Poly-Khronos Greece versus Clock-time Britain? Frameworks to examine culture's management of time in global schools of thought.

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Poly-Khronos Greece versus Clock-time Britain?

Frameworks to Examine Culture's Management of Time in Global Schools of Thought

By

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for the degree of Doctor of Philosophy

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Volume I

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed .... (candidate)

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STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the correction is clearly marked in a footnote(s).

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Abstract

The focus of this thesis is to address the impact of personality (i.e., achievement strivings, impatience/ irritability), culture (British and Greek) and coping strategies-polychronicity and Type A behaviours upon measures of performance (i.e., speed and accuracy). Key findings include the culturally differentiated role of achievement strivings and impatience/ irritability upon speed (as well as Type A behavioural orientations towards work). For example, increased levels of impatience/ irritability across Greek respondents significantly correlated with faster reaction times (speed). This relationship failed to manifest across British respondents.

A specific research gap identified concerns the need for a more clarified way to conceptualise multi-dimensional 'coping strategy' constructs, i.e., polychronicity and Type A Behaviour. A framework is proposed to more accurately conceptualise the intricate interplay involving multidimensional constructs of personal and cultural expression, i.e., polychronicity and Type A behaviour patterns by introducing 'EMAC': The 'Emotion-Mind-Action Complex'. Expressions of culture and personality are analysed in terms of emotion, mind and action, and which provide unique sources of variance. The complex of emotion, mind and action is interrelated and exists as a unit within an individual entity. It is argued that congruence across these three dimensions enables proficient activity-to-time management (see glossary for a definition of 'expression' and for its relations with emotion, mind and action).

The EMAC framework as inspired by Bandura's (1977a,b, 1982) social cognitive learning theory is easy to use and aids in differentiating across complex constructs pertaining to multidimensional 'coping strategies'. Taylor, Locke, Lee & Gist (1984) found that the performance of multiple projects simultaneously is a characteristic feature of the Type A behaviour pattern. This is also a feature of polychronic cultures (Hall, 1989). However, though these two constructs (polychronicity and Type A) are similarly related in terms of multi-tasking *behaviour*, they are open to differ in terms of contributory *cognitive* and/ or *emotional* sources. Behaviours may also manifest from repetitive syndromes of conditioned response, i.e., a 'habit' or a 're-action' (Dispenza, 2006). People culturally polychronic are event-oriented and *prefer* to

perform many activities at once, whereas for 'Type As' the performance of many activities at once may be better interpreted as a *response to role overload.* Findings convey a more informed understanding of coping strategies that are made up of 'emotion', 'mind', and 'action'. Hence, by accounting for the triad, dialectical approach, this thesis also offers a new way of thinking to innovate upon the research efforts currently deployed, i.e., those more diametric and bi-dimensional.

This thesis also addresses the misconceptions relating to the 'Type A *Behaviour* Pattern', which conceptualise the overt *behaviour* pattern as a *personality* trait (see glossary for definitional clarity of key conceptualisations). A key contribution to research is a new complex of interaction concerning traits of personality (i.e., achievement strivings; impatience/ irritability) alongside behaviour patterns (i.e., Type A behavioural orientations towards work), in a way unlike any other research effort to date. To build upon theory due to the tentative testing of newly proposed relations, research contributions are enabled via administrations of performance and survey testing. As the majority of relations investigated are yet to be addressed by international research efforts certain statistical analysis techniques confirmatory in theoretical design, i.e., LISREL (Linear Structural Equations), EQS and AMOS (Analysis of Moment Structures), though commonplace in the international marketing research arena, are inappropriate (Byrne, 2001). Without a defensible theory, LISREL (AMOS) is insupportable, and multivariate analyses constitute the main mode of data analysis.

An additional framework (Chapter 4; Fig. 4.3A) is proposed to guide the reader through hypotheses testing- A 'Framework to Examine Culture's Management of Time across Global Schools of Thought'. To limit the effect of extraneous variables, factors relating to space (i.e., within the individual, including 'personality', akin to matters of emotion and mind); context (i.e., high context/ little need for the spoken word, or low context/ greater need for the spoken word); and the nature of one's environment and task (i.e., called for actions and behaviours) are accounted for. Of interest, a number of the variables analysed have not been previously examined for cross-cultural variability, i.e., 'performance speed and accuracy' vis-à-vis 'subjective time estimates', Type A behavioural orientations towards stress or work, and the 'perceived control of time'. Yet, to provide a standard, benchmark of comparative,

theoretical research results, objective barometers of performance-related speed and accuracy, easily replicable across differing cultures and contexts are employed.

Keywords: Culture, Time, Context (Global Schools of Thought), Polychronicity, Multidimensionality, Cognitive Processing, Task Complexity, Personality, Type A Behavioural Orientations, Satisfaction, Subjective Time, Speed, Accuracy.

