_1^T Q_1 x_1 + R_1^T x_1\right\} \qquad \min\left\{\frac{1}{2}x_2^T Q_2 x_2 + R_2^T x_2\right\}$$
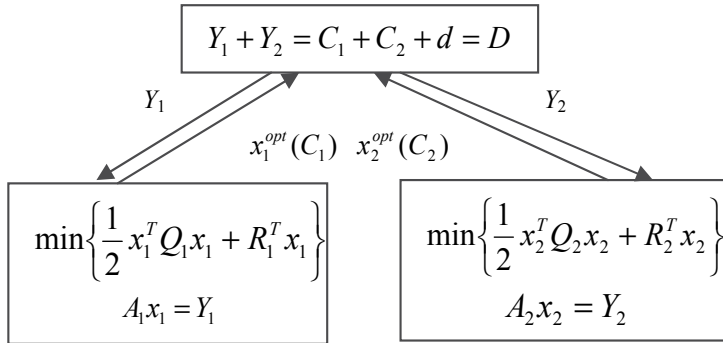
$$A_1 x_1 = Y_1 \qquad\qquad A_2 x_2 = Y_2$$

Fig. 2. Resource allocation in bi-level hierarchical system.

To find an explicit analytical description, the relation $x_i(y_i)$ is approximated in Taylor series in the point $y_i = C_i$, which refers to the current system state dealing with the resources C_i

$$x_i(Y_i) = x_{i0} + \frac{dx_i}{dY_i}\Big|_{x_{i0}}(Y_i - C_i), \tag{4}$$

where x_{i0} are decisions of (3) when $Y_i = C_i$

$$x_{i0} \equiv \arg\left\{ \begin{array}{c} \min\left(\frac{1}{2}x_i^T Q_i x_i + R_i^T x_i\right) \\ A_i x_i = Y_i \\ Y_i = C_i \end{array} \right\}. \tag{5}$$

Using the results of noniterative coordination (Stoilov&Stoilova, 1999) x_{i0} can be expressed as an explicit analytical relation

$$x_{i0} = -Q_i^{-1}[R_i - A_i^T(A_i Q_i^{-1} A_i^T)^{-1}(A_i Q_i^{-1} R_i + C_i)]. \tag{6}$$

The matrix $\frac{dx_i}{dY_i}$ following (Stoilova&Stoilov, 2002) and taking into account that $\frac{d^2 g}{dx^T dx}$ is a zero matrix it follows

$$\frac{dx_i}{dY_i^T} = \left[\frac{d^2 f_i}{dx_i^T dx_i}\right]^{-1} \frac{dg_i^T}{dx_i}\left[\frac{dg_i}{dx_i^T}\left(\frac{d^2 f_i}{dx_i^T dx_i}\right)^{-1}\frac{dg_i^T}{dx_i}\right]^{-1}, \quad i = 1,2$$

For the linear quadratic case, using the substitutions

$$\frac{d^2 f_i}{dx_i^T dx_i} = Q_i, \quad \frac{dg_i}{dx_i^T} = A_i, \quad \frac{df_i}{dx_i^T} = Q_i x_i + R_i, \quad i=1,2 \tag{7}$$

the matrix $\frac{dx_i}{dY_i}$, expressed in the terms of the resource allocation problem (1) is

$$\frac{dx_i}{dY_i^T} = Q_i^{-1}A_i^T(A_iQ_i^{-1}A_i^T)^{-1} \quad ,i=1,2 \tag{8}$$

Hence, the components x_{i0} and $\dfrac{dx_i}{dY_i}$ of (4) are explicitly defined. If the optimal resource

distribution Y_i^{opt} can be found, the optimal subsystems solutions and respectively the resource allocation problem $x_i^{opt} = x_i(Y_i^{opt})$ of (1) will be evaluated by substitution of Y_i^{opt} in (4). The evaluation of Y_i^{opt} is found from the coordination problem.

Coordination problem

The coordination problem of the resource allocation problem (2) is

$$\min_{Y}\left\{\begin{array}{l} w(y) = \sum\limits_{i=1}^{2}[\frac{1}{2}x_i^T(Y_i)Q_ix_i(Y_i) + R_i^Tx_i(Y_i)] \\ \sum\limits_{i=1}^{1}Y_i = C_1 + C_2 + d \quad or \quad \begin{vmatrix}I & I\end{vmatrix}\begin{vmatrix}Y_1 \\ Y_2\end{vmatrix} = C_1 + C_2 + d \end{array}\right\}, \tag{9}$$

where $x_i(Y_i)$ is analytically determined according to (4), (5) and (8)

$$x_i(Y_i) = x_{i0} + \frac{dx_i}{dY_i^T}(Y_i - C_i) \tag{10}$$

and $\qquad x_i^T(Y_i) = x_{i0}^T + (Y_i - C_i)^T\dfrac{dx_i^T}{dY_i}$.

Substituting (10) in (9) an explicit description of $w(Y)$ is found

$$w(Y) = \frac{1}{2}x_{i0}^TQ_ix_{i0} + R_i^Tx_{i0} + \frac{1}{2}x_{i0}^TQ_i\frac{dx_i}{dY_i^T}(Y_i - C_i) + \frac{1}{2}(Y_i - C_i)^T\frac{dx_i^T}{dY_i}Q_ix_{i0}$$

$$+\frac{1}{2}(Y_i - C_i)^T\frac{dx_i^T}{dY_i}Q_i\frac{dx_i}{dY_i^T}(Y_i - C_i) + R_i^T\frac{dx_i}{dY_i^T}(Y_i - C_i).$$

The components of $w(Y)$, which do not contain Y_i, do not influence the coordination problem and they can be omitted. Thus, using that Q_i are symmetric matrices the analytical description of the coordination problem becomes

$$\min_{Y}\left\{w(Y) = \sum_i\frac{1}{2}Y_i^T\frac{dx_i^T}{dY_i}Q_i\frac{dx_i}{dY_i^T}Y_i + Y_i^T\frac{dx_i^T}{dY_i}Q_i(x_{i0} - \frac{dx_i}{dY_i^T}C_i) + R_i^T\frac{dx_i}{dY_i^T}Y_i\right\} \tag{11}$$

$$Y_1 + Y_2 = C_1 + C_2 + d \ .$$

Using (6) and (8) it follows

$$x_{i0} - \frac{dx_i}{dY_i^T} C_i = -Q_i^{-1}[R_i - A_i^T (A_i Q_i^{-1} A_i^T)^{-1} A_i Q_i^{-1} R_i] \tag{12}$$

and it is valid

$$\frac{dx_i^T}{dY_i} Q_i (x_{i0} - \frac{dx_i}{dY_i^T} C_i) = 0 \tag{13}$$

Applying (13) the coordination problem is

$$\min_Y \left\{ w(Y) = \sum_{i=1}^2 \frac{1}{2} Y_i^T \frac{dx_i^T}{dY_i} Q_i \frac{dx_i}{dY_i^T} Y_i + R_i^T \frac{dx_i}{dY_i^T} Y_i \right\} / \ Y_1 + Y_2 = C_1 + C_2 + d \tag{14}$$

Taking into account the equalities

$$\frac{dx_i^T}{dY_i} Q_i \frac{dx_i}{dY_i^T} = (A_i Q_i^{-1} A_i^T)^{-1}$$

$$R_i^T \frac{dx_i}{dY_i^T} = R_i^T Q_i^{-1} A_i^T (A_i Q_i^{-1} A_i^T)^{-1}$$

the coordination problem (14), expressed in terms of the initial problem (2), is

$$\min_Y \left\{ w(Y) = \sum_i \left[\frac{1}{2} Y_i^T (A_i Q_i^{-1} A_i^T)^{-1} Y_i + R_i^T Q_i^{-1} A_i^T (A_i Q_i^{-1} A_i^T)^{-1} Y_i \right] \right\}$$

$$Y_1 + Y_2 = C_1 + C_2 + d$$

or

$$\min_Y \left\{ w(Y) = w_1(Y_1) + w_2(Y_2) \equiv \frac{1}{2} |Y_1 \quad Y_2|^T \begin{vmatrix} q_1 & 0 \\ 0 & q_2 \end{vmatrix} \begin{vmatrix} Y_1 \\ Y_2 \end{vmatrix} + |r_1^T \quad r_2^T| \begin{vmatrix} Y_1 \\ Y_2 \end{vmatrix} \right\}$$

$$Y_1 + Y_2 = C_1 + C_2 + d \ , \tag{15}$$

where

$$q_i = (A_i Q_i^{-1} A_i^T)^{-1}]; \ r_i^T = R_i^T Q_i^{-1} A_i^T (A_i Q_i^{-1} A_i^T)^{-1} \tag{16}$$

The analytical solution of this problem is (Stoilov&Stoilova, 1999).

$$y^{opt} = -q^{-1}r + q^{-1} A_I^T (A_I q^{-1} A_I^T)^{-1} (A_I q^{-1} r + C_1 + C_2 + d) \tag{17}$$

or the explicit subsystems description of the solutions are:

$$\begin{vmatrix} Y_1^{opt} \\ Y_2^{opt} \end{vmatrix} = - \begin{vmatrix} q_1^{-1} & 0 \\ 0 & q_2^{-1} \end{vmatrix} \begin{vmatrix} r_1 \\ r_2 \end{vmatrix} + \begin{vmatrix} q_1^{-1} & 0 \\ 0 & q_2^{-1} \end{vmatrix} \begin{vmatrix} I_m \\ I_m \end{vmatrix} \left(\begin{vmatrix} I_m & I_m \end{vmatrix} \begin{vmatrix} q_1^{-1} & 0 \\ 0 & q_2^{-1} \end{vmatrix} \begin{vmatrix} I_m \\ I_m \end{vmatrix} \right)^{-1} *$$

$$* \left(\begin{vmatrix} I_m & I_m \end{vmatrix} \begin{vmatrix} q_1^{-1} & 0 \\ 0 & q_2^{-1} \end{vmatrix} \begin{vmatrix} r_1 \\ r_2 \end{vmatrix} + C_1 + C_2 + d \right)$$

or

$$Y_1^{opt} = -q_1^{-1} r_1 + q_1^{-1} \left(q_1^{-1} + q_2^{-1} \right)^{-1} \left(q_1^{-1} r_1 + q_2^{-1} r_2 + C_1 + C_2 + d \right)$$

$$Y_2^{opt} = -q_2^{-1} r_2 + q_2^{-1} \left(q_1^{-1} + q_2^{-1} \right)^{-1} \left(q_1^{-1} r_1 + q_2^{-1} r_2 + C_1 + C_2 + d \right)$$

In terms of the initial problem, applying (16) the relations above can be expressed as

$$Y_1^{opt} = -A_1 Q_1^{-1} R_1 + (A_1 Q_1^{-1} A_1^T)(A_1 Q_1^{-1} A_1^T +$$
$$+ A_2 Q_2^{-1} A_2^T)^{-1}(A_1 Q_1^{-1} R_1 + A_2 Q_2^{-1} R_2 + C_1 + C_2 + d)$$
$$Y_2^{opt} = -A_2 Q_2^{-1} R_2 + (A_2 Q_2^{-1} A_2^T)(A_1 Q_1^{-1} A_1^T +$$
$$+ A_2 Q_2^{-1} A_2^T)^{-1}(A_1 Q_1^{-1} R_1 + A_2 Q_2^{-1} R_2 + C_1 + C_2 + d)$$

The optimal solution $x(Y)$ is expressed as Taylor series at the point $x_i = C_i$ and according to (4) it follows

$$x_i(Y_i) = x_{i0} - \frac{dx_i}{dY_i^T} C_i + \frac{dx_i}{dY_i^T} |_{x_{i0}} Y_i$$

or

$$x_i(Y_i) = -Q_i^{-1} R_i + Q_i^{-1} A_i^T (A_i Q_i^{-1} A_i^T)^{-1} A_i Q_i R_i + Q_i^{-1} A_i^T (A_i Q_i^{-1} A_i^T)^{-1} Y_i \qquad (18)$$

and after transformations it follows (Stoilova, 2010)

$$x_i(Y_i) = -Q_i^{-1} R_i + Q_i^{-1} A_i^T \left(A_1 Q_1^{-1} A_1^T + A_1 Q_1^{-1} A_2^T \right)^{-1} \left(A_1 Q_1^{-1} R_1 + A_1 Q_1^{-1} R_1 + C_1 + C_2 + d \right) \quad (19)$$

These relations, derived for the case of allocation of additional resources for bi-level system allow to be implemented bi-level control policy for fast resource allocation. The subsystems send to the coordinator their steady state values x_{i0}. The coordinator defines the appropriate coordination problem (15) and evaluates the corresponding solutions Y for the resource allocation. The final subsystems solutions are found by merely substitutions of Y in (4). Thus, the global problem of the resource allocation (2) is solved faster, using the current steady states control solutions of the subsystems.

4. Numerical example

Several problems of resource allocation, solved by bi-level hierarchical approach are considered. It is assumed that initially the sub-systems have C_1 and C_2 allocated resources.

Then, additional resources d have to be allocated, $d_{new}=j.d_{old}$, $j=0,1,2,3,4$. The scale of the resource problem (N) is increased from $N=4$ (which corresponds to subsystems' dimensions $n_1=n_2=2$) to $N=6$, $n_1=n_2=3$; $N=8$, $n_1=n_2=4$; $N=10$, $n_1=n_2=5$; $N=12$, $n_1=n_2=6$. For each of these cases problem (2) is solved, applying three methods: evaluation without using the steady state subsystem solutions; evaluation applying goal coordination; evaluation, using the steady state subsystem solutions. Comparison of the computational performance is done. Thus, the most computational effective approach is identified.

The initial resource allocation problem is in the form

a. $n_1 = 2$ $n_2 = 2$ $N = 4$

$$\min_{x}\left\{ \frac{1}{2}\begin{vmatrix} x_{11} & x_{12} & x_{21} & x_{22} \end{vmatrix}\begin{vmatrix} 4 & -1 & 0 & 0 \\ -1 & 3 & 0 & 0 \\ 0 & 0 & 2 & -1 \\ 0 & 0 & -1 & 1 \end{vmatrix}\begin{vmatrix} x_{11} \\ x_{12} \\ x_{21} \\ x_{22} \end{vmatrix} + \begin{vmatrix} -6 & -2 & -4 & -5 \end{vmatrix}\begin{vmatrix} x_{11} \\ x_{12} \\ x_{21} \\ x_{22} \end{vmatrix} \right\}$$

subject to

$$x_{11} + 2x_{12} + x_{21} + x_{22} = 1 + 3 = 4$$
$$2x_{11} + x_{12} - 4x_{21} + x_{22} = -1 - 1 = -2$$

where

$$Q_1 = \begin{vmatrix} 4 & -1 \\ -1 & 3 \end{vmatrix}, Q_2 = \begin{vmatrix} 2 & -1 \\ -1 & 1 \end{vmatrix}, A_1 = \begin{vmatrix} 1 & 2 \\ 2 & 1 \end{vmatrix}, A_2 = \begin{vmatrix} 1 & 1 \\ -4 & 1 \end{vmatrix},$$

$$R_1^T = \begin{vmatrix} -6 & -2 \end{vmatrix}, R_2^T = \begin{vmatrix} -4 & -5 \end{vmatrix}, C_1 = \begin{vmatrix} 1 \\ -1 \end{vmatrix}, C_2 = \begin{vmatrix} 3 \\ -1 \end{vmatrix}.$$

It is necessary to allocate additional resource $d = \begin{vmatrix} -1 \\ 1 \end{vmatrix}$, d has 5 values: $d=j.d$, $j=0,1,2,3,4$

b.   In this case the problem dimension is increased to:

$$n_1 = 3 \quad n_2 = 3 \quad N = 6$$

The problem's data is

$$Q_1 = \begin{vmatrix} 4 & -1 & 1 \\ -1 & 3 & -2 \\ 1 & -2 & 2 \end{vmatrix}, Q_2 = \begin{vmatrix} 2 & 1 & -2 \\ 1 & 4 & -1 \\ -2 & -1 & 4 \end{vmatrix}$$

$$A_1 = \begin{vmatrix} 1 & 2 & -2 \\ 2 & 1 & 1 \end{vmatrix}, A_2 = \begin{vmatrix} 1 & 1 & 2 \\ -4 & 1 & -3 \end{vmatrix},$$

$$R_1^T = \begin{vmatrix} -6 & -2 & -1 \end{vmatrix}, \quad R_2^T = \begin{vmatrix} -4 & -5 & -1 \end{vmatrix},$$

$$C_1 = \begin{vmatrix} 1 \\ -1 \end{vmatrix}, \quad C_2 = \begin{vmatrix} 3 \\ -1 \end{vmatrix}.$$

It is necessary to allocate additional resource $d = \begin{vmatrix} -1 \\ 1 \end{vmatrix}$, where d has 5 values: $d=j.d,\ j=0,\ldots,4$.

c.   The problem's dimension is set to:

$$n_1 = 4 \quad n_2 = 4 \quad N = 8$$

d.   The problem's dimension is set to:

$$n_1 = 5 \quad n_2 = 5 \quad N = 10$$

e.   The problem's dimension is set to:

$$n_1 = 6 \quad n_2 = 6 \quad N = 12$$

The data of the problems is:

$$Q_1 = \begin{vmatrix} 4 & -1 & 1 & 2 & 1 & -2 \\ -1 & 3 & -2 & -1 & 3 & -1 \\ 1 & -2 & 2 & 1 & -2 & 2 \\ 2 & -1 & 1 & 2 & -1 & -1 \\ 1 & 3 & -2 & -1 & 6 & 1 \\ -2 & -1 & 2 & -1 & 1 & 18 \end{vmatrix}, \quad Q_2 = \begin{vmatrix} 2 & -1 & -2 & 1 & -1 & 1 \\ 1 & 4 & -1 & 2 & 0 & 2 \\ -2 & -1 & 4 & -2 & 2 & -1 \\ 1 & 2 & -2 & 3 & -1 & 2 \\ -1 & 0 & 2 & -1 & 2 & 2 \\ 1 & 2 & -1 & 2 & 2 & 12 \end{vmatrix},$$

$$d = \begin{vmatrix} -1 \\ 1 \end{vmatrix}$$

$$A_1 = \begin{vmatrix} 1 & 2 & -2 & -3 & 4 & 0 \\ 2 & 1 & 1 & -1 & -3 & 4 \end{vmatrix}, \qquad A_2 = \begin{vmatrix} 1 & 1 & 2 & -1 & -3 & -2 \\ -4 & 1 & -3 & 3 & 1 & 0 \end{vmatrix},$$

$$C_1 = \begin{vmatrix} 1 \\ -1 \end{vmatrix}, \qquad\qquad\qquad C_2 = \begin{vmatrix} 3 \\ -1 \end{vmatrix},$$

$$R_1^T = \begin{vmatrix} -6 & -2 & -1 & -3 & -1 & -4 \end{vmatrix}, \quad R_2^T = \begin{vmatrix} -4 & -5 & -1 & -2 & -3 & -1 \end{vmatrix}.$$

5. Problem's solution

Each problem is solved by three methods:

1.   Using the Optimization Toolbox of MATLAB, the function QP for solving linear-quadratic problems is applied. The computational efficiency is assessed by the number

of the operations with floating point (flops), performed by the processor during the solution of the resource allocation problem. This assessment is performed for several increases of the additional resources: from *j=0* (without additional resource), to *j=1* (the additional resources are **d**), *j=2* (the additional resources are 2**d**), respectively for *j=3* and *j=4*.