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"It isn't what you know that counts, it's what you think of in time."
Benjamin Franklin (1706-1790)

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August 13th 2007.

DEDICATION

I dedicate this work to:

♥ My Parents ♥

Kewal Singh and Amarjit Kaur Biran have played an incredibly supportive role to help me during my PhD experience, and have instilled within me a certain sense of strength to see even the most difficult of tasks through. They have always done their best by me, and have always been there to encourage me to work hard on my thesis. Thank you my dearest mum and dad.

♥ The Paramātmā ♥

love is the every only god

who spoke this earth so glad and big
even a thing all small and sad
man, may his mighty briefness dig

for love beginning means return
seas who could sing so deep and strong

one querying wave will whitely yearn
from each last shore and home come young

so truly perfectly the skies
by merciful love whispered were,
completes its brightness with your eyes

Any illimitable star

E.E. Cummings (1894-1962)

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Glossary of Key Concepts & Variables:

Concepts:

Behaviour: the way in which someone or something behaves (OED, 2001).

Coping mechanism: the way in which 'coping' works or is brought about (OED, 2001), deriving from sources of emotion, mind and action (Bandura, 1977a,b, 1982).

Cultural trait: a defining characteristic relating to the culture of a society (OED, 2001).

Expression: (i) the *action* of expressing, (ii) the *look* on someone's face, (ii) a word or phrase expressing an *idea*. In order of presentation the dimensions of action (i), emotion (ii), and mind (iii) are conveyed to constitute a definition of 'expression' (OED, 2001).

Orientation: the action of orienting; to align, position (OED, 2001).

Personality trait: a defining characteristic of an individual (OED, 2001), i.e., achievement strivings and impatience/ irritability.

Strategy (of 'coping'): the art of planning as well as directing emotions, thoughts and action to achieve a particular end (OED, 2001).

Trait: a distinguishing quality or characteristic (OED, 2001).

Type A Behaviour Pattern (Pattern A): an overt bi-dimensional behaviour pattern oriented towards either work or stress. Behavioural orientations are provoked by certain kinds of environmental stimuli perceived as appropriately challenging (Carver *et al.,* 1976; Sutil *et al.,* 1998).

Variables:

Abbreviation	Explanation
	Individual-level Characteristics
Personality:	
SE	Self-Efficacy
PCT	Perceived Control of Time
AS	Achievement Strivings
II	Impatience/ Irritability
Preferred Temporal Orientation:	
MC	Monochronic
Dual MC & PC	Dual Monochronic & Polychronic
PC	Polychronic
STE(s)	Subjective Time Estimate(s)
STEs for 3 Coding tests:	
CopySTE	Copy Task Subjective Time Estimate
CFWDSTE	Code Forward Task Subjective Time Estimate
CBWDSTE	Code Backward Task Subjective Time Estimate
STEs for 2 Letter-Matching tests:	
PISTE	Physical Identity Task Subjective Time Estimate
NISTE	Name Identity Task Subjective Time Estimate
	Performance-related Measures
Accuracy Measures for 3 Coding tests:	
Copy	Total Correct Answers Copy Task
CodeForward	Total Correct Answers Code Forward Task
CodeBackward	Total Correct Answers Code Backward Task
Accuracy Measures for 2 Letter-Matching tests:	
RTPI	Physical Identity Task Reaction Time
RTNI	Name Identity Task Reaction Time
1 Intelligence Test (IQ):	
RAPM	Raven's Advanced Progressive Matrices (Total Correct Answers)
Speed/ Reaction Time (RT) Measures for 3 Coding tests:	
RTCopy	Copy Task Reaction Time
RTCFWD	Code Forward Task Reaction Time
RTCBWD	
Speed/ Reaction Time (RT) Measures for 2 Letter-Matching tests:	
RTPI	Physical Identity Task Reaction Time
RTNI	Name Identity Task Reaction Time
Stress-related Measures:	
Type A Behaviour Pattern [TABP]F1	Type A Behaviour Orientation Towards Work
Type A Behaviour Pattern [TABP]F2	Type A Behaviour Orientation Towards Stress
RA	Role Ambiguity
RO	Role Overload
Satisfaction Measure:	
LS	Life Satisfaction (Satisfaction)

CHAPTER 1: INTRODUCTION

"Start by doing what is necessary, then what's possible and suddenly you're doing the impossible."
St. Francis of Assisi (1181-1226)

1.1 Introduction

Amidst a world of increasing globalisation and competition, certain developments in the marketplace are deserving of increased attention and evaluation. For example, 'doing the impossible' is surely a characteristic of societies increasingly high-tech in orientation. Specifically, over recent years global communication has advanced at an unprecedented speed, as a result of ever-escalating progressions in information communication technologies (Kaufman-Scarborough, 2006; Sheehy, 2000; Turner, Grube, Tinsley, Lee & O'Pell, 2006; Turner & Reinsch, 2007).