2. The resource allocation problem is solved, applying the non-iterative goal coordination. The computational efficiency is assessed also by the number of "flops", performed by the processor. The problem is solved, according to the relation (Stoilov&Stoilova, 1999)

$$x = Q^{-1}[R - A^T(AQ^{-1}A^T)^{-1}(AQ^{-1}R + C + j.d)]$$

or

$$x = \underbrace{Q^{-1}R + Q^{-1}A^T(AQ^{-1}A^T)^{-1}(AQ^{-1}R + C)}_{\alpha} + \underbrace{Q^{-1}A^T(AQ^{-1}A^T)^{-1}}_{\beta} j.d$$

$$x = \alpha + \beta.j.d$$

Evaluation algorithm:

For *j=0*, sequentially are calculated:

a. the value of α
b. the value of β

The global solution is $x^{opt} = \alpha$

c. The number of "flops" is assessed.

For j=1 additional resources **d** have to be allocated

a. The values of α and β are used from the case *j=0*;
b. The optimal solution $x = \alpha + \beta.j.d$ *(j=1)* is calculated
c. The number of "flops" is assessed.

For ***j=2***, ***j=3***, ***j=4*** the algorithm follows the case of ***j=1***

3. The resource allocation problem is solved with non-iterative predictive co-ordination, applying relation (17)

$$Y_1^{opt} = -A_1Q_1^{-1}R_1 + (A_1Q_1^{-1}A_1^T)(A_1Q_1^{-1}A_1^T + A_2Q_2^{-1}A_2^T)^{-1}(A_1Q_1^{-1}R_1 + A_2Q_2^{-1}R_2 + C_1 + C_2 + d)$$

which is presented like

$$Y_1^{opt} = -A_1Q_1^{-1}R_1 + (A_1Q_1^{-1}A_1^T)\underbrace{(A_1Q_1^{-1}A_1^T + A_2Q_2^{-1}A_2^T)^{-1}(A_1Q_1^{-1}R_1 + A_2Q_2^{-1}R_2 + C_1 + C_2)}_{\gamma_1} +$$

$$+ \underbrace{(A_1 Q_1^{-1} A_1^T)(A_1 Q_1^{-1} A_1^T + A_2 Q_2^{-1} A_2^T)^{-1}}_{\delta_1} d)$$

or

$$Y_1^{opt} = \gamma_1 + \delta_1 d \tag{20}$$

Respectively, it follows

$$Y_2^{opt} = \gamma_2 + \delta_2 d \ .$$

According to (18), it holds

$$x_i(Y_i) = \underbrace{-Q_i^{-1} R_i + Q_i^{-1} A_i^T (A_i Q_i^{-1} A_i^T)^{-1} A_i Q_i R_i}_{\alpha_i} + \underbrace{Q_i^{-1} A_i^T (A_i Q_i^{-1} A_i^T)^{-1}}_{\beta_i} Y_i$$

or

$$x_1(Y_1) = \alpha_1 + \beta_1 Y_1 \qquad\qquad x_2(Y_2) = \alpha_2 + \beta_2 Y_2$$

By substituting above the relations of Y_1 and Y_2 from (20) it follows

$$x_1(Y_1) = \underbrace{\alpha_1 + \beta_1 \gamma_1}_{L1} + \underbrace{\beta_1 \delta_1}_{M1} d = L1 + M1.d$$

$$x_2(Y_2) = \underbrace{\alpha_2 + \beta_2 \gamma_2}_{L2} + \underbrace{\beta_2 \delta_2}_{M2} d = L2 + M2.d \ .$$

It is evident that having off-line evaluations of the parameters $\alpha_i, \beta_i, \gamma_i, \delta_i$, $i=1,2$, the solution of the resource allocation problem is easily found for each variation of the resources d . This follows from the explicitly derived relation $x_i(Y_i)$, which does not insist to solve appropriate optimization problem.

Evaluation algorithm:

For *j=0*, sequentialy are calculated*:*

a. the values of α_1 , β_1
b. the values of α_2 , β_2
c. the values of γ_1 , δ_1
d. the values of γ_2 , δ_2
e. the values of L_1 , M_1
f. the values of L_2 , M_2
g. The global solution is $x_1 = L_1 \quad x_2 = L_2 \quad x = [x_1 ; x_2]$
h. The number of "flops" is assessed.

For *j=1* additional resources *d* have to be allocated

a. A) The values of $\alpha_1, \alpha_2, \beta_1, \beta_2, \gamma_1, \gamma_2, \delta_1, \delta_2, L_1, L_2, M_1, M_2$

are used from the case *j=0;*

b. B) The optimal solutions $x = [x_1; x_2]$,

$$x_1 = L_1 + M_1.j.d , \ x_2 = L_2 + M_2.j.d \ (j=1),$$

are calculated.

c. The number of "flops" is assessed.

For *j=2, j=3, j=4* the algorithm follows the case of *j=1.*

6. Conclusions

Using MATLAB algorithm, the resource allocation problem is solved, without using the intermediate states of the subsystems, when they use resources C_i. In that manner, each optimization problem, parameterized by the resource variation *d* is solved in independent way as a fully new problem. Thus, the evaluation performance, assessed as number of flops is poorly preserved.
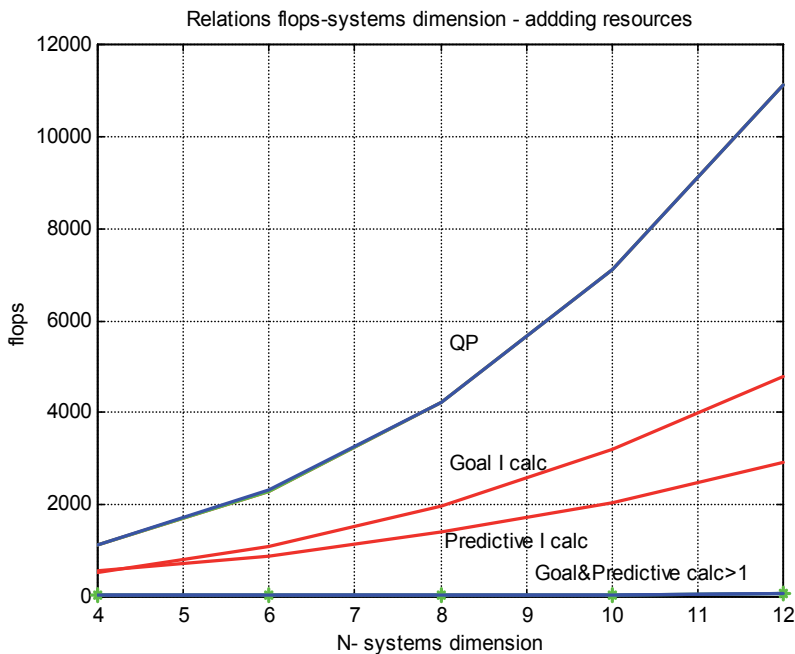

Fig. 3. Variation of calculation according to problem's dimension.

For the case of non-iterative goal coordination it is possible to use previously calculated coefficients, defined for the case of the steady-state subsystem management with initially allocated resources C_i. Thus, the influence of the additional resources d to the computational workload of the processor is lower, compared with the case of MATLAB implementation. The increase of flops from the problem's dimension N is presented in Figure 3. The curve "QP" refers to the implementation of MATLAB's QP function. "Goal I calc" and "Predict I calc" are the curves, resulting from the calculation of Goal and Predictive coordination approaches, which lack with additional resources, $d=0$ ($j=0$). For the cases with additional resources, $j>0$, the evaluation performance is very high because the intermediate results for j=0 are used and the amount of the new calculations are very few. Thus, the relation flops (N) is situated near by the N axis.

The comparison, between the algorithms in solving the resource allocation problem gives preference to the method of the non-iterative goal coordination. For that case the amount of calculations are nearly 50% less than MATLAB's QP implementation for the initially resource allocation, j=0.

For the case j≠0 when additional resources have to be allocated, the non-iterative coordination's approach give quite better results because the optimization is not solved again, but the previously defined solutions for j=0 are used and the new additional calculations are quite few. Thus, the amount of flops decreases dramatically.

A comparison between the amount of flops, performed by the predictive non-iterative coordination algorithm and the MATLAB QP function, according to the frequency of the resource variation $j=0,1,2,3,4$ is illustrated in Figure 4. It is evident that for the case of QP implementation, its curve preserves the flops number as a constant value, because of the resource variation, the resource allocation problem has to be solved repetitively. Applying Goal and Predictive coordination algorithm, only for the initially evaluation of the steady state resource allocation, j=0, flops are performed, but they are nearly half of the QP's value. Then for resource variations, $j=1,2,3,4$, the additions of flops is very few, which results to close behaviour of the curves towards N axis. However, in both cases, according to the problem's dimensions and towards the frequency of the resource variations, the algorithms of the predictive coordination strategy is better and preferable because of its efficiency and rapidity.

Hierarchical bi-level model for initial separable linear-quadratic problem is developed. The coordinator's and sub-systems problems are defined. The coordinator's problem is determined like linear-quadratic one with definition area less than the definition area of initial problem. It is supposed that there is known resources and additional ones have to be allocated among the sub-systems. The inexplicit function $x_i(y_i)$ is developed in Taylor series in the point of known resources. Using the non-iterative predictive coordination for each sub-system the coordinating influences are realized. An example, illustrating the advantage of this model is presented.

The solution of the source problem using bi-level hierarchical system is preferable for on-line cases. Thus the time for management of a hierarchical or distributed systems decreases considerably.
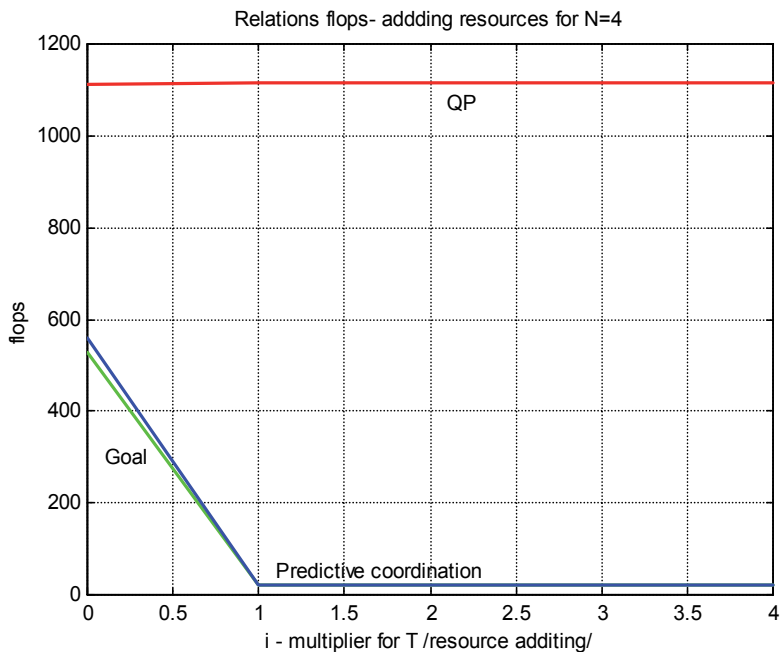
Fig. 4. Variation of calculations according to added resources.

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Part 3

Practical Cases for Time Management

A Practical Application of Time Management

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1. Introduction

"A foolish consistency is the hobgoblin of little minds." Thomas Hobbs, British philosopher and political theorist, made this oft-quoted observation in 1588. But thoughtful consistency is one of the defining qualities of time management and goal achievement: That which we do on a regular basis has potential to yield extraordinary rewards over time. Think, for a moment, the results of spending one hour a day on just about any activity. How would your life be different if you spent one hour a day exercising? Practicing an instrument? Writing up projects that lie dormant in your computer files? Improving personal relationships? Acquiring wealth?

But then Mr. Hobbs intrudes. There are millions who quite consistently watch TV programs, obsess on YouTube videos, clean their houses, hang out with friends, drink, party, or play video games. There is nothing particularly wrong with any of these activities, but those who devote their lives to such pursuits rarely end up with much to boast about. Can scientific research help us distinguish between a consistency that generates extraordinary results and a consistency that condemns one to membership among the mediocre?

As this chapter progresses four specific components of "a practical application of time management" are addressed: First is the description of a study that reveals how important time management is to personal or academic success; next the story of Ivy Lee illustrates the importance of integrating clear goals with time management; third, a real-world example and how the consideration of both psychological factors and structural factors facilitates goal achievement; and fourth, the importance of thorough preparation for time management to yield the desired results. The chapter concludes with a summary of key points.

2. Research support for the importance of time management (and clear goals)

In a recent project (George, Dixon, Stansal, Gelb, & Phiri, 2008) we explored factors associated with student success among a sample of 231 undergraduates. Participants were students from a small liberal-arts university in Alberta, Canada. The requirements for participation were extensive: completion of a lengthy questionnaire and monitoring and recording daily activities in 30-minute increments for a week. This detailed method of data acquisition allowed researchers to move beyond the frequently-biased personal perceptions to measured activities as predictors of success.

First we needed to operationalize the definition of success. Among a student sample, academic performance is clearly one criterion. So, consistent with many other studies (e.g., Trockel, et al. 2000; Lammers, et al., 2001; Lasane & Jones, 1999), we employed overall cumulative GPA (Grade-Point Average on a 4-point scale) as one success measure. But we know that GPA is only weakly correlated with accomplishment in other areas of life (Stanley, 2000), so we created a second measure called "Personal Success".

The creation of this second measure was a bit complicated. First we instructed each subject to write down "three important goals (in any area of interest) that you presently possess." After acquiring all the forms, several of the authors rated the three goals based on the widely-used S.M.A.R.T. principle (Specific, Measurable, Attainable, Relevant, Time specific). Each of these five areas was rated on a 7-point scale. The composite score (mean of the five sub areas) produced a scale that ranged from clearly-defined goals (7) to vague or poorly defined goals (1). Goal clarity, then, was used as a predictor variable in analyses that followed.

For the personal success measure, each subject answered 11 questions that indicated how well they had achieved (or were successfully progressing toward) the stated goals. To increase objectivity and reduce personal bias, each subject revealed the three goals to a friend who answered the same 11 questions. A composite of those 22 responses (11 by the subject, 11 by the friend) resulted in our second dependent variable, Personal Success.

Finally, since both types of goals are important to most students we created a third dependent variable called "Total Success" that weighted GPA and Personal Success equally.

A combination of the time diary measures and the questionnaire items yielded a large number of potential predictor variables. Below we present a chart that shows the primary variables and their correlations (designated as "r") with GPA, Personal Success and Total Success. Remember that a *positive* correlation means that *more* of that quality results in *greater* success, whereas a *negative* correlation means that *more* of that quality results in *less* success. A larger the *r*-value (positive or negative) is associated with a greater influence. For instance: the strongest correlation is between Clear Goals and Personal Success ($r = .52$) and is strongly significant ($p < .001$). The factors that contribute to success are rank ordered from most important to least important (but still significant). Then the factors that detract from success follow, also rank ordered.

Factors that Contribute to Success Predictor Variables (below)	Dependent Variables		
	GPA	**Personal Success**	**Total Success**
Clear goals	$r = .28, p < .001$	$r = .52, p < .001$	$r = .49, p < .001$
Time management skills	$r = .38, p < .001$	$r = .38, p < .001$	$r = .46, p < .001$
Good diet	$r = .30, p < .001$	$r = .33, p < .001$	$r = .39, p < .001$
Good physical health	$r = .20, p = .001$	$r = .39, p < .001$	$r = .36, p < .001$
Emotional stability	$r = .12, p = .037$	$r = .37, p < .001$	$r = .30, p < .001$
Personal spirituality	$r = .14, p = .016$	$r = .31, p < .001$	$r = .27, p < .001$
Own their own computer	$r = .28, p < .001$	$r = .15, p = .013$	$r = .26, p < .001$
Self-esteem	$r = .02$, NS	$r = .35, p < .001$	$r = .23, p < .001$
Devotional time	$r = .15, p = .010$	$r = .18, p = .003$	$r = .21, p = .001$
Time studying	$r = .21, p = .001$	$r = .01$, NS	$r = .13, p = .023$
An Internal locus of control	$r = .13, p = .023$	$r = .07$, NS	$r = .12, p = .033$

Factors that Contribute to Success	Dependent Variables		
Predictor Variables (below)	GPA	Personal Success	Total Success
Intelligence	$r = .20$, $p = .001$	$r = -.06$, NS	$r = .09$, NS
Factors that Detract from Success			
Spend time in passive leisure	$r = -.22$, $p < .001$	$r = -.17$, $p = .005$	$r = -.24$, $p < .001$
Get up late	$r = -.26$, $p < .001$	$r = -.13$, $p = .027$	$r = -.24$, $p < .001$
More time sleeping	$r = -.12$, $p = .038$	$r = -.06$, NS	$r = -.11$, $p = .043$

Code: r—Pearson bi-variate correlation, p—significance of the correlation, NS—not significant

Table 1.

Just a glance shows that the most influential predictors of student success are clearly-defined goals and excellent time-management skills. Regression analysis is a procedure that reveals which predictor variables influence the dependent variable *after* the influence of other variables is considered. Regression analysis generates a much more stringent list of predictors than do simple correlations. For those not fluent in the principles of regression, a simple illustration clarifies: personal spirituality is significantly correlated with Personal Success ($r = .31$, $p < .001$) but when other variables are included as predictors spirituality drops from .31 to .16 ($\beta = .16$, $p = .003$) but still retains significance. A closely related concept is time spent in devotions. This variable is also significantly associated with Personal Success ($r = .18$, $p = .003$) but when other variables are included, devotional time drops to non-significance. Undoubtedly some of its predictive power was consumed by the spirituality variable.

In the regression equations the number one predictor of GPA is time management skills ($\beta = .24$, $p < .001$); the number one predictor of Personal Success is clearly-defined goals ($\beta = .40$, $p < .001$); and the top two predictors for Total Success are clearly defined goals ($\beta = .30$, $p < .001$) and time-management skills ($\beta = .22$, $p < .001$). These two far outrank more traditional predictors of success such as study time, self-esteem, emotional stability, internal locus of control, and intelligence.

The study clearly identifies the importance of clear goals and time-management skills but the question arises, how do we teach such skills? How do we apply the concepts in a productive way? That is the title and goal of this chapter: how do we make practical application of information that the present study reveals is so important?

3. The Importance of clear goals: The story of Ivy Lee

The first basic concept to be learned is that time management skills and clearly defined goals go hand in hand. Without clear goals, management of time and activities becomes Thomas Hobb's "hobgoblin of little minds." Dan Aslet, famous author on how to clean a house, speaks of a client who spent 40 years acquiring possessions and the next 40 dusting and rearranging them. Think back to the first few paragraphs of this chapter when we spoke somewhat disparagingly of watching TV, obsessing on YouTube videos, cleaning houses, partying, or playing video games. For most people these are time wasters, but there are people who make excellent livings critiquing TV shows, posting popular YouTube videos,

writing books about how to clean houses, marketing party favors and creating video games. So it is not the activity that determines importance, rather it is whether there are clear goals associated with that activity. The centrality of clear goals is illustrated in the following story.

In the early 1900s a gentlemen named Ivy Ledbetter Lee (1877 – 1934) met with the owner of a small steel company. Ivy told him that he could teach him and his employees to manage their time in such a way as to achieve far more than he thought possible. The owner told Mr. Lee that he already knew the importance of time management but had difficulty applying it. He told Mr. Lee, "If you can show me how to actually achieve effective time management, I am willing to pay you well." Mr. Lee told him that in 30 minutes he could teach him a method that would quadruple his current output, and stated his fee: "You apply what I teach you, and after you try it for a while, send me a check for whatever you think it is worth." The owner tried the principles taught by Mr. Lee and several months later sent him a check for $25,000 stating that it was the most useful information he had ever acquired.
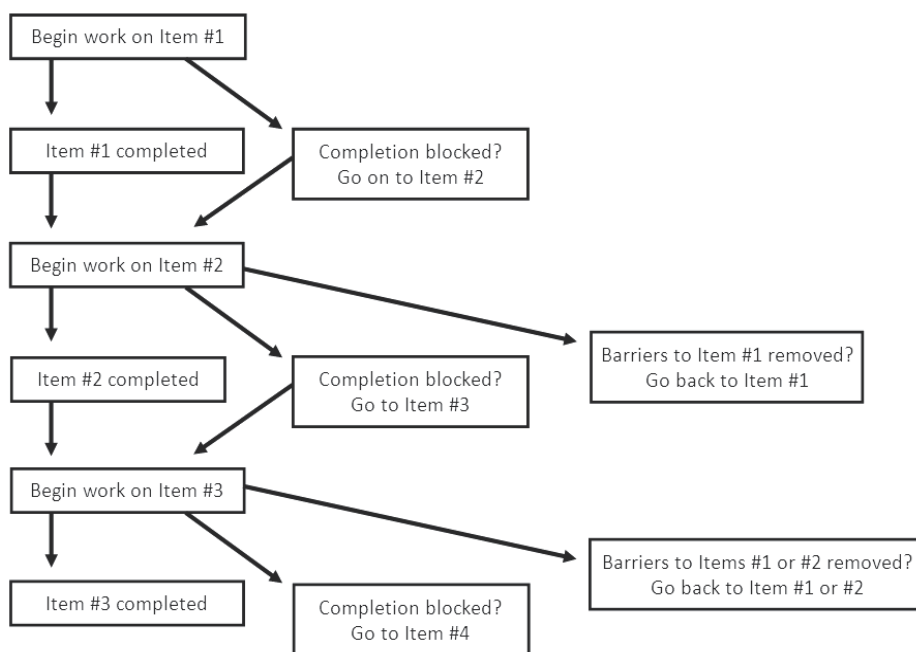
Fig. 1.

What was it that Mr. Lee explained at that time? He told the owner, I want you to take out a sheet of paper and write down the six most important things that need to be done tomorrow. The owner scratched his head and after about ten minutes had his list of six. Mr. Lee then told him, now, rank order the six from most important to least important. This process took another five minutes. Now, said Mr. Lee. When you get up tomorrow begin doing the #1 item on your list. Continue to do that item until it is finished. If some barrier prevents you completing #1, shift your attention to the #2 item and continue working on that until one of two events occur: a) Whatever blocked completion of #1 is resolved—if so, you return to #1 and complete it. b) You have completed #2 or something prevents completion of #2. In either case move on to #3 and work on that until finished, unless something blocks your completion

of #3, and so forth. If some emergency intrudes (that prevents you continuing on your numbered projects), you have either completed or made progress on the most important items. There is no other method by which you could achieve more.

What Mr. Lee described can be presented in a time-flow chart that looks something like this (previous page).

The business man that Mr. Lee spoke with was Charles Schwab, who, over the next few years would guide Bethlehem Steel to become one of the largest steel producers in the world and enable Mr. Schwab to become one of the richest men in the world.

So what characterizes the Lee plan that makes it so effective, and in what way does it differ from time-management mechanisms promoted today?

Essentially the plan provides the power of simplicity and clarity. First, goals are clearly defined—that is, it possible to identify when a goal is completed. Second there is total clarity on the sequence of goal achievement that will yield success—which goal is more important than another. The final quality that empowers success is that you always know what to do. There are never moments of indecisiveness. If you have completed one task, go on to the next. If something blocks completion, begin working on the next. If whatever blocked resolution of a prior goal resolves, go back and continue work on that project until completion. Even the vagaries of life are built into the model. If life pulls you away, depart, do what you have to do, and return to your task sequence when your circumstances allow.

When you contrast Ivy Lee's plan with today's seminars on effective time management what disappears is the simplicity. A common method promoted by many time-management firms is to write down in a day timer or some electronic time-management device the list of items you plan to accomplish on a certain day. There may be 20, 30, or 40 of them. There is a mix of personal and professional goals. You then code goals according to importance: An "A" represents "urgently important", "B" represents important but less so. Items coded "C" are the least important. Then you are instructed to rank order you're A's your B's and your C's, and complete them in that order. But I have watched scores of people attempt to create and follow such a plan, but have rarely seen success. It fails under the weight of its own complexity. At some level it looks simple: "Complete items in the stated order." What could be easier? The problem is that this process attempts to build the entire spectrum of life's activities into the system. In today's world there are so many events demanding your attention that in this case, "complete items in this order" is quite impossible.

How does the Lee plan differ? First Ivy Lee did not mix "specified accomplishment" with personal issues. For Charles Schwab the plan addressed business success. The pull of personal life was fully acknowledged, but was represented simply as something that pulled you away from the plan you had created. There was no attempt to integrate. When your personal issues resolve, then get back to the plan.

4. Application of the Ivy Lee plan in a complex world

So, one application is to avoid mixing the goal-accomplishment phase of life with other areas. I present a personal example to illustrate. As I write there are three major publication projects awaiting completion: 1) This chapter, 2) A research project dealing with sexual tension in cross-sex friendships, and 3) A research project that deals with the influence of

discrepancy factors in marital satisfaction. The chapter is due October 12 and the two research projects are scheduled for completion by November 30. Keep in mind that these projects are in addition to a full life otherwise. Major time consumers include: Coaching track and cross country at a local high school and junior college, daily practice on the trombone and piano, rehearsing and performing in three musical groups, daily exercise, not to mention being a full-time professor—teaching four classes a semester and serving on committees. At the personal level I am married with two children at home, and am a movie buff who enjoys collecting and viewing classic movies.

So, amidst all that complexity, how is it possible to create the simplicity and clarity to accomplish the three desired goals?

First off, over the years, I have become skilled at automatizing certain areas of my life: All classes, committees, coaching and rehearsals are already scheduled. I simply show up and do what I am supposed to do at those times. Other things are already tightly engineered into a current pattern such as my trombone and piano practice and exercise. Other things are not so tightly structured. I refer specifically to class prep and grading of papers. I have a TA for grading and the demands of class prep ebb and flow from class to class and topic to topic. But without scheduling, I always get prep in somehow and am quite capable of "winging it" occasionally. The classic movie obsession requires no schedule as I can enjoy it when time allows and ignore it otherwise. The big wild card (and where I think most time-management schemes self-destruct) is the area of personal life: nurturing my marriage and the growth of my children. Preparing for my wife's 50th birthday party did not fit into any schedule and became what Ivy Lee described as "when personal matters intrude". I simply accomplished less on the three projects in the week leading up to that event. What, then, can we do to maximize the likelihood of success in (in this case) the three desired areas of accomplishment?

5. Integration of both psychological and structural issues

I am a psychologist and I look at both the psychological components and structural components in creating a plan that can work. We begin with the psychological: Why do I want to publish these three projects anyway? I am a professor at a small liberal arts "teaching" university, am tenured and am not required to publish. The university encourages "scholarly activity" leading to publication and pays an honorarium when you do. But my earnings would be much greater if I spent the equivalent amount of time working at McDonalds. So in this case, the "why" is built into my self-definition. I did my grad work at a top research university (UCLA) and research that contributes to the knowledge base in my areas of expertise is something I do. However, there are many settings where the why must be explored more thoroughly.

The structural component includes that I don't teach Monday, Wednesday and Friday allowing me to be in my office between 9:30 a.m. and 3:30 p.m. A locked door and a disconnected phone allows uninterrupted time to work. Five hours per day are allotted to the three projects—a total of 15 hours a week. Fifteen hours a week should allow completion of the chapter before October 12 and allow both research projects to be submitted by the end of November. Let's be frank. I rarely get in all 15 hours. Almost always something intrudes. But if I manage only 8 or 10 hours, it is solid progress toward the desired goal.

Finally, the sequencing. The order is: 1) The chapter—it's due first; 2) Sexual tension in cross-sex friendships—that project is a bit further along, and 3) Discrepancy factors in

Marital Satisfaction. The chapter is not only due first, but is simplest: I am the only author and my wife and the editors of the book are the only ones to critique it before publication. For the two other projects data collection and entry is complete, analysis and interpretation is finished, and a rough drafts of both papers are largely in place. But there is much still to be done: Coordinating with my co-authors as we revise the paper, review by colleagues before submission, completion of tables, charts and references, and so forth.

I will work on the chapter until it is completed. Then my co-authors and I will continue work on the sexual-tension project. In a practical sense there will be a good deal of back-and-forth between the two research studies. When I send the first study off for a colleague to review, then I will work on the second until the first is returned with comments and I can continue toward completion on that one. I suspect that the two projects will be finished about the same time and submitted within a week or two of each other.

But the point is that the plan is pure Ivy Lee. Clear goals, rank ordered, and work one of the projects until completed or barriers prevent further progress. And I don't try to fit my wife's 50th birthday party into the mix. I simply accept that "personal matters intrude" and click back into the program when the fun and demands of the party are over.

Here's what the time-flow chart (introduced earlier) looks like with my own projects inserted. Notice the inclusion of the feed-back loops to indicate the back and forth that invariably takes place in large projects of this nature:
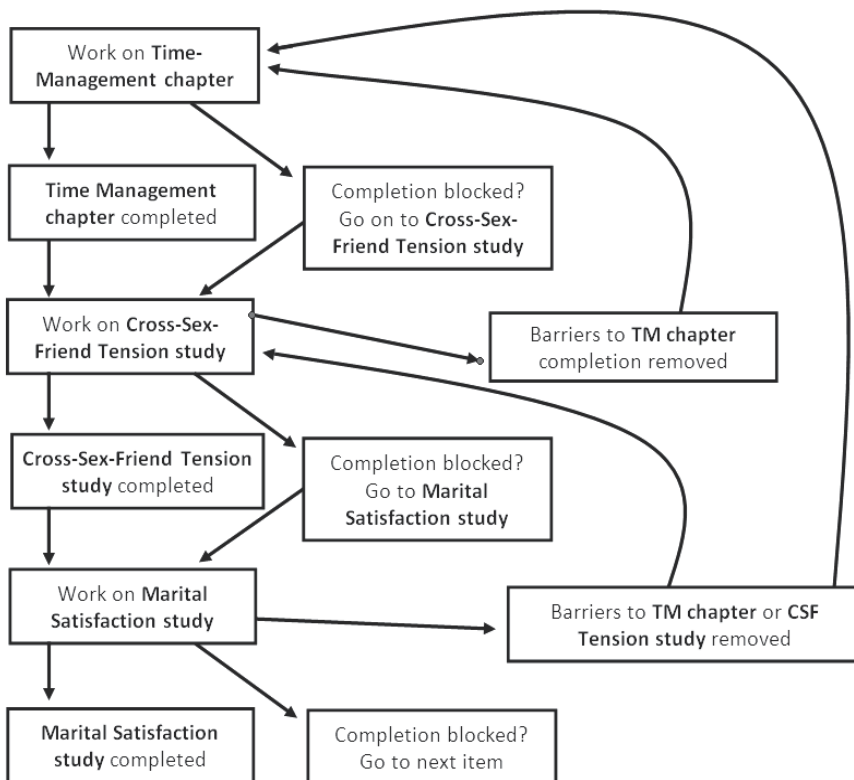

Fig. 2.

6. The importance of thorough preparation

We now take a breath and consider another aspect of effective time management. Prior to completing my Ph.D., I taught high school mathematics for nine years. It was just before my final year of teaching that Alhambra City Schools hired a motivational speaker for a presentation to the teachers of the six high schools in our district. The master presenter described teaching methods that would transform the lives of students and empower extraordinary levels of accomplishment. Having already taught high school for eight years, everything this man said made sense. I wondered why it was that all teachers did not implement the techniques he was presenting, and was excited about applying his material to my own teaching.

A few days later the school year started and I quickly found out why everyone didn't do it. It took a huge amount of time and effort for his process to work—engaging parents, lining up volunteer teacher aids, creating the worksheets and lessons plans, improving teaching skills. I soon decided it was too much effort to apply, particularly since I had already been accepted at UCLA and knew that my future was not in high school teaching. In subsequent years several key points presented that day have been integrated into my university teaching.

The point is this: If you have challenging projects and it is urgent that you finish them, it may take a good deal of planning before you create a sequence of activities that allows successful completion of these projects.

Yes, it seems in contradiction to the simplicity that Ivy Lee proposed. But let's be clear about simplicity and complexity. Simplicity is allowed by thorough preparation. An athlete preparing for a national championship five months hence will work with the coach many hours creating the plan that will yield the best performance on the big day. That is the "thorough preparation" part. Once the plan is in place then implementation is simple: Each day do what the plan says.

The last item addressed here (prior to a final summary) is the issue of how much preparation time do you need to set up a successful time-management sequence? In general the more challenging the goal and the more difficult the circumstances, the more planning time will be required. Goals are commonly divided into three types of difficulty: Goals that require a choice only, goals that require choice plus effort, and goals that require choice plus effort plus pain. We provide some examples below:

1. **Goals that require a choice only**: Goals in this category simply require choosing to do one activity rather than other activities. If I decide to read Jane Austen's *Pride and Prejudice*, I choose to spend time reading the book, perhaps 30 minutes per day, rather than doing other things. A million different pursuits fall into this category: Tidy my desk, prep my class, bake chocolate chip cookies, read through the Bible, get my car serviced, grade my quizzes. Some of you will complain, "Yeah, but sometimes it is really difficult to find the time." Those who say that are missing the point. This category of goal achievement simply involves choosing to do one activity rather than another. It is up to you, just like Charles Schwab, to determine which activities are priorities.

2. **Goals that require choice plus effort**: The "effort" part is of two kinds. One type of effort is the focus and energy required to finish the task. The other kind of effort is

associated with the complexity of your world. You may have many things pulling on your time and it requires effort to clear the space that allows you to pursue the desired goal. Writing up a research project provides a good example of "choice plus effort". Such writing often taxes your creative and scientific abilities to the limit. Other examples might include learning to play an instrument well, building a successful marriage, refinishing a room in your house, weeding the garden, scrubbing the floor.

3. **Goals that require choice plus effort, plus pain**: These are the most difficult. Examples might include, losing weight, training to run a marathon, quitting smoking, restoring a relationship that has gone toxic, breaking off a relationship that can't work, building muscle mass through weight lifting. Notice that some of the examples deal with physical pain (training for a marathon, losing weight, quitting smoking, lifting weights) whereas others deal more with emotional or relational pain (restoring a relationship, breaking off a relationship).

There is no specific code to determine how much time and effort should be applied to planning based on these three types of goals. First, there are individual differences: what is enormously difficult for one may be easy for another. Then there is the reality that the lines between these three categories are often fuzzy. In general any movement from the low end of the scale (choice only) to the high end of the scale mandates additional time to create a plan that can work.

Planning to achieve the goals I mentioned earlier in this chapter (complete this chapter and the two research projects) required careful thought. All three projects fall into category 2 (choice plus effort). This means that I need to pursue completion when my mind is strong—fatigue kills creative effort. Then, life provides many distractions—with the potential to crowd out time to work on these projects. This requires cooperative effort between my wife and me to determine that the goal is worth achieving and that these projects should be pursued rather than other things. Thirdly it requires a specific identification of when it is possible to work on these projects. And the most important, in the complexity of this wi-fi age, is absolute clarity on the steps to achievement. I am so clear on the steps to complete present projects that it does not disorient me when life intrudes. If my wife called right now and said it is important that you come home and watch a movie with me and the kids, I would finish the sentence and head on home—particularly if it was one of my favorite classics! Sometime the next morning I would continue from where I left off—with the added benefit that my subconscious has been working to organize and create during the 12 hours I was away. "But what if the chapter was due tomorrow?" I hear someone cry. The answer is not trivial. I *planned* to be finished two weeks early. Are you acquainted with the word "proactive"?

7. Summary

In summary then, a number of critical points have been established:

- The research study described in the first few pages of this chapter identifies that clear goals and time-management skills rank as the most important factors in personal or academic success and far outrank items such as study time, emotional stability, locus of control, or IQ.

- Before time can be managed successfully your goals need to be clear, quantifiable (that is, you know when you are finished), and are psychologically and logically sound—remember the S.M.A.R.T. principle.
- Equally important is that you rank order the various projects you are attempting to complete. This ensures that your efforts are always focused on the most important.
- One formula for disaster is trying to plan and regulate all areas of your life at the same time. Instead, create a plan associated with areas that are important (but will get ignored or crowded out if you don't attend to them) and work to keep other areas of your life well-ordered so that many things just happen automatically.
- Retain the clarity of what Ivy Lee proposed: Have the plan clearly in order, and, if life intrudes, fine. Do what you need to do, and when you return, you know exactly where to take up again.
- To plan quickly and superficially assures early breakdown
- Take as much time as is required to create a good plan. The more challenging the goal, the more difficult your circumstances, the more time will be required to make certain that the plan yields the desired result. Most time should be spent when the goal is difficult (such as a #3 goal) and your circumstances are complicated.
- Consider both structural issues (already scheduled obligations and personal resources) and emotional/psychological issues when creating the plan. If you are making a plan to lose weight you better have thought through "What do I do when I get home at 4:30 and am starved?"
- Finally keep it simple. The more complex it is, the more likely it is that your efforts will fail.

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Personal Time-Management and Quality of Life in the Network Society

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1. Introduction

In recent decades, health sciences have evolved towards an integrationist model in which health and illness are not only the result of biological factors, but also those of a psychological and social nature. In this biopsychosocial model, individuals' living conditions and habits play a vital role in explaining their health and quality of life. Lifestyle is thus viewed as a substantial element to be taken into account when seeking to explain illness and promote health (Kaplan, 2003).

An in-depth examination of the concept of lifestyle is not our objective. However, we do feel it appropriate to emphasize the fact that this concept is related to behavioural patterns common to a given social group, patterns which are acquired through the process of socialization. According to this perspective, social changes also tend to entail alterations in people's lifestyles (Korp, 2010).