Advancements in e-commerce and communication technologies now foster improved opportunities in business relations and transactions, and yet the physical presence of individuals is no longer necessary (Giddens, 1994; Harvey, 1989; Kaufman-Scarborough, 2006; Turner *et al.,* 2006). "Previously businesses would systematically disqualify customers who were too far away, too expensive to service, and so forth. Meanwhile, a large number of customers 'disqualified' themselves for some of the same reasons. The Internet eliminates many such near misses and second-guesses. By clicking on a site, a customer gains the ability to make a transaction, transcending geography, time, and distance" (Manardo, 2000: 23).

Innovations in technology in pursuit of economic growth, market share and global leadership have served to reduce temporal and spatial horizons, to further manifest a global society expectant of instantaneous communication, regardless of actual distance and differing temporal zones (Francis-Smythe & Robertson, 1999b; Kaufman-Scarborough, 2006; Turner *et al.,* 2006). In light of today's changing conceptualisations of time and space as a result of advancing technology, the speed of transactions and the transference of information have elevated to heights of incomparable importance (D'Aveni & Gunther, 1994; Fine, 1998; Rubin, 2001; Sheehy, 2000). As a consequence, the pace of life has fast accelerated. No longer is this a world that simply demands

'survival of the fittest', as times morph into a state of reality defined by 'survival of the fastest' (Greengard, 2000).

In going global the main challenges that face marketers namely focus on considering the desired combinations of launching global brands against considerations of local customisation needs for diverse markets (Manardo, 2000; Schiffman & Kanuk, 2000). Yet, with the impact of the Internet on globalisation it is now standard to expect products and services to be delivered with speed and accuracy (Greengard, 2000; Manardo, 2000; Sheehy, 2000). "To win the Internet economy, companies must have systems that operate reliably and accurately at very high speeds" (Rubin, 2001: 36).

The concepts of speed and accuracy are of paramount managerial relevance and importance (Raphel, 2001). Speed and accuracy are crucial determinants of a successful business, when considered as a competitive advantage by companies adopting 'time to market' and 'first mover advantage' strategies (Porter, 1980), which serve as key performance indicators (Greengard, 2000; Rubin, 2001; Sheehy, 2000).

As a performance measure, the speed (time) taken to respond relates to how efficiently, for instance, the Internet (as a mode of communication) actually assists in saving real time, particularly for a culture that perceives time as scarce (Greengard, 2000; Ruquet, 2001). The speed of Internet communication also purports greater advantages in anticipating and acting upon change (Elkington, 1999; Koberstein, 2000).

Faster response times and accurate responses are essential for all companies pursuing growth strategies and higher productivity levels in this age of increasing global competition (Carmichael, 1996; Cooper & Madigan, 2002; Manardo, 2000). However, this ever-escalating trend towards a 'speeded-up' world characterised by 24-hour business cycles will inevitably affect levels of accuracy and productivity (Greengard, 2001; Lu, 2000; Sheehy, 2000).

Hitherto, time and 'speed and accuracy of response behaviours' are inextricably linked. "Time has been analyzed and exploited to gain competitive advantage[s] mostly by stressing speed and velocity to ultimately reduce costs" (Reinmoeller, 2001: 2). Time, as with culture, infiltrates all realms of business, including marketing, international trade

negotiations, decision-making, scheduling, appointment management, teamwork, deadline behaviour, lead times, creativity and innovation (Ancona, Goodman, Lawrence & Tushman, 2001a; Hall, 1989; Hall & Hall, 1990; Reinmoeller, 2001; Schein, 1992).

Time employed as a constructive management procedure has been found to relate to attainments of grade point average (Britton & Tesser, 1991; Macan, Shahani, Dipboye & Phillips, 1990), self-assessments of academic performance (Macan *et al.,* 1990), and job satisfaction (Arndt, Arnold & Landry, 2006; Landy, Rastegary, Thayer & Colvin 1991; Macan *et al.,* 1990). Also, greater attention paid to an individual actor's subjective view of time may also be critical in discerning how firm timing, for example, is a potential source of competitive advantage (Mosakowski & Earley, 2000).

Particularly, how is the subjective experience of time affected by the rising popularity of the Internet and its related technologies, i.e., emails, instant messaging, social utility services (e.g., facebook) and mobile phones? Is time speeding up, or is time slowing down? Is time 'running out' or does one 'have all the time in the world'? In view of the changing conceptualisations of space and time (once traditionally set in stone), how are space and time currently understood and managed? Does the role of geography and culture (aspects of space) differentially affect the relative value and experience of time?

Accordingly, this thesis puts forth the argument that the investment in new communication and information technologies by certain societies greatly serve to alter traditional conceptualisations and perceptions of space, time and interaction, due to how efficiently, if not speedily such technologies are facilitated (Harvey, 1989; Kaufman-Scarborough, 2006; Turner *et al.,* 2006; Turner & Reinsch, 2007).