It seems clear, then, that the transformation advanced societies are undergoing towards what is referred to as the Network society or the information and knowledge society not only involves changes in technology, economy or education, but also in our behavioural patterns; in a word, in our lifestyles.

What characteristic traits of the Network society do we think are of particular relevance in this context? We would like to highlight the following:

- The overabundance of information.
- The speed with which such information becomes obsolete, and the consequent need for new material.
- The individual's simultaneous performance of multiple roles and undertaking of various tasks.
- The need for constant synchronization/coordination with decentralized organizations and people.
- The use of different devices to coordinate everyday life.

In brief, we have to cater for the day-to-day demands of a decentralized, multitasking, flexible, changing society whose members are in permanent contact with each other (Anderson & Tracey, 2001, Castells, 2001; Wellman & Haythornthwaite, 2002).

One of the challenges that underlie the Network society lifestyle is using available time efficiently and productively (Hassan, 2010; Parkins & Craig, 2006). Time is regarded as a limited resource, and its use must be carefully planned and supervised in the context of a day packed with tasks to be carried out, roles to be played and information to be assessed and processed. This perspective is examined, for instance, by Levine and Norenzayan (1999), who base their work on Hoch's theory on the relationship between economic factors and the pace of life; a theory that explores the economic value of people's time.

Strategies and devices designed to help us "save time" are therefore commonplace and actually make it possible to achieve more with the same time resources. However, they may also accentuate our sensation of speed. In fact, together with the experience of overburdening in terms of the roles played on a daily basis, the perception of an accelerated pace of life has been identified as one of the factors responsible for deteriorations in individuals' health (physical and psychological) and their perceived quality of life (Friedman et al., 1996; Gleick, 1999; Roxburgh, 2004). Additionally, the feeling of being constantly rushed is especially evident in technologically-advanced countries (Szollos, 2009).

It's important to point out that the polychronic attitude made necessary by the constant demand for simultaneous attention to multiple tasks is not, per se, a negative factor as regards quality of life (Feldman & Hornik, 1981). However, it can become so as a result of feeling increasing levels of stress caused by a sensation of a lack of time in day-to-day life.

In spite of the relation between time perception and health, Strazdins et al. (2011) point out that the way in which time contours health has been neglected in the literature. Szollos (2009) also makes the criticism that psychological inquiries have been largely missing in the multidisciplinary contributions to the study of time shortage, and highlights the fact that findings related with the psychological questions that could be explored in this field can be meaningfully integrated into the area of well-being and quality of life.

Moreover, Roxburg (2006) points out that scant research is undertaken into how gender differences affect the relation between time perception and quality of life. Despite the fact that time perception is related to social roles and that men and women play different roles, only a few studies take gender indicators into consideration when analyzing time perception and quality of life or health (Roxburg, 2006; De la Fuente, 2007).

In order to contribute to this neglected area of research, we carried out an empirical study of time use in the Network society and its relationship with perceived quality of life. Our aims are: a) to describe the use of time in different daily activities of a group of technology users; b) to analyze possible relations between these time habits and the way in which subjects perceive their quality of life; and c) to explore some gender differences.

2. Methods

2.1 Participants

We enrolled a total of 264 subjects, all of whom were volunteers with access to the Online Campus of the Universitat Oberta de Catalunya (UOC). 70.3% of the volunteers were females and 29.7% males. Their average age was 33 (DT=8.48). Table 1 contains a summary of the sociodemographic data corresponding to the participating subjects.

Marital status		Employed	
Married or with a partner	54.5%	Yes	87.9%
Single	41.3%	No	12.1%
Divorced or separated	4.2%		
Number of children		**Work in a health-related field**	
No children	52.3%	No	83.5%
One	23.4%	Yes	16.5%
Two	12%		
More than three	12%		
Relationship with UOC		**Annual family income**	
Students	76.8%	> €24,000	51.8%
Staff	11.8%	between €12,000 and €24,000	36.4%
External lecturers	8.7%	< €12,000	11.9%
Others	2.7%		
Field of study		**First use of internet**	
Psychology	29.4%	> 5 years ago	62.7%
Business studies	12.6%	Between 2 and 4 years ago	34.2%
Work studies	11.3%	< 2 years ago	3.1%
Other studies offered by UOC, master's degrees and doctorates	46.7%		
Completed studies		**Able to read English**	
General degree	34.1%	Yes	82.4%
Honours degree	28.8%	No	17.6%
Secondary education	18.2%		
Doctorate	6.8%		
Others	12.1%		

Table 1. Sociodemographic description of the participating subjects.

It should be borne in mind that the typical profile was that of a student or professional at an online university that uses distance-learning methods. The data shows that 76.8% of the subjects are students and 23.2% are staff or external lecturers. Those data related to the use of technologies can be summarized as follows: 95.5% used a computer; 95% used a mobile telephone; 62.7 % had been using the internet for over 5 years; 85.2% had a permanent internet connection; and 81% used the internet on a daily basis. It should also be noted that the level of studies of the sample group was quite high. The vast majority (69.7%) had general or honours degrees or doctorates, and 82.4% were able to read English.

2.2 Instruments

The instruments used were as follows:

- **Time usage perception scale (TUPS):** from the analysis of several personal diaries about daily routines, we created a 60-item questionnaire to explore lifestyles in the network society. This questionnaire was used in a previous study (Boixadós et al., 2007) and from the data analysis we obtained several dimensions related to lifestyles. One of these dimensions accounts for how individuals perceive their time usage in their daily

life. This dimension had 11 items (see Table 2) and we grouped them according to the time usage perception scale (TUPS). Thus, TUPS consists of 11 items (with a 5-point Likert scale) on different aspects related to lifestyle, all of which aim at capturing the perception of the use of time in different daily activities, so that the higher scores indicate a slower pace of life and vice versa. The Cronbach alpha internal consistency index is 0.70. Items 3 and 6 weigh in the opposite direction to the original scale.

Items of time usage perception scale (no. of items = 11; α = 0.70)
1.   Adhering to regular sleeping times.
2.   Regular bowel movements.
3.   (-)Delaying going to the toilet despite it being necessary to do so.
4.   Having regular mealtimes
5.   Having meals in peace and quiet, without rushing.
6.   (-) Carrying out more than one task at a time, due to the number of jobs to be done (work-related tasks, family responsibilities, domestic chores, etc.).
7.   Foreseeing and adhering to the time required for different activities (e.g. travelling, meetings, errands, etc.).
8.   Having the necessary time and being sufficiently rested to engage in the desired level of sexual activity.
9.   Taking breaks to counteract the negative effects of physical and/or mental fatigue.
10. Sleeping a minimum of eight consecutive hours a day.
11. Taking an afternoon nap.

Table 2. Items corresponding to the time usage perception scale.

- **Quality of life questionnaire (QoLQ):** this generic questionnaire consists of 39 items, with a five-point Likert scale, designed and validated by Ruiz and Baca (1993) and used with a healthy Spanish population. The factor structure of the version used in this work was confirmed in a previous study (Boixadós et al., 2009). As reflected in Table 3, the items were grouped into four dimensions, namely Social support (13 items), General satisfaction (12 items), Physical/psychological wellbeing (7 items) and Absence of excessive workload/free time (7 items). The Cronbach alpha internal consistency index obtained for each dimension varied between 0.82 and 0.89, and the internal consistency of the total questionnaire score was 0.93.

Quality of life questionnaire (QoLQ) (No. of items = 39; α = 0.93)
FACTOR 1- SOCIAL SUPPORT (S.S.)- no. of items = 13; α = 0.89
36. Are you satisfied with your partner? 37. Are you physically attracted to your partner? 24. Do you feel that you have someone to turn to when you need company or support? 39. Are you satisfied with your family (partner and/or children)? 38. Does your partner satisfy your sexual desires and needs? 21. Do you feel loved by the people who are important to you? 27. Are you satisfied with your friends? 20. Do you have a satisfactory relationship with those with whom you live?

Quality of life questionnaire (QoLQ) (No. of items = 39; α = 0.93)
23. Do you have friends on whom you can rely if necessary? 26. Do you have someone with whom you can share your free time and pastimes? 28. Do you find your social life satisfactory? 22. Do you have a good relationship with your family? 25. Would you like to have more satisfying sexual relations? If you do not have sexual relations, would you like to?
FACTOR 2- GENERAL SATISFACTION (G.S.) no. of items =12 ; α = 0.89
01. Do you enjoy your work? 17. Do you believe that you are fulfilling your ambitions? 19. Do you feel capable of obtaining most of the things you desire? 32. Do you regard your life as interesting? 18. Do you feel that life is meeting your expectations? 02. Are you happy with the way you work? 33. Are you satisfied with your life? 11. Do you consider yourself to be a failure? 31. Do you regard your life as pleasant? 04. Are you happy with your working environment? 34. Are you satisfied with the money at your disposal? 35. Are you satisfied with the way you are?
FACTOR 3- PHYSICAL/PSYCHOLOGICAL WELLBEING (P.P.W.) no. of items = 7 ; α = 0.88
14. Do you suffer from insomnia or significant problems getting to sleep? 16. Are you satisfied with your current state of health? 09. Do you feel that you are in good health? 13. Do you have concerns that prevent you from relaxing or sleeping, or which make it difficult for you to do so? 15. Do you spend most of the day feeling tired? 12. Do you feel worried or distressed? 10. Do you feel that you have enough energy for your day-to-day life?
FACTOR 4- ABSENCE OF WORK OVERLOAD/FREE TIME (A.W.O.F.) no. of items = 7 ; α = 0.82
29. Do you have enough time to relax and enjoy yourself every day? 06. At the end of a working day, do you feel so tired that all you want to do is rest? 08. Do you have too much work at present? 03. Does your work leave you enough free time for other things that you want to do? 30. Are you able to pursue your pastimes (time, money, etc.)? 07 Are you permanently tense as a result of your work? 05. Do work-related problems or concerns prevent you from enjoying your free time?

Table 3. Factorial structure of the questionnaire QoLQ.

2.3 Procedure

Data was collected by means of an online questionnaire posted on an internal web page of UOC, which was only accessible to members of the community thereof. The questionnaire

was available for 3 months on the online Campus. On the first screen, prior to seeking consent, an explanation of how to answer the questions was provided and the various options as regards replies were mentioned.

3. Results

The results presented below were organized into three sections. The first section presents the response rate by gender to each item in the TUPS questionnaire. For each item we calculated the Chi Square statistic to compare response rate patterns between males and females. We carried out the necessary corrections to meet the assumptions of the Chi Square Test (expected frequencies >5).

In the second section we analyzed gender differences in relation to the scores on the four dimensions of the QoLQ. The Student's t-test was applied and confidence intervals (95%) calculated to ascertain gender differences in these scores. We checked the assumptions of normality and homogeneity of variance of the t-test by applying the necessary corrections in the absence of homogeneity.

Finally, in the third section we show the relationship between the extreme scores at either end of the TUPS scale (i.e. <P25 and >P75) and the four dimensions of QoLQ, taking into account the gender of the subjects. In order to do this, we applied the Student's t-test and calculated confidence intervals to find the differences between the <P25 and >P75 groups according to the four dimensions of the QoLQ , segmenting the results by gender. We checked the assumptions of normality (i.e. null hypothesis is not rejected in the Shapiro-Wilk test) and homogeneity of variance, applying the necessary corrections in the absence of homogeneity.

3.1 Gender patterns of TUPS scores

We first made a descriptive analysis of the items of TUPS. Table 4 summarizes these results, which have been organized from highest to lowest score based on the frequency (percentage %) with which the subjects undertook the activity described, and have been compared by gender. To make reading of Table 4 easier, we have shaded the boxes that show the biggest percentage of response for each item. All the items are presented in a positive sense, indicating regularity or availability. We recoded those that were originally negative (they now have "NO" written in front of the original).

Table 4 shows that most of the subjects answered *Almost always* or *Always* to items related to maintaining a certain degree of regularity, as is the case of "respecting meal times", "sleeping time" and "regular bowel movements". In this last item we found significant differences in gender ($\chi2=11.71$; df= 3; p= 0.009), with men being more regular in this habit in relation to women.

Following the above, Table 4 shows the items to which the subjects mostly responded *Almost always* or *Sometimes*, and features three items of a different nature, namely "no delaying going to the toilet when it is necessary to do so"; "foreseeing and adhering to the time required for different activities", "taking breaks to counteract the negative effects of physical and/or mental fatigue". These items show similar statistical patterns in both men and women.

Items of time usage perception scale	Gender	Never	Almost never	Sometimes	Almost always	Always
Adhering to regular sleeping times.	M	3.7	11.1	8.6	**59.3**	**17.3**
	F	3.6	11.4	9.9	**62.3**	**12.8**
Having regular mealtimes	M	2.5	6.2	13.6	**61.7**	**16**
	F	0.5	6.8	15.2	**65.4**	12
Regular bowel movements * (χ2=11.71; df= 3; p= 0.009) M>F	**M**	1.2	8.6	9.9	**48.1**	**32.1**
	F	3.2	12.1	**22.6**	**44.2**	17.9
NO Delaying going to the toilet despite it being necessary to do so.	M	1.2	2.5	**29.6**	37	**29.6**
	F	3.2	4.2	**35.3**	**40.5**	16.8
Foreseeing and adhering to the time required for different activities (e.g. travelling, meetings, errands, etc.).	M	2.5	6.2	**26.2**	**50**	15
	F	2.1	6.2	**33.3**	**45.3**	13
Taking breaks to counteract the negative effects of physical and/or mental fatigue	M	4.9	13.6	**28.4**	**35.8**	17.3
	F	4.7	18.8	**31.4**	**28.8**	16.2
Having meals in peace and quiet, without rushing.* (χ2=7.4; df= 2; p= 0.025); M>F	**M**	1.2	12.5	**37.5**	**38.8**	10
	F	4.8	**24.3**	**33.3**	**33.3**	4.2
Having the necessary time and being sufficiently rested to engage in the desired level of sexual activity.	M	10	15	**37.5**	**28.8**	8.8
	F	4.7	**27.4**	**41.6**	21.6	4.7
NO Carrying out more than one task at a time, due to the number of jobs to be done (work-related tasks, family responsibilities, domestic chores, etc.).	M	2.5	**35**	**32.5**	25	5
	F	8.9	**36.5**	**32.8**	18.2	3.6
Sleeping a minimum of eight consecutive hours a day.	M	20	**35**	**20**	12.5	12.5
	F	13.8	**30.2**	**24.9**	19.6	11.6
Taking an afternoon nap.* (χ2=8.06; df= 3; p= 0.045); M>F	**M**	**42.5**	20	25	12.5	0
	F	**37.8**	**36.7**	17.6	6.9	1.1

Table 4. Percentages of responses of TUPS by gender.

Following these appear the items "having meals in peace and quiet" and "have enough time to engage in sexual relations", for which frequency response decreases in women, compared to the previous items. As reflected in Table 4, when comparing by gender significant differences were found for the item "Having meals in peace and quiet, without rushing" (χ2=7.4; df= 2; p= 0.025), with women responding with greater frequency with *Almost Never* or *Never* (29.1%) in comparison to men who had a 13.7% response rate; on the other hand the response *Always* or *Almost always*, was higher among men (M=48.8%; F=37.6%).

The last section of Table 4 shows the three items that have *Almost never*, *Sometimes* or *Never* as the most common answers. Those items were: "not carrying out more than one task at a time, due to the number of jobs to be done…", "sleeping a minimum of eight consecutive hours a day" and "taking a nap in the afternoon". In the last item significant differences were found between men and women (χ2=8.06; df= 3; p= 0.045) if we compare the response patterns, the most frequent category for both was *Never*; however, men showed an increased frequency compared to women in the responses *Sometimes* and *Almost Always*.

In summary we can say that the response pattern is similar between men and women in most TUPS items, however, there are three items ("regular bowel movements", "having meals in peace and quiet, without rushing" and "taking an afternoon nap") in which we observed significant gender differences and in all cases we see that women perceive themselves as having a faster pace of life or less time than men.

3.2 Relationships between quality of life dimensions and gender

Additive scales were generated in order to calculate scores for the QoLQ as a whole and for each of its four component dimensions.

Table 5 and Figure 1 show the descriptive statistics and confidence intervals (95%) of the mean difference between genders in those quality of life dimensions. Looking at Figure 1 and the confidence intervals in relation to the differences between men and women (see Table 5), we see that gender significantly affects two of the quality of life dimensions, i.e.

	Male			Female			CI (95%)dif	
	Mean	SD	N	Mean	SD	N		
S.S.[1]	4.15	0.58	60	4.23	0.52	132	-0.24;0.09	M=F (p=0.360)
G.S.	3.79	0.59	77	3.69	0.53	174	-0.05;0.25	M=F (p=0.195)
P.P.W.	3.91	0.63	78	3.67	0.60	179	0.08; 0.41	**M>F (p=0.003)**
A.W.O.F.	3.48	0.67	76	3.27	0.62	180	0.04;0.38	**M>F (p=0.016)**

SS: Social support; GS: General satisfaction; PPW: Physical/psychological wellbeing; AWOF: Absence of excessive workload/free time.
[1]*The size of the sample in the Social support subscale is smaller due to the fact that some items of this subscale can only be answered by people with a partner.*

Table 5. Descriptive statistics and confidence intervals (95%) of the mean difference between gender (Male/ Female) in quality of life dimensions.

"Physical and Psychological wellbeing (PPW)" (t=2.97; df=255; p=0.003) and "Absence of excessive workload (AWOF) " (t=2.43; df=254; p=0.016). In both cases, men show better quality of life than women, as they perceive they have better physical and psychological wellbeing and that they are less overwhelmed. The effect size is higher in the subscale P.P.W. CI 95% (0.08; 0.41). In relation to the scores for "Social support (SS)" y "General satisfaction (GS)", we can conclude that gender is not a significant influence.