As a consequence, "multitasking has become synonymous with the communication technology-infused workplace of today" (Turner & Reinsch, 2007: 36). Even so, it is not to be assumed that multiphasic thoughts or preferences steeped in one's 'mind', always translate into multi-tasking 'behaviours' (König, Bühner & Mürling, 2005; Ruiz & Reynolds, 2007; Taylor *et al.,* 1984).

Such issues are subject to the subjective position of an individual, time tangibility, environmental factors, task, and culture (Haase, Lee & Banks, 1979; Palmer &

Schoorman, 1999). And as inspired by the works of cultural anthropologist Hall (1959, 1989) and Hall & Hall (1990), cognition-based preferences for multi-tasking (action-based polychronicity) have been explored by Haase *et al.,* (1979) who verified the discriminant validity of polychronicity across differing levels of intelligence, and also cognitive complexity; imposed by the individual to screen incoming stimuli.

The results obtained are most insightful, particularly as they "are complicated by the fact that the 'intelligent' and/or 'cognitively complex' subject cannot be simply described as either 'monochronic' or 'polychronic'. Rather the intelligent or cognitively complex person may be described by both elements of monochronicity and polychronicity when viewed in terms of the multiple factor structure of the Polychronicity Index" (Haase *et al.,* 1979: 276). The relevance and occurrence of the dual approach (monochronic *and* polychronic), however, is missing from the literature. This is in spite of the following evidence presented by Hall (1989: 58): "All cultures with high technologies seem to incorporate both polychronic as well as monochronic functions...The Japanese are polychronic when looking and working inward, toward themselves...the French are monochronic intellectually but polychronic in behavior."

Accordingly, polychronic and/ or monochronic approaches may change across differing cultures, the context of activity (i.e., personal or professional), as well as intellectually or behaviourally. Of importance, this thesis positions the *combined* approach as just as important to the arenas of comparative and theoretical research, as well as organisational management and behavioural research. What is more, the combined approach requires greater empirical attention, incorporating a conceptual definition unique to that of being categorised as 'neutral' (Lindquist & Kaufman-Scarborough, 2004; Zhang, Goonetilleke, Plocher & Liang, 2005).

One reason for why concerns the fact that the construct of polychronicity is a continuum ranging from high 'preferred monochronic orientation' to that of high 'preferred polychronic orientation'[1]. Thus when considering the mid-range, it may be also be conceptualised as the point where monochronic and polychronic orientations combine;

[1] Preferred (mind-based) polychronicity is labelled in SPSS output as 'Total Polychronic Time Use Score'.

that is, where 'oil and water' come into contact (Hall, 1989). This is a major gap in research addressed by the present thesis, and discussed in the following section.

Importantly, has the price of 'Time' ever been as subjectively and/ or objectively high as it is today (Blount & Janicik, 2001; D'Aveni & Gunther, 1994; Fine, 1998; Meyer, 1993; Stalk & Hout, 1990)? As progressions in technological discovery accelerate the rates at which information is located, processed and disseminated, similar impacts are observed upon the pace of work, and life in general (Blount & Janicik, 2001; D'Aveni & Gunther, 1994; Fine, 1998; Meyer, 1993; Stalk & Hout, 1990). "Paradoxically, even though these modern technologies are associated with 'speed, tempo, velocity, and flexibility', reports indicate that people may have less time and more stress than before, especially since higher output standards have often accompanied the time-saving durables" (Kaufman-Scarborough, 2006: 62).

In reality, Linder (1970) advocates that in this modern world the rising scarcity of time is its chief paradox. To verify these conclusions in light of socio-cultural and technological forces, the present thesis proposes a comparative, theoretical research design of key variables specifically chosen to address the interplay of culture's management of time, according to objective measures of speed and accuracy.

Also, how do these technologically infused ways of life vary across cultures, in addition to orientations towards stress or work? How do traits of personality, such as achievement strivings and impatience/ irritability impact upon Type A behavioural orientations towards work or stress? Do all cultures share similar relations? For example, in terms of achievement strivings and productivity, a positive relationship has predominantly been found across U.S. based research efforts. Is this the same across all cultures? Does achievement strivings always translate into a desirable state of being?

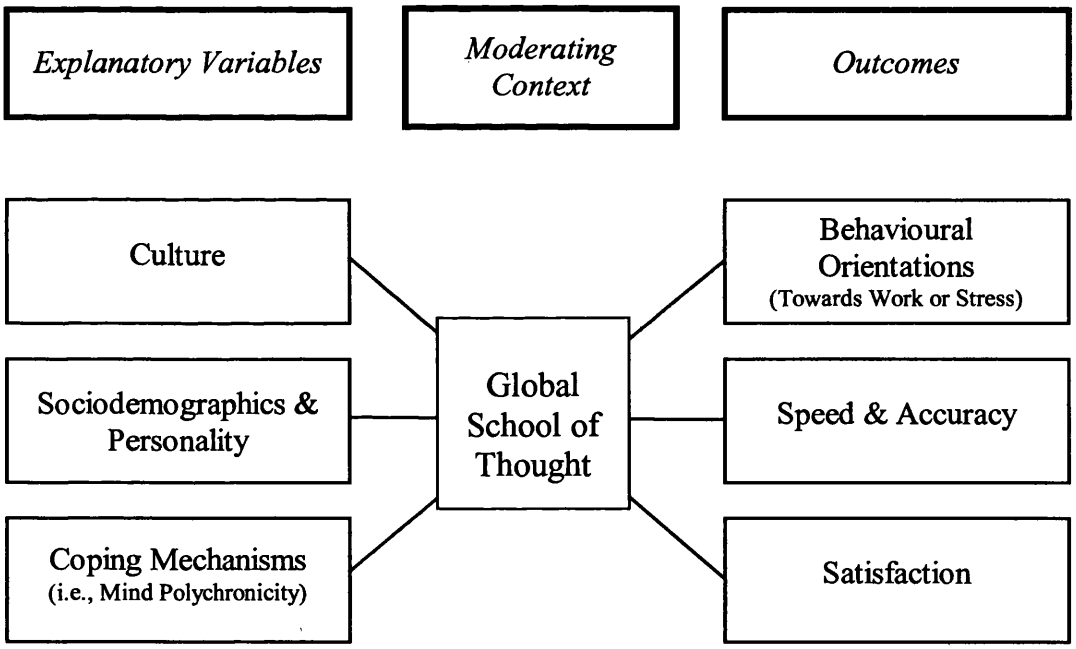
To advance upon these issues, as well as specify the exact objectives of the present thesis, a cross-cultural examination of the interplay of personality, culture and time within a cognitively challenging context that is universally understood (i.e., global schools of thought) is proposed. As an example of a global school of thought, universities are proposed as typical of a context universally understood and equally accessible to students anywhere across the globe, i.e., via exchange programmes and

study schemes abroad. Accordingly, universities are arguably representative of 'global schools of thought' deemed comparative across national culture.

Relationships explored concern objective measures of cognitive accuracy (intelligence), speed, the subjective passage of time, as well as Type A behavioural orientations towards either work or stress. To provide the bigger picture the following section presents a general framework as driven by comparative and theoretical research, within the context of global schools of thought (universities).

1.2 Research Overview

Figure 1.2A: Structural Model of Main Linkages:



The above framework aims to serve as a preliminary guide for the present thesis and its lines of hypothesis testing. This framework is expanded upon, and features in the conceptualisation chapter; see chapter 4 (section 4.3 and Figure 4.3A). See also the glossary of key terms for an explanation of abbreviated terms. Thus, in accordance with the above interplay the following section introduces the eight main research objectives driving this thesis and relevant hypotheses (research questions) addressed, accompanying each of the objectives.

1.3 Research Objectives

Research Objective (I): How can the constructs of polychronicity and Type A behavioural orientations be both conceptually and theoretically refined to clarify present-day confusions pertaining to their underlying multi-dimensionality? *See hypotheses Ho1, Ho1a, Ho2, Ho3 and Ho3a.*

One answer is to apply the techniques of comparative, theoretical methods of research. By improving upon a researcher's understanding of culture's management of time, a better understanding of behaviour is also argued to exist (Graham, 1981, 1982; Hall, 1989). Time as researched by Hall (1989: 5&6) was used "as a means to gaining insight into culture, but not the reverse...There is a basic point that must be introduced here...there is an underlying, hidden level of culture that is highly patterned- a set of unspoken, implicit rules of behavior and thought that controls everything we do. This hidden cultural grammar defines the way in which people view the world, determines their values, and establishes the basic tempo and rhythms of life. Most of us are totally unaware or else only peripherally aware of this." Hall refers to these hidden paradigms as primary level culture (PLC), discussed further in the literature review.

Considering primary level culture serves to establish the values and tempos of life, the application of objective measures of speed and accuracy serve as useful benchmarks for purposes of cross-cultural comparisons. Objective barometers of performance constitute a standard approach for testing for differences in theoretical, comparative research. In particular, objective measures of speed and accuracy provide an easily replicable way to test for differential relations across cultures and also constructs that are entangled though not clearly conceptualised, i.e., polychronicity and Type A behavioural orientations. Also, speed (reaction time) and accuracy have not, as yet, been collectively and empirically tested for relations with preferred polychronicity involving the British and Greek cultures.