It can be interpreted, therefore, that gender influences individuals' perception of quality of life, so that men would score higher than women on the subscales that assess physical health, psychological wellbeing and absence of excessive workload.
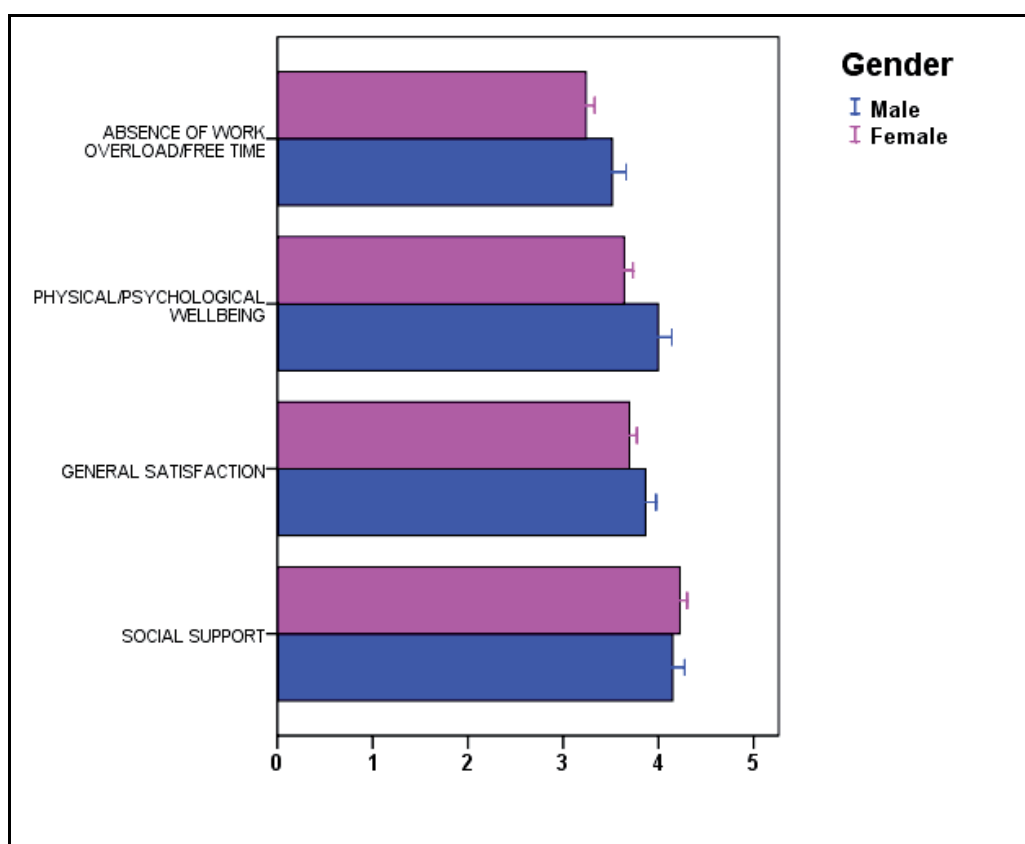

Fig. 1. Means and confidence intervals (95%) of total scores and quality of life dimensions according to gender (Male/ Female).

3.3 Relationships between time usage perception and quality of life by gender

The overall score for the TUPS was calculated in the same way as the QoLQ, i.e. each subject's mean score was generated on the basis of the items' direct scores. Higher scores were obtained from subjects who perceived they managed time well in their everyday life, so that they felt less pressured by time (Szollos, 2009).

The aim of this analysis is to explore the relationships between time perception and quality of life. We decided to split the sample and to concentrate on the items below or above the 25th or 75th percentile of the TUPS scores. It was thus possible to compare the mean quality of life scores of these two extreme groups.

Table 6 and Figure 2 summarize the descriptive statistics, means and confidence intervals (95%) of quality of life dimensions according to *higher/lower* (below P_{25}/ above P_{75}) TUPS scores, segmented by gender.
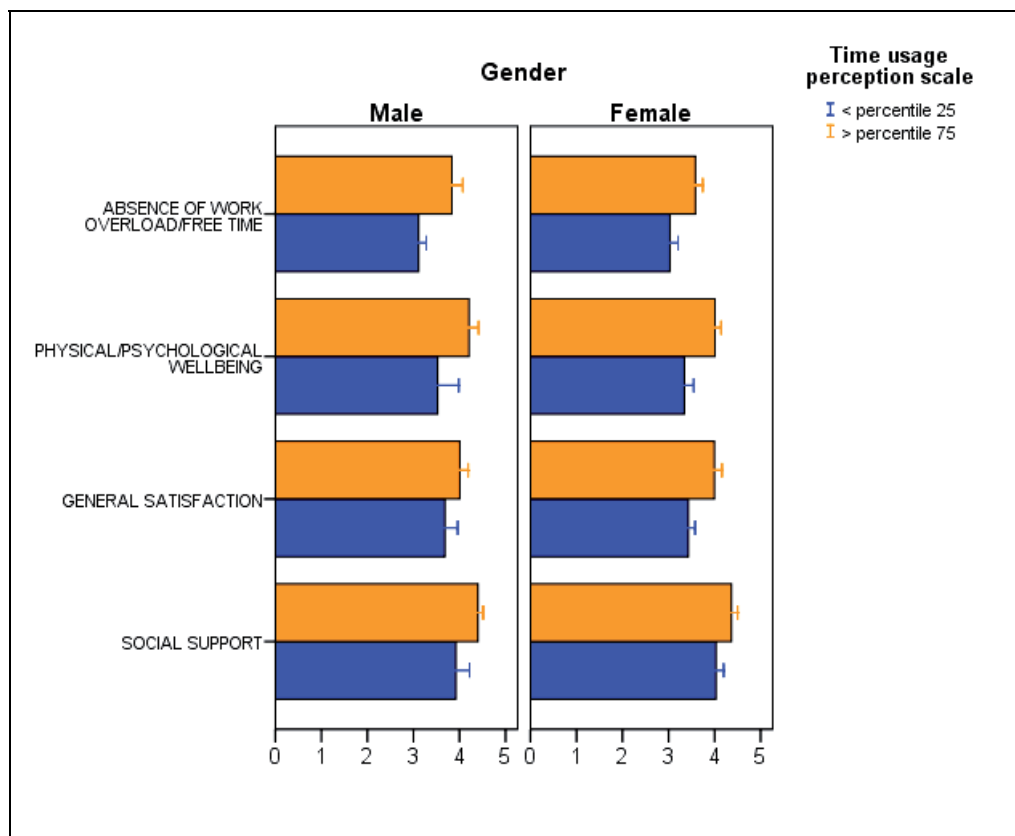

Fig. 2. Means and confidence intervals (95%) of quality of life dimensions according to *higher/lower* (below P_{25}/ above P_{75}) in time usage perception scale by gender.

When interpreting the data plotted in Figure 2 and the confidence intervals of the differences observed between the extreme groups, it can be seen that the variable of time use perception significantly affects quality of life across three dimensions, for both men and women. The relationship is in the expected direction, with higher perceived quality of life in those with a slower pace of life.

		Below P25			Above P75			CI (95%)dif	
		Mean	SD	N	Mean	SD	N		
S.S.[1]	M	3.92	0.57	10	4.40	0.31	24	-0.78; -0.17	**P75>P25** (p=0.004)
	F	4.10	0.63	42	4.37	0.46	31	-0.58; -0.05	**P75>P25** (p=0.022)
G.S.	M	3.75	0.65	15	3.97	0.53	24	-0.60; 0.17	P75=P25 (p=0.251)
	F	4.44	0.56	50	3.9	0.55	44	-0.70; -0.25	**P75>P25** (p<0.001)
P.P.W.	M	3.57	0.73	15	4.1	0.61	25	-0.98; -0.11	**P75>P25** (p=0.014)
	F	3.34	0.72	55	3.99	0.40	45	-0.84; -0.42	**P75>P25** (p<0.001)
A.W.O.F.	M	3.12	0.50	15	3.83	0.65	23	-1.11; -0.30	**P75>P25** (p=0.001)
	F	3.01	0.65	54	3.62	0.54	45	-0.85; -0.37	**P75>P25** (p<0.001)

SS: Social support; GS: General satisfaction; PPW: Physical/psychological wellbeing; AWOF: Absence of excessive workload/free time.

[1]*The size of the sample in the Social support subscale is smaller due to the fact that some items of this subscale can only be answered by people with a partner.*

Table 6. Descriptive statistics, means and confidence intervals (95%) of quality of life dimensions according to *higher/lower* (below P_{25}/ above P_{75}) in time usage perception scale by gender.

We can also see that the influence of the variable time usage perception tends to be more severe in men than in women on the subscales "Absence of excessive workload/free time (AWOF)" (CI 95%dif in M: -1.11; -0.30; CI 95%dif in F: -0.85; -0.37) ; "Physical/psychological wellbeing (PPW) " (CI 95%dif in M: -0.98; -0.11; CI 95%dif in F: 0.84; -0.42) and "Social support (SS)" (CI 95%dif in M: -0.78; -0.17; CI 95%dif in F: -0.58; -0.05). On the other hand, it tends to have a greater influence on women than men for the subscale "General satisfaction (GS)" (CI 95%dif in M:-0.60; 0.17; CI 95%dif in F: -0.70; -0.25). These data allow us to talk about trends, but the confidence intervals of the differences between the extreme groups overlap when comparing gender, and therefore the differences between men and women reflected in Figure 2 are not statistically significant.

In summary, participants with a slower pace of life, regardless of gender, have statistically higher scores in terms of both the overall quality of life score, and the questionnaire's four dimensions. What this means is that the differences in participants' time usage perception are relevant for the perception of their quality of life, irrespective of gender.

4. Discussion

Returning to the aims of our work, our analysis aims to meet three objectives. First, to describe the use of time in the different daily activities of a group of technology users; second, to analyze possible relations between these time habits and the way in which subjects perceive their quality of life; and third, to explore (if any) some gender differences.

Regarding time usage, men and women reported not allocating enough time to basic behaviours such as meals, sleep or sex. Moreover, carrying out more than one task at the same time appeared as being one of the characteristics of our participants' lifestyles. All of our participants were technology users as they worked/studied (or both) with technology and they played various roles in their day-to-day life. This is coherent with what we expected from individuals living in the Network society, where using available time efficiently and productively is crucial (Hassan, 2010; Parkins & Craig, 2006). People are constantly looking for better ways to manage their time. Application of economic utility-maximizing behaviours to that purpose, such as using technology to enhance time allocation, hasn't resulted in a solution because people still feel their pace of life is too fast.

On the topic of perceived quality of life, our results correspond with the national surveys conducted in Catalonia, Spain (De la Fuente, 2007; Generalitat de Catalunya, 2006), showing high levels of quality of life among our participants, together with a fast pace of life in line with the existing literature (i.e. Warren, 2010; Mattingly & Sayer, 2006). This is an initially paradoxical co-occurrence. Nevertheless, it can be understood by using cultural explanations such as assuming that feeling pressured for time is the expected adaptive personal answer to the Network society's pace of life. It can be also understood by considering that doing more –and at the same time feeling pressured for managing this increased level of simultaneous activity- could be an index of personal empowerment and high living standards and comfort. All of these explanations can be applied to the

characteristics of our group of participants: successful people with enough time for work and personal interests and who have medium-high annual incomes.

Beyond cultural explanations, subjective dimensions can also be used to explain this phenomenon. In particular, analyzing the satisfaction that people derive from everyday activities is worthwhile. It has been shown to be a useful explanatory variable in understanding gender differences both in quality of life and with respect to feeling rushed. With regards to this, satisfaction seems to be a mediator variable for women (Szollos, 2009; Mattingly & Sayer, 2006; Warren, 2010).

Furthermore, and as expected, there is a relation between quality of life and the perception of being hurried, so that having a slower pace of life is related with higher rates of quality of life. To explore further this relationship, and as suggested in the literature (Szollos, 2009), we compared quality of life rates of those participants in our study with the fastest pace of life with those with the slowest. This resulted in evidence for the crucial effect of pace of life on individuals' quality of life, even beyond gender differences, which we discuss below.

Our third aim focuses on trying to identify some gender differences concerning pace of life and quality of life. According to our results, slight gender differences in regard to time habits showed that women perceived a faster pace of life or of having less time than men. We can also note that women –even when perceiving a high quality of life- have an overall lower quality of life than men, particularly regarding their perceptions of having less physical and psychological wellbeing and feeling more overwhelmed. Nevertheless, these differences are, beyond gender, tied to the perception of time usage. This highlights the strong effect that pace of life has on people's quality of life. These results are consistent with the literature, showing a persistent inequality in gendered time-use patterns together with gendered experiences of time pressure and gendered rates of quality of life (i.e. Mattingly & Sayer, 2006).

Among our results, we can point to the significance of those aspects related to feeling overwhelmed as a result of doing several tasks at the same time. Thus, perception of overload is crucial and has been identified as one of the basic factors responsible for stress and deteriorations in individuals' health (physical and psychological) in today's society (Friedman et al., 1996; Gleick, 1999; Roxburgh, 2004). Nevertheless, as Warren points out (Warren, 2010), feeling overwhelmed and having a fast pace of life due to multitasking is not so simple, as it requires us to consider not only a time wealth dimension (having enough time), but a chronologic (time at the right time), sovereignty (control), and a synchronization (time that fits) dimensions. To this end, it is clearly vital to broaden research beyond chronometric dimensions to better understand time management issues.

To conclude, our analysis can be deepened and broadened by examining subjective assessments of time usages and by considering the extent to which cultural factors are also contributing to heightened perceptions of time scarcity. Those ideas will be picked up in the concluding remarks.

5. Conclusions

Despite reporting that they have an overall high quality of life, men and women feel they have a fast pace of life, and are thus overloaded. Therefore, dealing with feelings of time pressure could improve their quality of life.

To reach this goal, first it is crucial to better define and choose the time-usage issues to be studied in order to increase our understanding of the subjective aspects related to management of personal time. Advancing towards more *ecological momentary assessments* (Stone et al., 2007) and going beyond behavioural surveys of standard time -diaries and self-retrospective reports- more meaningful data are required. Thus, gathering data about mental states, feelings & cognitions (Szollos, 2009) gathered at random times and with a life course perspective (Mattingly & Sayer, 2006), could help us better understand the relationships between pace of life, feelings of being pressured and quality of life. By first understanding how people live and feel about their routines, it then becomes possible to intervene more efficiently to improve their management of personal time and quality of life.

Moreover, as women appear to have a faster pace of life than men, together with higher workload and lower perceptions of wellbeing, the primary focus should be on them. Thus, efforts need to be addressed to lower their pace of life by working on their feelings and cognitions about time usage. It can also be useful to promote periods in which there are no interferences or combination among different activities or responsibilities, even in free time. This could improve the management of their personal time together with their quality of life.

6. Acknowledgment

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Part 4

Time Management
in Academic and Sports Cases

Distance Learners' Time Management and Learning Effectiveness

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1. Introduction

Time management predates modern times as God Himself exhibited time management prowess at creation (Genesis chapter one of the Holy Bible). The importance of time management was equally emphasized by the Book of the Preacher i.e. Ecclesiastes in chapter three verses 1-10, where we are told that each human activity including one's birth or death has its own time. The implication of these emphases is that planning use of time, utilisation and evaluation of time which tantamount to time management would culminate in effectiveness whatever one is doing. It is this vein that Rawson in his undated ten lessons on time management emphasis listing eight priorities of daily engagements that should be carried out and follow it as religiously, evaluate how feasible it was to carry out in the day, giving the time allotted to executing each of the listed priorities. He further stated that if it failed try again and again until one gets it right. This, by implication, means that through constant practice of time management one would become a master of it. Furthermore, it should be noted that time as implied from the above observations required discipline which comes from deliberate decision to foregone substantial amount of pleasure, in order to gain knowledge or dexterity in one's field of human endeavour.

Distance learning mode of study can be seen as alternative mode of education that offers a second opportunity of education for those who could have perpetually missed the chance of being educated [Association for the Development of Education in Africa (ADEA, 2004)]. Distance learning enables a learner to gain access to acquire education without the pain of having to forfeit the opportunity of retaining their jobs. Thus, the learners at a distance who is physically separated from his/her teacher would now have to share his/her available time everyday among various contending daily engagements for the use of his/her twenty-four hours. This calls for systematic and deliberate planning and subsequent prudent use of the time available to him/her. This process is amount to time management. According to Rawson (undated), the essence of time management is to be effective in whatever one does.

The effectiveness of someone in any area of human endeavour is measured by the level of accomplishment or achievement in that area or discipline. The effectiveness of the learner cannot but be measured in any other way except in terms of his/her degree of achievement in the field. It is a well known fact that achievement is not only a function of instruction/teaching

but also a function of a number of several other factors including but not limited to time management, home and school environments, school management among other factors (Durowoju 2010; Durowoju, Onuka and Onabamiro, 2010). Therefore, this study determined how time management affected the study/learning effectiveness of the distance learner and how she/he can be assisted to effectively manage his/her twenty-four hours in order to effectively study without being disadvantaged and earn degrees that they can truly claim to have earned. In other words, in the study, the relationship between time management and the distance learner study effectiveness [DLSE] was determined as well as the ways in which the learners' time management skills can be improved.

Arising from the foregoing, the paper addressed the following two questions:

1. What is the relationship between the distance learners' time management and their learning effectiveness?
2. How could their time management skills can be improved for learning effectiveness?

2. Methodology

2.1 Research procedure

This investigation, which is a pilot study on distance learners' time management, was carried out ex-post facto. This procedure was used because according to Kerlinger and Lee (2000), ex-post facto is the best approach to gathering data whose events had occurred as in this study.

2.2 Population

The population was made of distance learners in the learning programmes of three Federal Universities in South-West, Nigeria namely: University of Lagos, Akoka, Lagos, University of Ibadan, Ibadan and the Obafemi Awolowo University, Ile-Ife.

2.3 Sampling procedure and sample

The sampling procedure for selecting the participants for this study was purposive sampling technique. This is because randomization was not possible as the learners come to the sites of the programmes only to collect text and other learning materials and for contact sessions, hence, subjects were purposively chosen from among distance learners in the Faculties of Education of these universities, as education has the largest participants in distance learning programmes of universities in Nigeria. Therefore, 40, 30 and 30 participants were respectively selected from Ibadan, Lagos and Ile-Ife. The participants in the study were those who have had at least three contact sessions and written examinations three times at three different levels.

2.4 Instrumentation

A nine-item time management checklist (Pro-forma) developed and validated by the researcher using the content validity index computation formula given by Content Validity Index as espoused by Amin (2005) as Content Validity Index (CVI) = the total number judges minus the number of judges declaring an item valid over total number of judges [$n-n_j/n$, where is total of judges, n_j is number of judges declaring an item valid], which yielded

an aggregate validity coefficient of 0.821 [the aggregate CVIs of the nine items]. This index was obtained by giving ten colleagues to ascertain the content validity of the time management model or checklist. The instrument was again to another set of 10 experts to ascertain the content validity; the outcome was then subjected to computation of the more complex Content Validity Ratio (CVR) formula (Lawshe, 1975) as related in Cohen and Swerdik (1999). This yielded an aggregate content validity ratio of 0.782. The formula is given as Content Validity Ratio [CVR] = number of experts indicating an item as essential minus total number of judges divided by two over total number of judges divided by two, i.e.

$$n_e - n/2$$

$$n/2,$$

where n is the total number of experts, n_e is number of experts regarding the item as essential]. This instrument was divided into nine broad daily and learning-related tasks, in which the learners may have to engage on daily basis, and to which they are to allocate time out of twenty-four hours of the day. The instrument was a product of the aggregation of the typical daily activities as indicated by 90 pre-research sampled distance learners from a non-participating university distance learning programme, who were requested to write down twelve things they normally do each day of the week. It was from the collation of the information given by them that the model/instrument model shown below was designed by this researcher. The items included in the instrument were those activities that were indicated by at least 70% of the 90 learners [at least 63 distance learners]. The instrument was further administer on a similar sample outside of the participants in the study twice at a week interval and its reliability determined using Pearson's Product Moment correlation through Statistical Package for the Social Sciences [SPSS]. This process yielded a reliability coefficient of 0.92.