What is more, in addition to accounting for the differential effects of culture upon objective outcome measures of speed and accuracy, this thesis is also concerned with the role socio-demographics (i.e., gender, age, and education), and personality have to play upon preferred temporal orientations towards managing tasks over time, as well as outcomes both desirable and non-desirable. For example, in the related field of

'satisfaction', gender differences have been found across antecedents of 'impressing others' and 'self-image' to predict overall satisfaction with cars (Moutinho & Goode, 1995). As will be addressed by the literature review (part II), temporal perspectives and orientation are likened to an individual's personality; specifically, the effects of cultural values may differ in keeping with personalised preferences (Cotte & Ratneshwar, 1999; Conte & Gintoft, 2005; Koehler-Jones, 1995).

The value of traits and dispositions in predicting behaviour has been recognised in studies investigating retail employee satisfaction and rates of turnover (Arndt *et al.,* 2006; Krishnan, Netemeyer & Boles, 2002; Srivastava & Sager, 1999). Specifically, individual-level characteristics relating to coping styles and appraisals are deemed to be of importance (Folkman & Lazarus, 1980; Folkman, Lazarus, Dunkel-Schetter, DeLongis, Gruen, 1986a; Folkman, Lazarus, Gruen & DeLongis, 1986b; Kirmeyer & Diamond, 1985; Lazarus, 1966). Accordingly, personality factors, such as achievement strivings, impatience/ irritability, perceived control of time, and self-efficacy are proposed for empirical study. As yet, these constructs have yet to be tested for cultural variability across outcomes of speed and accuracy. Accordingly, cultural variability across objective measures of speed and accuracy are offered as a benchmark for comparative and theoretical research efforts into 'Time' that are more subjective in orientation. Many avenues of insight are proposed care of the present thesis and as one example, in terms of consumer behaviour, 'Time' and its more subjective aspects bears a huge relevance to research conducted in areas of motivational theory and customer satisfaction.

Without a doubt, the topic of temporal research is elemental to furthering one's appreciation of how and why differing types of individuals and differing cultures manifest differential perceptions, cognitive and/ or emotive coping styles/ appraisals, as well as behavioural responses concerning the meaning, use, and value of time (Ancona, Okhuysen & Perlow, 2001b; Folkman & Lazarus, 1980; Folkman *et al.,* 1986a,b; Kirmeyer & Diamond, 1985; Roy, 1960).

The topic of polychronicity is hugely relevant today and based on a review of the literature this thesis proposes a new way of conceptualising polychronicity with respect to the 'Emotion-Mind-Action Complex' (EMAC). In accord with Bandura's (1997a,b,

1982) social cognitive learning theory concerning self-efficacy, EMAC is also relevant to the Type A behaviour pattern, as revealed in the literature review. It is expected that this particular tri-dimensional framework will assist researchers to fully appreciate the overlap that exists across polychronicity and the Type A Behaviour Pattern. Specifically, the framework provides clear demarcations that aid to differentiate the two constructs. For these reasons this thesis aims to offer innovative research findings designed to inform cultures, individuals and organisations of a new era of 'cross-cultural activity-to-time management'.

As already indicated, the construct of polychronicity could also benefit from more refined conceptualisations concerning its multi-dimensional intricacies. Specifically, there exists a dire need to incorporate the dual monochronic (MC) and polychronic (PC) categorisation, resulting in a tri-dimensional approach to understand the finer intricacies of the preferred temporal continuum. Primarily, such a category labelled as 'neutral' (Lindquist & Kaufman-Scarborough, 2004; Zhang *et al.,* 2005) is argued to be conceptually distinct from that of a mid-point category labelled "Dual MC&PC". A major reason for why concerns the fact that there are cultures where these two 'time systems' infiltrate one another. Polychronic and monochronic orientations *do* simultaneously manifest, to include the people of France (across thoughts and behaviour) (Hall, 1989; Hall & Hall, 1990), Japan (across private and public lives) (Hall, 1987, 1989), and those of high–tech societies (Hall, 1989).

To elaborate, Zhang *et al.,* (2005) examined control strategy and its relations to polychronicity defined primarily by task-switching behaviours akin to activity change (Lindquist & Kaufman-Scarborough, 2004), and dove-tailing/ time-sharing (Frei, Racicot & Travagline, 1999; Arndt *et al.,* 2006). To evaluate control strategy in a task-switching experiment, participants were split into 3 groups: (M/ monochronic/ MC (less than or equal to 3), neutral (3 to 5), P/ polychronic/ PC, 5 to 7) and significant differences in the performance and strategy measures were identified.

Relevant to this thesis, Zhang *et al.,* (2005) identified the potential for a triad approach to categorising polychronicity, though their mid-range category was defined as 'neutral'. Specifically, they calculated a midrange category to create a three way split (MC/ monochronic, neutral, PC/ polychronic), in presenting differences in control strategy and

performance. A similar tact is taken by Lindquist & Kaufman-Scarborough (2004) in assessments of polychronic tendency analyses of shopping behaviours; a neutral midrange category is again alluded to. Consequently, although both these studies call for the incorporation of the mid-point categorisation, they tend in favour of a neutral midrange category. Consequently, a theory-driven conceptual understanding of the "Dual MC&PC" approach category is not included.