The specimen of the instrument is as shown in the table A below:

S/No of Task	Task	Time Allotment in hours for all the participants	Average Time Allotment in hours	Time used as % of 24hrs
1	Sleep			
2	General preparation for the day			
3	Interaction with ICT in relation to learning			
4	Social activities			
5	Home activities			
6	Learning activities			
7	Work activities			
8	Leisure			
9	Others			

Source: Time Management Model/checklist was designed by this Researcher for purpose of this study which could be adopted or adapted for future study

Table A. Specimen of Time- Management Model.

There was also a Focus Group Discussion Schedule on improving the distance learner's time management for effective study/learning effectiveness based on the content of the model/checklist.

Study effectiveness was determined by collating the Cumulative General Point Averages of the subjects used in the study and applied in the computation of correlation of effectiveness in relation to time management.

The subjects were grouped into 5 groups of eight persons each in the University of Ibadan and 5 groups of six persons each in University of Lagos and Obafemi Awolowo University respectively as focus group discussion [FGDs]. Each group was asked to discuss how they can manage their time with regard to their schedules vis-vis their study.

2.5 Procedure for data collection

The instrument was administered on the 100 hundred participants chosen for the study from the three distance learning programmes in three universities in the South-West, Nigeria as aforementioned. The one hundred distance learners/participants of three Nigerian university distance learning programmes (University of Ibadan [40], University of Lagos [30] and the Obafemi Awolowo University, Ile-Ife [30]) were asked to analyse how they plan, organize and utilize their whole time taking cognizance of their whole day undertakings using the instrument/model provided for the study by the researcher. This was after a series of three lectures each on effective time management to each of the three groups at different times during their contact sessions at the three universities, to enable them to understand and to grasp the import of time-management in effective self-motivated/directed learning and to help them carry out the analysis of how they were managing their time in relation to their study habits with the benefit of hindsight, insight and with foresight, endeavour to improve on their study habit vis-à-vis their time schedule for study and other necessary daily engagements. The instrument was administered on the sample from each of the three programmes to enable them assess how they have been planning, budgeting, organizing and implementing their all day time vis-à-vis their daily task including sleep and all preparations for the tasks. Daily time management schedule of each group was computed. The participants were requested to rate their study effectiveness which were cross checked by scrutinizing and using their past results to correlate their time-management assessment, the ratings in percentage were aggregated and the mean in percentage for each group was again put against the daily mean (i.e. typical day) as depicted by the results through the instrument. The instrument was administered personally by the researcher during their (learners) contact sessions. The instrument doubles as the distance time management model.

The learners were also grouped into five focus discussions (FGDs} for each of the three ODL programmes by constituting for Ibadan and five panels of six each respectively for each of Lagos and Ife, using the FGD schedule on improving the distance learner's time management for study effectiveness whose responses denominated in percentages to collate/analyse how time can be effectively managed for study or learning effectiveness. In the focus group discussions the members of the panel freely discuss each item of the FGD schedule which recorded and later was transcribed and coded in percentages to come out with a recommended time management model/checklist.

2.6 Data analysis

The resulting data from the research exercise were analyzed using percentages while the Pearson's Product Moment correlation statistic was also used to determine the relationship between time management and study effectiveness of the distance learner using the SPSS. The opinions of the participants in the Focus Group Discussions (FGDs), on how to improve learners' time management and the concomitant study effectiveness were analysed using percentages.

3. Results and discussion

3.1 Results

From the below table, the average time the participants from the University of Ibadan Distance Learning Centre daily spent on different major activities such as Sleep is a quarter of a day, work-related activities and learning related activities take a total of 1/6 of their daily activities. The rest of the day is shared among all other activities.

S/No of Task	Task	Time Allotment in hours for all the participants	Average Time Allotment in hours	Time used as % of 24hrs
1	Sleep	240	6.0	25
2	General preparation for the day	60	1.5	6.25
3	Interaction with ICT in relation to learning	80	2.0*	8.34
4	Social activities	40	1.0	4.17
5	Home activities	100	2.5	10.42
6	Learning activities	80	2.0*	8.34
7	Work activities	320	8.0	33.33
8	Leisure	40	1.0	4.17
9	Others	20	0.5	2.08

Table 1a. Time management schedule of University of Ibadan Distance Learning Centre.

The correlation between University of Ibadan Distance Learning Centre Learners' time management and their learning effectiveness is shown in table 1b below:

Variables	N	Mean	SD	R	Sig
Average time spent with ICT	40	2.0	0.34	0.94	0.00
Learning activities	40	2.0	0.32		

Table 1b. Correlation between average time spent on learning-related activities among U.I. Distance Learners' study effectiveness.

This table shows that there is a very high positive relationship between University of Ibadan Distance Learning Centre [UIDLC] participants' time-management and their learning

effectiveness. The implication of this finding is the effective time-management by distance learner in UIDLC results in learning effectiveness of the learners.

S/No of Task	Task	Time Allotment in hours for all the participants	Average Time Allotment in hours	Time used as % of 24hrs
1	Sleep	180	6.0	25.0
2	Preparation for the day	60	2.0	8.34
3	Interaction with ICT in relation to learning	45	1.5	6.25
4	Social activities	30	1.0	4.17
5	Home activities	60	2.0	8.34
6	Learning activities	45	1.5	6.25
7	Work activities	255	8.5	33.33
8	Leisure	30	1.0	4.17
9	Others	15	0.5	2.17

Table 2a. Time Management Schedule of University of Lagos Distance Learning Institute Participants.

From the above table, the average time the participants of University of Lagos Distance Learning Institute daily spent on different major activities are [a quarter of a day] on sleep, a half an hour more than Ibadan participants spent on work-related activities and an hour less than the time those of Ibadan spent learning related activities.

The correlation between time spent on ICT and learning activities is shown in the table below:

Variables	N	Mean	SD	R	Sig
Average time spent with ICT	30	1.0	0.26	0.76	0.00
Learning activities	30	3.0	0.81		

Table 2b. Correlation between average time spent on learning related activities by Learners at University of Lagos Distance Learning Institute and their learning effectiveness.

This table shows that though relationship between time management and study effectiveness at the University of Lagos Distance Learning Institute is quite high at 0.76, yet it falls below what obtained in Ibadan. This implies that time management by the learners at Lagos still results in some high level learning effectiveness of participants.

From the below table, the average time by the participants at Obafemi Awolowo University Centre for Distance Learning Centre daily spent on different major activities are as follows: 6hrs {25% of a day]}, 8 hrs on work related activities, the same as in UI and the same amount of time on learning-related activities [4hrs in all] as in Ibadan.

S/No of Task	Task	Time Allotment in hours for all the participants	Average Time Allotment in hours	Time used as % of 24hrs
1	Sleep	210	7.0	29.17
2	Preparation for the day	45	1.5	6.25
3	Interaction with ICT in relation to learning	30	1.0	4.17
4	Social activities	30	1.0	4.17
5	Home activities	75	2.5	10.42
6	Learning activities	90	3.0	12.5
7	Work activities	240	8.0	33.33
8	Leisure	15	0.5	2.08
9	Others	15	0.5	2.08

Table 3a. Time Management Schedule by Learners at the Obafemi Awolowo University Centre for Distance Learning.

The correlation between time management and learning effectiveness of the learners is shown in table 3b below:

Variables	N	Mean	sd	r	Sig
Average time spent with ICT	30	1.5	0.43	0.85	0.00
Learning activities	30	1.5	0.42		

Table 3b. Correlation between time management and learning effectiveness OAU Distance Learners.

Table 3b shows that relationship between time management by OAU learners and their study effectiveness is also very high correlation at r-value = 0.85. This result shows very high positive correlation between effective time management and study effectiveness at Ife.

4. Discussion

4.1 Time management and learning effectiveness

The results from this study show that the differences in time-management ability or level of application of time-management are a function of location and the degree of business attached to the location. Amount of time available seem to possess inverse relation with level of industrial and commercial activities associated with a particular location. For instance, in Lagos that is the busiest city in the West African sub-region, the participants were only able to spare a total of three hours to learning and learning-related activities giving only 3hrs of 24hrs [12.5%] of a whole day or typical day. Whereas in Ibadan, a less busy city and less traffic congested city more time was available to distance learner for undertaking learning daily: a total of four hours was devoted to the same quantum of

learning activities giving 16.68% as opposed to the 12.5% of the day giving to learning by Lagos participants. However, it proves almost true that the levels of business and industrial activities as well as that of traffic congestion are less than those of Lagos, when it came to the turn of Ile-Ife which is the least busy of the three cities, as its participants devoted almost the same quantum of time to learning and learning-related activities as did Ibadan, though not in the same degree between pure learning activities and learning-related activities on Information and Communication Technologies. While Ibadan share its four hours on equal basis between the two, Ife does its own in a disproportionate manner, due its *'ruralness'* possibly because of the fact that the Ibadan participants who are not as busy as Lagos participants had more access to the use of these technologies than Ife, but took advantage that it was less busy than Lagos to access ICT facilities more and utilize them. Consequently, the study/learning effectiveness shown by the study revealed that the Ibadan participants had the highest level of study effectiveness of 96%, followed by Ife participants who though allocated more time to real learning activities, but could as much keep abreast of global development in their fields of study because of the quantum of time they gave ICT activities. Thus, they nonetheless came second in study effectiveness with 85%, with Lagos participants bringing up the rear both in terms time management effectiveness and study/learning effectiveness with 76% study effectiveness as perceived by its participants. The difference in the correlation between Ibadan participants and Ife participants could due to the degree of programme organisation and perhaps the fact that Ibadan has more relevant facilities than Ife, while the busy nature and high level of traffic congestion rip off any good impact available relevant facilities as the combined effect of the busy nature and traffic congestion neutralize the impact of possible access to good facilities One can easily notice that chunk of the learner's time is spent at work, a thing they do not have control over as the case is with sleep, both of which together have between them something in neighbourhood of 58.33-62.5% of the total daily time spent on them.

These findings confirm the findings of Ogunsanya and Agu (1990), Onuka, Onyene and Junaid (2008) and Onuka (2010) respectively that effective time management, which involves estimating the time each task requires to be effectively undertaken, planning it, budgeting, organizing and implementing as well as evaluating in order to revise it for possible on it, would normally result effectiveness in handling the activities or getting the expected results; and that effective time management calls for sacrifice or what could be termed 'opportunity cost' with regard to some activities that must be forgone for time management effectiveness and accomplishment of expected outcome. The findings are also in consonance with the finding of Junaid (2010) that effective management of a distance learning programme among other factors can result in appropriate programme outcome. By implication, if Nigerian university distance learning outfits are to be kept afloat, they must necessarily inculcate the spirit of time management in their learners (clientele). The correlations between time management and their study effectiveness show that the more effective the learners were able to manage their time, the more they were effective in their study, which goes to support the fact that effective time management can engender effective study habit (Onuka et al, 2008). The outcome also confirm the view and finding of Rawson [undated] and Mokuolu [2007] that prioritizing one's daily activities assists the individual manage his time manage very well in order to become effective in his activities or undertaking. The findings therefore, imply that effective time management is a product of

effective prioritization of one's daily undertakings, while effective management in turn produces dexterity in the worker/learner, thereby leading to learning or work effectiveness.

4.2 Improving the distance learners' time management effectiveness

On how to improve the learners' time-management skills, the participants in the groups proffer that as part of orientation programme for participants of Nigerian university distance learning programmes, time management should be taught to the participants both textually and electronically. This, they opined would enable them to understand the need to manage their time vis-à-vis their daily tasks including the schedule for the study, as such would motivate them to daily have some time out of their daily schedule. This development, according to them will assist to become effective distance learners, as they confess that quite often they have had no regular time table for daily engagement in learning, unless when they receive notification on contact sessions and/or examination schedule. They averred that lack of time-management skills had hindered hitherto from effective learning as they were not able to manage task time effectively and as such were less effective in their learning styles and the concomitant learning/study effectiveness. There were no differences in opinion about these results by the participants from the three programmes. This is perhaps so, because in Nigeria, educational programmes by similar institutions are run in the same manner particularly the distance learning programmes (Junaid, 2010). The participants also felt that if they have had personal advisors assigned to guide each of them, they would have realized the enormity of the tasks ahead and thus evolve a time-management spirit which (Rawson, undated; Ogunsanya and Agu, 1990) stated was essential to effectiveness whatever area of human endeavours one is engaged. These views by the respondents also conform to the observation of (Onuka, 2010; White, 1998; Mokuolu, 2007) that time-management skills are not in-born but are acquired through either training or constant observation of the activities of a 'trained' or practicing time manager, because as he said time is about the only resource that has been equitably distributed among humans of all races, creed or climes. This also confirms Rawson's [undated] implied view that effective time management requires high level of self-discipline which, of course results from sacrifice of certain not very essential things that the economist would refer to as opportunity for time management effectiveness. Thus, individual must decide to profitably use his or her time. This implies making sacrifice of activities that may be essential but not expedient or necessary.

The study, therefore, evolved the following model for distance learners' time management schedule for strict observance during their course of study in order to improve time management prowess of the distance learner to engender his/her learning effectiveness.

Synthesising the above, the study evolved a model time-management for the effectiveness of the learner in South-West, Nigeria and other parts of the country because the much similarities in work hours and endeavours especially in respects of social engagements, and other habits. Nothing anyone can do about the working hours, hence the nine hours allotted for work, medically, 6 hours would be sufficient for an adult and our population is an adult one. It is expected that as education is investment and investment is the sacrifice made today for tomorrow's enjoyment or gain, hence the one hour so allotted to it. Thus, social activities must be minimized. Thus, the effective distance time management model is given

by S + Gp + Ct + Sa + Ha + La + Wa + Lt + Th or *The linear equation for DLSE can be as a function of effective time management given by [DLSE = f (24 S –Gp –Sa –Ha –Lt –Wa –Th)]*, {Where S (sleep) [6]; Gp (General preparation) [1]; Ct (Interaction with ICT) [$1^1/2$]; Sa (Social activities) [$^1/2$]; Ha (Home activities) [2]; La (Learning activities) [3]; Wa (Work place activities) [9]; Lt (Leisure time) [$^1/2$]; Th (Others) [$^1/2$]}. Alternatively the model can represented as follows: *DLSE (i.e. Distance Learner Study Effectiveness) = 24 –S –Gp –Sa –Ha – Lt –Wa –Th.* The figures in parenthesis [] shows the recommended time for the activity after which they appear. The recommended aggregate daily study time [including learning related activities] apart from total daily time allocated to non-learning activities in our suggested is *$1^1/2$+3 = $4^1/2$ giving 27 hours a week* while providing one any day of the week is utilized for rest all through. However, the distance learner decides how s/he uses the rest of Saturday when he might not be at workplace.

Task	Time Allocated to Task	Percentage of 24 Hours
Sleep	6 hours	25%
General preparation for the day	1 hour	4.2%
Interaction with ICT in relation to learning	1 hour 30 minutes	6.2%
Social activities	30 minutes	2.1%
Home activities	2 hours	8.3%
Learning activities	3 hours	12.5%
Work activities	9 hours	37.5%
Leisure time	30 minutes	2.1%
Others	30 minutes	2.1%l
Total	24 hours	100%

Table 4. Recommended Daily Time- Management Model for Effective Distance Learning.

5. Conclusion and recommendations

5.1 Conclusion

It is obvious that Open/distance learning mode has become an acceptable means of providing access to higher education in this twenty-first century. In Nigeria, where there have been constant shortfall between demanded spaces in higher education institutions and the supply therefrom, and where public and private university-based distance learning programmes are self-sustaining, all such programmes must endeavour to ensure that its outputs are quality products comparable to what the formal university system outputs. The best way of so assuring this phenomenon is by inculcating the spirit of time management in its learners at the beginning of their enrolment into their various programmes, because the learners are expected to do at least 75% of their study/learning by themselves on their own by means of self-regulation, to enable them to do effective time-tabling to guide them in their individual study efforts. Since it is invariably very clear that time-management skills need to be taught, as it can only be acquired through learning and by constant observation

of the practical time manager exhibiting his skills in the way he organizes and executes his tasks promptly and profitably. With this done the programmes can then be assured of ever-expanding clientele and perpetual self-sustenance. A recommended time-management model has been evolved for the distance learner for effective learning from this study, which he/she can adjust to suit his/her own purpose-appropriate feasible time- schedule and execution [management]. This obviously involves self-discipline resulting deliberate sacrifice of certain not too essential activities and putting off those that can be put on hold for future time and deliberately using the saved time from such sacrificed activities profitably in one's field of human endeavour, which in this case is open/distance learning.

5.2 Recommendations

Therefore, the following recommendations are hereby made for the consideration:

- That Nigerian university-based distance learning programmes should as a matter of necessity, organize annual time-management orientation course for their new entrants and also on study habit;
- That consideration should be given to the nature of location in order to absorb any externalities resulting therefrom in the time management process for study effectiveness;
- That programme advisor/counsellor should be assigned to each distance learner for the purpose of guidance particularly in terms of use of available time among seemingly competing needs, so that he can learn to effectively manage his time both effectively and efficiently, thereby engaging himself/herself in effective learning;
- That distance learners must learn to forgo some essential activities that may not be necessarily expedient, in which case, the learner must learn to prioritize their daily activities and forgo those found not expedient, to enable them devote substantial time to their self-regulated learning activities including those that can be mostly acquired using ICT facilities;
- Learners should be disciplined by deliberately sacrificing substantial amount of their social activities are often not that essential as well as other not too essential activities which could inhibit their learning activities by following their own time management schedule religiously for study effectiveness; and
- That learners should adopt the following time management model for learning effectiveness: the effective distance time management model is given by effective learning time management = La + Ct. Alternatively the model can represented as follows: *DLSE (i.e. Distance Learner Study Effectiveness) = 24 –S –Gp –Sa –Ha –Lt –Wa –Th =La + Ct* {Where S (sleep); Gp (General preparation); Ct (Interaction with ICT); Sa (Social activities); Ha (Home activities); La (Learning activities); (Wa (Work place activities); Lt (Leisure time); Th (Others)]. This can be mathematically expressed as *DLSE can be as a function of effective time management given by [DLSE = f (24 S –Gp –Sa –Ha –Lt –Wa –Th)].*

6. Brief on the researcher

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Academic Advising, Time Management and the African American Male Scholar-Athlete

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1. Introduction

Every human being faces the realities of 24 hours in one day, 7 days a week, and 365 days in a given year. For the modern day student-athlete this day is filled with the endless "juggling act" of academics, athletics and the social life of a college student. Since 1906, various National Collegiate Athletic Association(NCAA) and higher education leaders have debated the issues and problems that impact the experiences of student-athletes (Smith, 1988). Managing academic and athletic time commitments are challenging for any student-athlete.

However, African American male student-athletes in high-profile sports receive a great deal of attention in terms of organizational analysis of higher education (Martin & Harris, 2006); the National Collegiate Athletic Association (NCAA) (Watterson, 2000) and academic issues related to athletic commitments (Miller & Kissinger, 2009). These issues pertain to recruiting, improper benefits, commercialization and the pressure to matriculate to the professional ranks. In the next section we examine the specific research analyses and how it relates to the constructs of time management, academic advising dynamics, and the success of the African American male scholar-athlete. One area that is often overlooked is the social and cultural factors that impact the time management dynamics in the daily lives of African American male scholar-athletes. In the next section we review the traditional literature on African American males that participate in American college athletics and attempt to change the direction of this literature by examining their success, their successful strategies and the factors that might contribute to this success.

2. Literature review: Time management factors that Influence stress & success

Deficit perspectives are a common mode of research focus with African American male student-athletes, especially in the revenue-producing sports of football and men's basketball (Oseguera, 2010). Nonetheless, there are serious challenges that threaten the positive outcomes of academic success for this population and unique cultural identity on campus. These challenges are factors that prevent the proper management of time constraints of the modern day student-athletes. Factors include a full load of academic classes; practice on a

daily basis; study hall; mentoring by academic advisors; athletic meetings/weights/athletic training treatment of injuries/rehab; athletic contests; travel; social life; family; coaching expectations, and media interviews. This begs the question, is it possible for these factors to be managed in a positive and productive way?

By applying a theoretical framework such as the Positive Organizational Behavior (POB) and positive psychology framework(s) (Luthans, 2002a), the success of the African American male scholar-athlete can possibly be illuminated. Theoretically in past research in this area, few scholars or practitioners have applied or highlighted the tenets of positively oriented human resource's strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today's workplace" (Luthans, 2002a, p. 59). More research is evolving that focuses on the principles of positive psychology that fuels success and performance at work and other organizational contexts (Anchor, 2010). Quantitatively and/or qualitatively the perceptions and voices of success of African American male student-athletes is limited but does exist (Harrison & Lampman, 2001; Martin & Harris, 2006; Martin et al. 2010a; Martin et al. 2010b). Why is this the case? We feel that the focus and assumptions by some previous research has been that once African American male student-athletes receive a college athletic scholarship that they are less motivated with how they manage their academic time versus their athletic duties. This has implications on how we think about the *real* time management challenges of student-athletes. Sellers & Chavous (1997) capture this debate about structural inequities or individual motivation including successful academic performance with time management:

"Other studies have reported evidence which suggests that many of the African American student-athletes who are excluded from full participation and scholarship opportunities by the initial eligibility requirements would actually graduate if they are given the chance (NCAA, 1984; Walter, Smith, Hoey, & Wilhelm, 1987). The NCAA reported findings regarding the graduation class of 1984, two years before Proposition 48 went into effect, that 54%of African American male athletes who attended and subsequently graduated from the surveyed institutions would have been disqualified from freshman eligibility by the standardized test requirement of Proposition 48 (NCAA,1984). Similarly, Walter and his colleagues (1987) reported that 60% of the African American football players at the University of Michigan from 1974-83 would not have been eligible under Propositions 48 and 42. Yet, 87% of those African American football players who would have been excluded under Propositions 48 and 42 actually graduated. The National Collegiate Athletic Association (NCAA's) almost exclusive focus on increasing initial eligibility requirements has been based on the assumption that the academic problems of student-athletes are motivational in nature. Specifically, the argument has been that too many student-athletes place too much emphasis on athletics and not enough emphasis on academics. Thus, the higher admission criteria is believed to send the message to potential student-athletes in junior high school and high school that they must place a greater emphasis on academics if they plan to play sports in college. Further, potential student-athletes' improved academic preparation at the secondary level will result in increases in the graduation rates once they reach college. Some proponents of the current reform movement also believe that the initial eligibility requirements also send a message to high schools that they must also do a better job of preparing their athletes academically for the rigors of college work (p.4)."

Sellers (1992) also found that neither effort (as measured by hours spent studying) nor aspirations (the importance of obtaining a degree) was a significant predictor of student-athletes' grade point average. In an American Institute of Research(AIR) report focusing specifically on African American student-athletes, over one-third of the African American football and basketball players who regarded earning a degree as being of the greatest importance had earned Grade Point Averages(GPA's) of less than 2.0 (Center for the Study of Athletics, 1989). Sellers also suggest that more research is needed before anything definitive can be concluded regarding the role of academic motivation in the academic performance of student-athletes. We feel that one key approach in investigating the academic performance of student-athletes is to find out how they feel about managing the academic and athletic roles.

In order to "give voice" and perspective to the real-life experiences of those student-athletes managing the challenges of academic and athletic time management factors, a qualitative approach was incorporated. In terms of perspective, both authors of this chapter are former NCAA football and men's basketball participant observers respectively and have experienced the benefits of habitual time management skills that can also be transferred to other contexts besides athletic participation. In the next section we summarize the methods and procedures used to buttress our analysis of academic advising, time management and African American male student-athletes that build on the concept of "voice" with a sample population of contemporary African American male scholar-athletes.

3. Methodology

A phenomenological approach is a form of qualitative inquiry, which focuses on human experience and giving voice in this instance to the student-athlete. This approach's primary goal is to inductively and holistically understand human experience in context-specific settings (Patton, 2001); in this case we feel that approaching time management issues with contemporary student-athletes enables us to understand the human effects with this issue. Due to the sensitive nature of the study and the aim of the researchers, a phenomenological interview was employed to collect data. One of the purposes of this study was to explore participants' confidence about their academic achievement, which is a sensitive topic for college athletes, especially due to the many negative stereotypes associated with them. Phenomenological interviews (Thomas & Pollio, 2002) were utilized to gain insight and a deeper understanding into the academic experiences' of African American male student athletes. The aim of a phenomenological interview is to obtain a first-person account of some specific domain of experience (Thomas & Pollio, 2002; Thompson, Locander & Pollio, 1989), and the interviewer attempts to capture the perceived experience of the person interviewed in his or her own words. Researchers desire was to give participants an active and dominant voice. A phenomenological interview gives the participant control without predetermined structured questions (Patton, 2001). Typically the interview utilizes a probing statement, which is not even a question. This process allows the participants to share solely what is central to their experiences (Patton, 2001).

Patton's (2001) strategy of *purposeful sampling* was employed. The purpose of this strategy is to select information-rich cases for in-depth study. The size of the sample and specific cases depend on the study's purpose. According to Patton (2001), decision of sample size depends on the following factors: a) what the researcher wants to know; b) the purpose of the study;

c) what is at stake; d) what will be useful; e) what will have credibility, and f) what can be done with available time and resources. In this study, the following criteria were utilized to purposefully select participants: a) student athletes who attend Research I and Division I universities in the Western region of United States; b) cumulative grade point average at or above a 2.8; c) African American male student-athletes who participate in the intercollegiate sports of football, men's basketball, track and field or soccer; and d) African American male student athletes who are on schedule to graduate in five years or less.

3.1 Participants

Twenty-seven participants in 2004-05 were selected as eligible African American male undergraduates who had competed in football, basketball, track and field, and soccer. Participants were from four Research I institutions. The universities are located in the Western region of United States and are as follows: Stanford University, University of California at Berkeley, University of California at Los Angeles, and the University of Southern California. These institutions are similar in terms of size, academic rigor, geographic proximity, and athletic conference. Collectively, the universities enroll 72,239 undergraduates, with 3,502 (4.9%) African-Americans. The enrollment of African American students ranges from 3.7% to 8.8% at the selected institutions. In addition, nearly 31% of the African American students at these institutions are men. Two universities are public and two are private.

3.2 Procedure

An initial consultation with the athletic administrators and counselors from the universities took place to introduce the aims of the study and to identify all African American male student athletes who were eligible for participation in the study. The required criteria for particpant selection were conveyed to athletic administrators and athletic academic counselors at the universities. Initially, approximately forty African American male student athletes were recruited for this study. Due to limitations in regard to criteria and availability the participant pool was condensed. The participants contributed to this investigation on a voluntary basis. Prior to the interviews, participants read and signed the informed consent form. Next, the primary researcher participated in a bracketing interview in order to identify his biases, assumptions, and stereotypes. Bracketing means to suspend one's theoretical presuppositions prior to engagement with the phenomenon under investigation (Van Maanen, 1983). The aim is to utilize purposeful bracketing of one's preconception in order to understand phenomena from the perspective of those who experience it (Van Maanen, 1983). The interview is performed to sensitize the interviewer to conceptual biases that might serve to change his or her interpretive vision (Pollio, Henley, & Thompson, 1997; Thomas & Pollio, 2002). After completion of the bracketing interview, the initial and follow-up interviews were conducted with each participant.

3.3 Interview protocol

The interview stage included two unstructured audio-taped interviews – an initial interview, followed by an analysis for theme development, and a follow-up interview. Interviews were conducted in a private, quiet room located at the participant's university. The initial interview lasted one hour and the follow-up telephone interview approximately 15-20 minutes. The use of open-ended statements allows the interviewer to gather the data

being sought without making the dialogue exchange inflexible and restrictive (Holstein & Gubrium, 1995). During the initial interview, participants were prompted with the following four open-ended statements:

a) *Tell me about your academic experiences at your university.*; b) *Tell me how you are perceived on campus as an African American male student-athlete;* and c) *Tell me about the challenges of balancing academics and athletics;* and d) *Tell me about your sources of motivation to perform well academically.* The primary researcher made an effort to make the interviews as conversational and exploratory as possible which allowed participants to be comfortable with expressing their perceptions, expectations, and values regarding their academic experiences.

Following the initial interview, the audiotape was transcribed, and a copy of the transcript was given to the participant. If the participant felt some aspect of the contents needed revision, he so indicated and then returned the transcript. A follow up interview was conducted with each participant via telephone. Themes were developed through the use of an interpretive research group prior to the follow-up interview that was conducted with each participant (Denzin & Lincoln, 2000). This process will be detailed in the data analysis section. During the follow-up interview, a summary description of the themes for each transcript was given to the participant. The purpose of this interview was to obtain clarification and offer the participant an opportunity to add any other information (Denzin & Lincoln, 2000; Lincoln & Guba, 1985; Marshall & Rossman, 1999). All participants confirmed the accuracy of their individual transcripts and offered agreement concerning the themes for each transcript.

3.4 Data analysis

Before coding and analyzing the data, the primary researcher critically examined himself as the investigator of this study. This self-examination process known as *epoche*, allows the researcher to remove, or at least become aware of prejudices, viewpoints or assumptions regarding the phenomenon under investigation (Patton, 2001). Thus, it was important for the researcher to enter the analysis phase with a fresh and open viewpoint excluding any prior knowledge or experiences of the population under study.

According to Patton (2001), phenomenological analysis seeks to grasp and elucidate the meaning, structure, and essence of the lived experience of a phenomenon for a person or group of people. Similarly, Creswell (1998) posits, phenomenological data analysis occurs through information reduction, analysis of relevant statements, identification of common themes, and a search for all possible meanings emerging from the data.

An interpretive research group, which consisted of four individuals trained in qualitative research methodology, one of which was the primary researcher, was utilized throughout the data analysis process. To begin with, the interpretive research group read the transcripts focusing on the time management strategies of each participant separately to get a sense of the whole of each transcript. Moustakas' (1994) recommendation of finding statements from the interviews about how the participants experienced the phenomenon (in this case time management) was utilized by interpretive group members. The interpretive team continued the process of the African American male scholar-athletes' data by listing their significant expressions and thoughts about managing their academic and athletic time management strategies in the margins and treated each statement as having equal worth. This process is

called *horizontalization.* Next, the researchers organized and sorted key phrases using NVivo, a qualitative data management software program. After the 23 invariant constituents were identified, *textural descriptions* (what the academically driven student athletes experienced) and *structural descriptions* (how the participants had experienced the phenomenon) were written for each of the 27 participants in the larger study. These summaries were then used to generate accurate descriptions of how the phenomenon was experienced. A combination of 27 textural and structural descriptions, coupled with the 23 invariant constituents, produced three major themes in the area of time management that captured the true essence of the participants' shared experiences for the purposes of this chapter.

4. Qualitative data: Voices of African American male scholar-athletes
(Note: All names of the student-athletes are pseudonyms)

4.1 1st Major theme "What I Looked For: Academics and Athletics" (see table 1)

More than half of the participants in this study were All American student-athletes in high school. Hence, they were recruited by hundreds of Division I programs across the country. Though "big time" intercollegiate programs touted them, they consistently noted that their college choices were predicated on the academic reputations of the institutions, rather than the publicity of their athletic successes. USC student-athlete Daniel Kaiser commented: "I wanted to major in Business. A lot of other schools like Florida State, Washington, and Arizona recruited me, but I knew that USC had a reputable Business school. Majoring in Business was more important, because I knew that football would take care of itself."

Graphical Representation of Quotes	
What I Looked For: Academics and Athletics	*I wanted to major in Business. A lot of other schools like Florida State, Washington, and Arizona recruited me, but I knew that USC had a reputable Business school. Majoring in Business was more important, because I knew that football would take care of itself.[1]No one puts it together better than Stanford.[2]*
	It seemed like everyone around me wanted me to go to a football powerhouse like Georgia, Alabama, and other schools in the Southeastern Athletic Conference (SEC). I really liked coach Willingham's vision of being a champion in both academics and athletics. I also liked the fact that I would be able to study with some of the brightest people in the world. I knew that that would pay off for me in the end.[3] Everyone in Memphis had opinions about what school was best for me. Some people said that I should stay closer to home and a lot of my coaches wanted me to go to one of the Florida schools. People in my neighborhood would say, 'With your talent, you should be playing at a school like USC or Texas.' I got tired of what people had to say. I don't think they understood that football wasn't the most important factor in my decision.[4] I realize that I'm one of the few Black males from the ghetto that has the opportunity to earn one of the more respected degree's in the world. Earning this degree will allow me to leave footprints for other brothas' in the South Central Los Angeles to follow. I chose USC for the chance to become a leader in my community.[5]

Graphical Representation of Quotes	
The Academic Support Center Has Inspired Me	*I had one writing tutor who told me I should consider exploring poetry. She said I should not waste my talents by being like a lot of other students-athletes. She told me that I don't have to be a slave to the program — that I could be much more than a football player. That really inspired me to get more serious about my writing.[1]* *Calculus was tough for me last semester. To be honest, I really didn't think that I could get higher than a C in the course. My tutor spent a lot of time with me going over tips and different ways to prepare for exams. He also gave me pre-test motivational speeches, kind of like a coach. I thought that was kind of cool. I got a B in the class.My advisor is rare mix between advisor, tutor, and friend. He played football here at Stanford and he's still young enough to understand some of the challenges I go through. He's been there for me when I had no one else to turn to.[2]My advisor definitely keeps me in check.[3]* *Sometimes being the best student and athlete is tough. I've been guilty of slacking off at times. Nothing major, but I just get a little lazy on the academic side. It's times like that when I need someone to get me back on track to doing the things that will help me in the long run. My advisor always finds a way to keep me on a system for success.[4]*
I Want To Play In the League	*I want to be in a financial situation where I can help kids grow as students. I want them to grow up thinking that being smart is cool and that going to college is definitely attainable.[1]The 'white collar' Donnie will earn a nice salary and have a certain level of status in society; but Donnie the professional football player will be able to show love and respect to the people who carried me through the rough times. I will make enough money for my brothers and sisters to go to private schools; to stop my mom from working two jobs just to make it; and to give my close friends a solid financial foundation for them to succeed.[2]If I make it to the league, it should be a celebration for the entire race. Luke mentioned this celebration, because he aspires to help African Americans in meaningful ways — providing life skills resources for the homeless; buying textbooks for inner-city schools; being a life-long mentor for young African American boys; and creating counseling centers for troubled teenagers. Luke clearly communicated that a significant portion of his earnings would be allocated to the overall advancement of African American youth. He believed, By targeting the young kids, I will be contributing to society, because my efforts will allow another Black kid to fulfill the dreams that he or she never thought could be attained. As a Black male who has succeeded beyond the odds, I feel that this is my obligation.[3]* *Growing up in South Central Los Angeles wasn't the easiest thing in the world to do. I lived in an environment where people were just mad at the world and just trying to survive. I want to be in a position where I can create a positive vision for people in my community. Having a solid financial base will allow me to do this on a larger level.[4]*

Table 1.

"No one puts it together better than Stanford, "stated Manny Mason. All of the participants from Stanford University agreed with this assertion. They spoke extensively about the ways in which their family impacted their decision. Leslie Todd reflected on some of his pressures as a highly recruited student-athlete from Atlanta, Georgia.

It seemed like everyone around me wanted me to go to a football powerhouse like Georgia, Alabama, and other schools in the Southeastern Athletic Conference (SEC). I really liked coach Willingham's vision of being a champion in both academics and athletics. I also liked the fact that I would be able to study with some of the brightest people in the world. I knew that that would pay off for me in the end.

Similarly, Stanford participant Paul Grass communicated his frustration with individuals offering unsolicited advice during his recruiting process. He commented:

Everyone in Memphis had opinions about what school was best for me. Some people said that I should stay closer to home and a lot of my coaches wanted me to go to one of the Florida schools. People in my neighborhood would say, 'With your talent, you should be playing at a school like USC or Texas.' I got tired of what people had to say. I don't think they understood that football wasn't the most important factor in my decision.

Participant Keith Taylor vehemently expressed that his college decision was not based on the Track & Field tradition at USC. He spoke of how an International Relations degree from USC would allow him to serve as a model for other African American male students to follow. He spoke at length about his college decision being more about others than himself. "I realize that I'm one of the few Black males from the ghetto that has the opportunity to earn one of the more respected degree's in the world. Earning this degree will allow me to leave footprints for other brothas' in the South Central Los Angeles to follow. I chose USC for the chance to become a leader in my community."

4.2 2nd Major theme "The Academic Support Center Has Inspired Me" (see table 1)

The study participants also cited student-athlete academic support centers as significant factors in their academic development. Academic support centers at all four institutions provided resources for student-athletes to enhance their academic skills, receive direction in course selection, participate in life skill development workshops, and in many cases, for overall academic and personal empowerment. Although it was not mandatory for the student-athletes to utilize the services and resources, all but two of the participants took full advantage of the available tutors, advisors, and programs offered by the various academic support centers.

Tutors were major facilitators in instilling confidence in the participants. Instead of lowering their self-assurance, many tutors dissuaded the student-athletes against being "dumb jocks"—being locked into having only athletic identities. USC student-athlete Luke Jackobson offered the following remarks:

I had one writing tutor who told me I should consider exploring poetry. She said I should not waste my talents by being like a lot of other students-athletes. She told me that I don't have to be a slave to the program—that I could be much more than a football player. That really inspired me to get more serious about my writing.

Adrienne West, another participant from USC, talked about how his Math tutor gave him that extra "push" to succeed in a course. He concluded:

Calculus was tough for me last semester. To be honest, I really didn't think that I could get higher than a C in the course. My tutor spent a lot of time with me going over tips and different ways to prepare for exams. He also gave me pre-test motivational speeches, kind of like a coach. I thought that was kind of cool. I got a B in the class.