Specifically, unless the majority of responses are indifferent the main problem lies in the fact that the mid-point categorisation is not, strictly speaking, neutral. That is, to accurately define this category as neutral the majority of responses to the scale of polychronicity[2] are expected to occur at the mid-point (neither agree nor disagree). Whether or not this is what Zhang *et al.,* (2005) and Lindquist & Kaufman-Scarborough (2004) are actually referring is not entirely clear. Under the condition that the majority of responses were mostly indifferent (a score of 4 on each item symbolic of neither agree nor disagree) then it is argued that this category is representative of a neutral approach. For all other cases whereby a midrange category score is obtained, a dual approach is argued to operate. Thus unique to prior research efforts, this thesis accounts for the 'high-tech society's' tendency to adopt a dual monochronic and polychronic approach.

In other words, a core feature of this thesis is to propose the mid-point category as synonymous with a dual-pronged monochronic (MC) and polychronic (PC) time orientation characteristic of high-tech societies (Hall, 1989). The midrange is argued to be where the extremes merge and interrelate. Considering preferred temporal orientation is a continuum one expects a merger at the midpoint as opposed to a cancellation. A conceptual gap addressed by the present thesis.

To proffer two countries for theoretical, comparative research, Britain is argued as an ideal starting place, which in view of its role in instigating history's first ever 'Industrial Revolution', the introduction of standard, clock-time was its prime motivator. 'Clock-time' Britain however, may not be entirely monochronic in its approach, as it is also a high-tech society and serves as an ideal nation to empirically test Hall's (1989) observation regarding the dual monochronic and polychronic approach; specifically that

[2] The present thesis at hand employs the Inventory of Polychronic Values/ IPV (Bluedorn *et al.,* 1999).

the dual approach is a characteristic of high-tech societies. Greece on the other hand is an ideal polychronic culture to incorporate for comparative purposes, as according to Hall (1989) it is positioned 'mid P-time belt'.

However, to control for extraneous variables other than culture, the study needs to be 'contextually grounded' (Winter & Prohaska, 1983) to enable construct equivalence. Hitherto, this thesis is set within a universalistic setting, i.e., global schools of thought. What is more, these two nations are also comparable in terms of thought and logic, particularly as much of the English vocabulary derives from the Greek language. Even the word 'polychronic' is made up of two Greek words 'poly'-'khronos' (many – time). Thus, in terms of the historical and cultural origins of monochronic, clock-time mentalities, contrasted with polychronic, sources of thought and logic (logos), the British and the Greek cultures are arguably two most insightful nations to compare and contrast the notion of polychronicity across.

Also from a review of the literature no cross-cultural research exists concerning the links across perceived self-efficacy and mind-based conceptualisations of the mono/polychronicity continuum (preferred polychronicity). Hitherto, whilst it is also important to test for cross-cultural variations in self-efficacy across performance and stress- a common approach for such research, self-efficacy is also examined for cultural deviations across more refined conceptualisations of mono/polychronicity. Thus, leading onto the second research objective,

Research Objective (II): The second major research objective driving this thesis is to test for relationships across self-efficacy and 'mind polychronicity' (preferred temporal orientation). Is this relationship culturally invariant within the context of global schools of thought? *See hypotheses Ho4, Ho5.*

Resulting from a review of the literature it is evident that this relationship across preferred temporal orientation and self-efficacy has yet to be tested for across cultures. Therefore this is an important gap in research addressed by the present thesis.

Also missing from the literature are certain sets of variables that have not been tested for cultural variation (i.e., perceived control of time, dual monochronic and polychronic,

reaction times, subjective time estimations, expectations of achievement, orientations towards work and/ or stress). Specifically, perceived control of time has not been tested across cultures (or even within a culture for that matter) for its relations with monochronic *and/or* polychronic time use preferences. Also missing from the literature is the impact of personality traits, namely achievement strivings, self-efficacy and perceived control of time upon satisfaction, moderated via the context of culture. Thus,

Research Objective (III): What are the effects of perceived control of time upon preferred temporal orientation (mind polychronicity) and satisfaction across cultures? *See hypothesis Ho6, Ho6a.*

To advance upon prior research efforts and offer new modes of theoretical reasoning, this thesis also applies refined categorisations of the perceived control of time construct to account for high, medium and low levels. Thus, the main gaps in research addressed here, concern those relating to cross-cultural research on perceived control of time and research investigating the more intricate relations across preferred temporal orientation and perceived control of time.

Research pertaining to the perceived control of time by Macan (1994: 382) "was the first empirical examination of the linkages between time management behaviors and a perception of the control of time". The present thesis is the first to test perceived control of time for its relations with preferred polychronicity across temporally defined cultures.