Academic advisors also aided in providing the student-athletes with an additional support outlet. The participants frequently referenced their academic advisors as being good people—individuals who genuinely cared about the well being of all students. All of the participants identified at least one academic advisor who had been there to comfort them emotionally. Though the advisor's primary jobs were to provide academic guidance and support, many served in familial capacities for the participants in times of doubt, fear, and other various crises. Manny Mason added: "My advisor is rare mix between advisor, tutor, and friend. He played football here at Stanford and he's still young enough to understand some of the challenges I go through. He's been there for me when I had no one else to turn to."

"My advisor definitely keeps me in check," asserted UCLA student-athlete James Wooden. James talked about whenever he even thought about going down the "wrong road," his advisor always reminded him of his purpose for being at UCLA. He further elaborated:

Sometimes being the best student and athlete is tough. I've been guilty of slacking off at times. Nothing major, but I just get a little lazy on the academic side. It's times like that when I need someone to get me back on track to doing the things that will help me in the long run. My advisor always finds a way to keep me on a system for success.

Without exception, the participants had academic advisors and tutors who supported, encouraged, and uplifted them. From their perspective, the advisors' extensions of genuine care motivated them to achieve academically.

4.3 3rd Major theme "I Want To Play In the League" (see table 1)

Though the participants were commendable students, all of them expressed desires to play professional sports after college. Indeed, almost all of the student-athletes had an interest in attending graduate school shortly after their days in college; however, they also wanted to live out their dreams of being professional athletes. Unlike some of their teammates who aspired to play professionally for the fame and fortune, the participants offered more humanitarian reasons for wanting to play professionally. For instance, USC student-athlete Adam Holden expressed his desire to create reading and writing programs for African American students back in his hometown of Boston, Massachusetts. He talked about how earning money on the international Track & Field circuit would enable him to implement major educational programs for African American youth in Boston. "I want to be in a financial situation where I can help kids grow as students. I want them to grow up thinking that being smart is cool and that going to college is definitely attainable," he noted.

Berkeley student-athlete Devan McCoy spoke of how his financial earnings from the NFL would allow him to take care of his family. He stated that he owed a great deal to his family and close friends because they have supported him when nobody else seemed to care. His willingness to financially provide for his them was conveyed in the following reflection:

The 'white collar' Donnie will earn a nice salary and have a certain level of status in society; but Donnie the professional football player will be able to show love and respect to the people who carried me through the rough times. I will make enough money for my brothers and sisters to go to private schools; to stop my mom from working two jobs just to make it; and to give my close friends a solid financial foundation for them to succeed.

USC student-athlete Luke Jackobson viewed his opportunity to play in the NFL as a success for all African Americans. "If I make it to the league, it should be a celebration for the entire race. Luke mentioned this celebration, because he aspires to help African Americans in meaningful ways—providing life skills resources for the homeless; buying textbooks for inner-city schools; being a life-long mentor for young African American boys; and creating counseling centers for troubled teenagers. Luke clearly communicated that a significant portion of his earnings would be allocated to the overall advancement of African American youth. He believed, "By targeting the young kids, I will be contributing to society, because my efforts will allow another Black kid to fulfill the dreams that he or she never thought could be attained. As a Black male who has succeeded beyond the odds, I feel that this is my obligation."

Although UCLA student-athlete James Wooden expressed long-term aspirations of being an educator, he mentioned that professional Track & Field was in his near future. He talked about wanting to take advantage of maximizing his skills and talents at a fairly young age in order to live a comfortable life after his competition days are over. Similar to the ambitions of the aforementioned participants, James also shared his desire to uplift the lives of African Americans in South Central Los Angeles. "Growing up in South Central Los Angeles wasn't the easiest thing in the world to do. I lived in an environment where people were just mad at the world and just trying to survive. I want to be in a position where I can create a positive vision for people in my community. Having a solid financial base will allow me to do this on a larger level."

It was vividly clear that the participants wanted to help other African Americans be successful in all endeavors. Though the student-athletes admitted to living out their dreams of being professional athletes, they consistently talked about being change agents for society.

The participants underscored some of the major pitfalls that many African American male student-athletes fall victim to in the early stages of their college careers that relate to time management. Additionally, the participants commented on how they learned to stay focused on long-term goals; be a leader at all times; and take advantage of the many resources available at their respective institutions. Though their unique learning experiences and opportunities, the participants displayed commendable levels of wisdom that would be useful for all African American male student-athletes preparing to embark on the multi-faceted life and time consuming realities of being collegiate student-athletes at highly selective universities.

5. Discussion and conclusion: Policy recommendations to shape time management success

A common theme found in the academic literature contends that African American male student-athletes are channeled towards performing in the athletic setting rather than focusing their time on the academic field (see Tables 2 & 3). As a result of this colleges tend to provide the necessary athletic support while failing to ensure that there is also adequate academic support. To demonstrate this time crunch Tables 2 & 3 capture and quantify "a day in the life" a student-athlete. By filling Monday through Sunday with academic and athletic commitments, we are able to interpret the results and data in the following way(s). One, student-athletes in-season have zero days off. Second, the sports of USA football and men's basketball require serious time commitments both in-season and off-season equaling the workforce hours of 9 to 5 in terms of a full-time job; this may create extra stress on an already stressful and challenging environment. Third, the data and results inside the time management grid involve a picture and deeper glimpse through descriptive quantification

Football Fall Scheudle

	Monday		Tuesday	Wednesday	Thursday	Friday		Saturday		Sunday
	"Day Off"									
8:00-12	Class	8:00-12	Class	Class	Class	Class	9-9:30	Breakfast		
12-12:30	Lunch	12-12:30	Lunch	Lunch	Lunch	Lunch	11:00-3	Free Time		
5-5:30	Dinner	1:00-2	Weights	Weights	Weights	Weights	3-3:30	Lunch		
5:30-8	Work on New Game Plan	2:30-3	Meetings	Meetings	Meetings	Meetings	4:30	Be at stadium		
8:30-10	Study Hall	3:30-6:30	Practice	Practice	Practice	Practice	7:00-11	Game	6:00-10	Film
		7:00-8	Dinner	Dinner	Dinner	Dinner				
		8:30-10	Study Hall	Study Hall	Study Hall	Study Hall				

Football Spring Scheudle

	Monday		Tuesday	Wednesday	Thursday	Friday		Saturday	Sunday
8:00-12	Class	8:00-12	Class	Class	Class	Class			Day Off
12-12:30	Lunch	12-12:30	Lunch	Lunch	Lunch	Lunch	11-11:30	Lunch	
5-5:30	Dinner	1:00-2	Weights	Weights	Weights	Weights	12:00-4	Spring Scrimmages	
5:30-8	Free Time	2:30-3	Meetings	Meetings	Meetings	Meetings	5-5:30	Dinner	
8:30-10	Study Hall	3:30-6:30	Practice	Practice	Practice	Practice			
		7:00-8	Dinner	Dinner	Dinner	Dinner			
		8:30-10	Study Hall	Study Hall	Study Hall	Study Hall			

Table 2.

Basketball Fall Schedule

	Monday	Tuesday		Wednesday		Thursday	Friday		Saturday	Sunday
6-7:00	Free Throws	Free Throws			6-7:00		Free Throws			Day Off * 2 Hours of Film*
7-7:30	Breakfast	Breakfast	7-7:30	Breakfast	7-7:30	Breakfast	Breakfast	8:30-9	Breakfast	
8-12:00	Class	Class	8-12:00	Class	8-12:00	Class	Class	10-4:00	Game	
12:30-1	Lunch	Lunch	12-4:00	Free Time	12:30-1	Lunch	Lunch			
1:30-2:30	Film	Film	4-10:00	Game	1:30-2:30	Film	Film			
2:30-6	Weights/Practice	Weights/Practice			2:30-6	Weights/Practice	Weights/Practice			
6:30-7	Dinner	Dinner			6:30-7	Dinner	Dinner			
8:30-10	Study Hall	Study Hall			8:30-10	Study Hall				

Basketball Spring Schedule

	Monday	Tuesday		Wednesday		Thursday	Friday		Saturday	Sunday
6-7:00	Free Throws	Free Throws			6-7:00		Free Throws			Community Service at Completion of Season
7-7:30	Breakfast	Breakfast	7-7:30	Breakfast	7-7:30	Breakfast	Breakfast	8:30-9	Breakfast	
8-12:00	Class	Class	8-12:00	Class	8-12:00	Class	Class	10-4:00	Game	
12:30-1	Lunch	Lunch	12-4:00	Free Time	12:30-1	Lunch	Lunch			
1:30-2:30	Film	Film	4-10:00	Game	1:30-2:30	Film	Film			
2:30-6	Weights/Practice	Weights/Practice			2:30-6	Weights/Practice	Weights/Practice			
6:30-7	Dinner	Dinner			6:30-7	Dinner	Dinner			
8:30-10	Study Hall	Study Hall			8:30-10	Study Hall				

** March Madness / Tournament Time. Additional games per week.**

Table 3.

of all the juggling and managing of classes, meals, athletic meetings, study hall, weight lifting, practice travel for athletic contests, film watching for game preparation and little time for social life and family that may be visiting or live close by. These factors were aforementioned in the literature review section in this chapter. When all of these factors are managed effectively they have the potential to prepare a student-athlete for life and career (Shulman and Bowen, 2001).

Student athletes psychological, cultural and social problems increase along with the expanding competitiveness of U.S. athletic programs. It has been found in part that student-athletes earn fewer bachelor's degrees than general students, they take longer to do so, their grades are lower and they take less demanding coursework (Dudley, Johnson, & Johnson, 1997). Conversely, some data also indicate that student-athletes graduate at a higher rate than the general student body (Lapchick, 2010; NCAA, 2010). *African American male scholar-athletes in the current study exhibited mindsets that run counter to stereotypical trends despite*

inherent time management problems of higher education tied to big-time college athletics (Smith, 1988; Watterson, 2000). One, they looked for schools during their recruiting process that would validate their desires for academic and athletic balance. Two, the academic support centers inspired them at each respective institution versus having them "major in eligibility" with a "minor in beating the system" (See Harrison quotes, 2009 USA Today). Third, the African American males in the current study admitted to having aspirations of playing professional sports which means athleticism must be balanced with a high value on academics—in an environment with little extra time in either the academic or athletic domains. (See Table 2 football, Table 3 basketball fall & spring respectively).

The current study investigated and pinpointed certain factors that compelled the participants to commit their time to activities outside of the classroom while maintaining focus on academic success (See Table 3). Expanding on the limited research in this area, the findings provide insight to what the participants valued in their lives outside of their academic and athletic obligations which is highly correlated with effective time management. Applying Positive Organizational Behavior to the current study reveals that despite the quantitative reality that student-athletes must manage between (low) 40 to 70 (high) hours of academic & athletic commitments especially including extra study time during the week and weekends. A closer examination of the data gives ground for our conclusions and recommendations that follow on the next pages. In the next sub-heading we follow all the previous quantitative and qualitative assessments with this issue of time management by examining some appropriate models for contemporary time management challenges of today's student-athlete by threading from the actual study and quotes from the student-athletes themselves which is a key feature and contribution of this chapter to scholars and practitioners (Kissinger & Miller, 2009).

However, we want to be clear about the contributions of this chapter in terms of added value, benefit and impact of the current research, and lastly the broader influence on the theory and practice with time management issues related to contemporary student-athletes in competitive situations in the United States and possibly globally if the structure of intercollegiate athletics and higher education is comparable. Our first contribution is in the area of Positive Organizational Behavior (POB). With the subordinates in an organizational context being student-athletes, our investigation went beyond the surface of quantifying the number of hours student-athletes spend academically and athletically. This was achieved by listening to them express their specific thoughts about managing academic and athletic pressures. This contribution of success by student-athletes was in concert with the organizational leadership of academic advisors in a positive way. Specifically, our chapter contributes to the structural (organizational) analysis of intercollegiate athletics and higher education as the African American male scholar-athletes in the current study described their relationships with many of the athletic administrators, advisors and tutors as positive, empowering and assisting them with the challenge of managing their time commitments in a positive and productive way. These findings can aid in how academic support services helps student-athletes realistically succeed off of the playing field and in the classroom. With a better understanding of the demanding schedules required of student athletes, coaches, recruiters, and counselors can more adequately prepare and manage student-athletes to increase their success throughout college. Often times incoming student-athletes are not sufficiently ready for the transition from high school to college, and do not anticipate the additional time commitments outside of class and practice, leaving them overwhelmed and often times setting

them up for failure. With accurate depictions of the time the student-athlete role requires, they can subsequently be more proactive with their time management skills.

Our second and third contribution of value is the methodological approach (and data results) to investigate time management issues with African American male scholar-athletes that are successful and higher achievers in the sports mostly of football and men's basketball. Previous quantitative approaches with this ethnic and racial group has focused on deficit or deductive reasoning approaches that negatively highlight aptitude attributes and sub-par academic performances in the areas of Scholastic Aptitude Testing (SAT), Grade Point Average (GPA), and other standardized testing predictors. We in part used descriptive quantitative methods in terms of the snapshot of various time commitments (Tables 2 & 3); however our qualitative data enables our analysis of time management with this unique student-athlete population to be buttressed with information beyond stigmatizing, labeling and stereotyping the lack of success by African American male scholar-athletes. To summarize before the next section, our chapter contributes to a positive organizational leadership analysis of academic advisors that are often stereotyped as being apathetic about student-athlete success beyond mere eligibility and low expectations about academic performance; the benefit is that theorists and practitioners can apply tenets from this chapter to their desired outcomes; and finally the influence of this chapter on theory and practice is that we have data from *African American male scholar-athletes themselves in their words, language, symbols, jargon, cultural perspective and "real-time" experiences.*

5.1 Models for effective time management

First, Academic support services need to be more cognizant of the academic and social needs of African American male student-athletes. Rather than relying on the coaches to be the primary source responsible for the success of student-athletes, the entire academic support network needs to play a role in this process. Key individuals must emphasize the importance of high academic achievement and appropriate behavior on campus. Roper & McKenzie (1988) presented a comprehensive model for advising Black college athletes. This model relies on the growth and balance of symbolization, allocentrism, integration, stability, and autonomy. Those African American male student-athletes who have demonstrated excellence in the classroom must be recognized for their success and can act as role models for the younger generations in the current study.

Second, another key initiative to improving the college experience of African American student-athletes is to ensure recruitment and retention of African American administrators, academic staff, and coaches. The feedback from coaches, teammates, and peers is almost instantaneous when it comes to athletic performance. While this direct link is satisfying for the athletes, there is the danger of diverting the athlete's attention from their academics.

Clearly, the majority of literature on African American male student-athletes focuses on academic achievement and social adjustment (Edwards, 2000; Gaston, 1986; Harrison, 2000). Scholars contend that an oppositional relationship exists between sport and academic achievement and African American males are often encouraged to take their chances with athletics rather than reach their academic potential. The present study took more of a holistic approach to understanding the academic environment that many African American male student-athletes are subjected to and as such has determined the importance of qualitative research in examining issues related their academic and athletic achievement.

Dr. C. Keith Harrison as a participant observer has transferred his lessons from the scholar-athlete experience to his values as a faculty member with research, teaching and service to various communities. Part of these lessons that have continued since his playing days are to surround himself with a peer group that values the academic and athletic experience such as this photo with his colleagues that are former student-athletes (pictured left to right Drs. Harrison, Sutton and Lapchick (photo courtesy of Joslyn Dalton).

Dr. Brandon Martin has utilized his time management skills a former Division I Basketball Player who also played professionally in various global cities to ascend in leadership roles as a researcher and educator. Dr. Martin has over a decade of athletic administration experiences including senior level experience at the University of Southern California and currently the "number two" at the University of Oklahoma where he is the senior associate athletic director. Pictured is Brandon Martin next to a photo from his playing days at the Galen Center facility at USC (photo courtesy the Paul Robeson Research Center for Academic and Athletic Prowess).

6. Future research & policy suggestions: Eyeing the current study and data implications

Other studies in the future in this area might include women, women of color, examining various institutional levels of higher education culture such as Division I, II, III, community colleges, high school sports and even youth in sport as their attitudes of socialization are influenced early in life. Once again the current study is in line with researchers such as Sellers & Chavous that state "it is also important that researchers begin to examine the experiences African American student-athlete4s have once they are on campus. Research on such experiences may lead to the development of interventions for student-athletes once they are on campus that may enhance academic performance without the adverse side-effects on African American student-athletes that presently exist with the current reform efforts (Sellers, 1993)" (p.7).

In terms of policy suggestions, they should begin with reform efforts that target the National Collegiate Athletic Association (NCAA); the National Association of Academic Advisors for Athletics(N4A); the National Association of Collegiate Director's of Athletics (NACDA); and the American Educational Research Association (AERA). These are groups that not only shape policy in ways that impact the student-athlete but groups such as AERA research this issue and have many former African American male scholar-athletes that serve can serve as mentors and role models that have successfully managed their time effectively during their scholar-athlete days while on athletic scholarship on campus.

In the final analysis, the data from the African American male scholar-athletes serve us well as we conclude this chapter when thinking about policy suggestions. Of the 13 quotes and narratives from the student-athletes they illuminate successful strategies in terms of who they effectively managed various time commitments. The African American male scholar-athletes do this in their own language, words and symbolic meanings based on their experiences managing themselves with serious pressures to perform academically and athletically. There are five relevant points that may guide us in a more innovative discussion with policy analysis of intercollegiate athletics and higher education when it comes to time management based on the quotes from the study. A closer look at the data reveals these five points. First, the African American male scholar-athletes took ownership of their time management challenges and embraced the idea of having broader identities on campus that were not athletically related such as poetry in one instance. Policies should continue to create situations and programs where student-athletes can "brand themselves" beyond media guides and other public relations materials in athletics departments that often overlook academic and career success. Second, the value that coaches place on a student-athlete's success in the classroom is beyond measure and sets the academic and time management mindset of a student-athlete during recruiting as stated by several of the African American males in the study. Policies should continue to encourage and require coaches to balance their own priorities with academics and athletics. Third, the African American male scholar-athletes in the current study were all preparing (even with struggles at times) for something more important than the sport they participated in. One policy implication is to match student-athletes with graduates and successful former players from the university so that they have a mentor they can connect with and relate to during this preparation for life after sport. Fourth, the African American male scholar-athletes

articulated that leadership and community were the pillars of their privilege to be on athletic scholarship and a personal obligation to share with others that might not have the same opportunity. Policies must continue to require student-athletes to spend time in the community with high quality programs of substance which currently many schools perform at an adequate level in this area. Lastly, and probably most importantly in terms of popular culture and the potential impact on society youth and young adults—is that the study participants embraced that "school is cool" and they were intrinsically motivated (Rasmussnen, 2009) to compete in life beyond athletics. Policies must continue to create innovative ways to use media and new media to portray a new way of seeing student-athletes particularly in money making USA sports like football and men's basketball. One ad campaign might focus specifically on time management as part of this new image and discussion about student-athletes that successfully manage their time in the 21st Century.

7. Acknowledgment

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The time management is worthy goal of many human activities. It concerns variety problems related to goals definition, assessment of available resources, control of management policies, scheduling of decisions. This book is an attempt to illustrate the decision making process in time management for different success stories, which can be used as reference models by the interested audience.

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