Also in accord with the third objective, this thesis is the first to test how the 'perceived control of time' fares as a culturally moderated predictor of satisfaction, across global schools of thought. To ascertain the predictors of additional outcomes (other than satisfaction), such as Type A behavioural orientations work, the next research objective is as follows,

Research Objective (IV): What are the predictors of a positive Type A behavioural orientation towards work? Conversely, what are the main predictors of stress-related outcomes such as role ambiguity? *See hypotheses Ho7 and Ho8.*

Surprisingly time's influence on emotion, mind, and behaviour for many people is not entirely apparent on a conscious level (Hall, 1989; Hope, 1991), and technological progress is moving at a speed that human resources may potentially be overly optimistic in trying to emulate (Hall, 1989; Helman, 2001; Krishna, 2000). In assessing the concepts of time and the effects of temporal orientation upon outcomes of stress, a research seminar held on 'Transcultural studies in Health' by Professor Helman (2001) "discussed the potential conflict that individuals may experience between the power of the socially imposed clock time and individuals personal [internal clock] time" (<http://www.mdx.ac.uk/www/rctsh/concepts.htm>).

This matter is addressed by the present thesis to identify relations across culture, preferred temporal orientation, and outcomes of stress, i.e., role overload and role ambiguity. What is more, in terms of actually predicting the coronary prone Type A behaviour pattern, achievement strivings and impatience/ irritability, as traits of personality, have been shown to correlate with Type A's subcomponent, time urgency, but not coronary heart disease (CHD). As clarified by Spence, Helmreich & Pred, (1987): 527 "...a relation between the II scale and reports of relatively minor physical problems cannot automatically be generalized to CHD and other cardiovascular disorders."

However, considering that Sutil, Gil-Corbacho, Martínez, Gonzalez & Pulido's (1998) measure is specifically designed to tap the Type A behavioural orientations towards stress or work, elicited from extreme environmental stimuli, a chain of distinction is thus proposed. Primarily, the traits of personality, achievement strivings and impatience/ irritability are positioned as distinct from Sutil and colleagues (1998) Type A measure of behavioural orientations towards work or stress. This represents a new way of conceptualising the Type A behaviour pattern (particularly as not all Type A is 'toxic', i.e., oriented towards stress).

Using an objective benchmark such as speed it is of interest to the present thesis to see how this outcome relates to factors such as achievement strivings and impatience/ irritability. Also, how does culture intervene upon these relationships? Thus, to introduce the fifth research objective,

Research Objective (V): What are the relationships across speed, impatience/ irritability, and achievement strivings, and how is this differentiated according to culture? *See hypothesis Ho9.*

To elucidate upon the overt Type A Behaviour Pattern, Conte, Landy & Mathieu (1995) have tested to see how measures of achievement strivings, impatience/ irritability, and activity level, relate to time urgency. For the thesis at hand, the objective measure of speed, a characteristic feature of global schools of thought, is duly employed to ascertain the degree of cultural variability argued to manifest across this objective performance-related measure; yet to be tested for cultural variability. Activity level (i.e., mono/polychronicity) and performance is invariably affected by stress (i.e., role overload and role ambiguity), and this too needs to be considered for cultural variability. Accordingly, to introduce the sixth research objective,

Research Objective (VI): What is the relationship across preferred temporal orientation and role overload; specifically, are cultures categorised as P-time i.e., the Greeks, particularly adept at handling role overload in view of socio-cultural tendencies towards 'many-at-a-time'? *See hypothesis Ho10.*

Accounting for the gap in research pertaining to the finer intricacies of preferred temporal orientation (mind polychronicity) that incorporate the dual approach (i.e., by high-tech societies), its relations with role overload examined for cultural variability is highly relevant for attaining an understanding of the more refined interplay of preferences for polychronicity across culture within global schools of thought, as well as how this may differentially serve to lessen the experience of role overload.

Thus, applied to track distances and changes in speed and accuracy across different temporal cultures, it is argued that 'Time', as a subliminal force of control, will ultimately facilitate improved insights of the what, how, when, and why of cultural change (Heirich, 1964). Of importance is how the coping device of preferred temporal orientation (mind polychronicity)- a cognitive mechanism to manage activities-to-time (clock time and/ or event time), fares in terms of objective measures of speed and accuracy. This area of investigation is also missing from the literature. Consequently,

Research Objective (VII): What is the specific interplay across mind polychronicity (i.e., preferred temporal orientation), speed and accuracy? *See hypotheses Ho11 and Ho12.*

To move on to the final research objective, measures of speed and accuracy offer objective, and easily replicable methodology. Also, as proposed by this thesis, methodologies of subjective time estimation represent valuable ways to understand how 'Time' is also of the 'Mind'. In particular, what about the concurrent subjective experience of 'Time's' passage, whilst performing related tasks over set periods of time? Also, how does Hofstede's (1991) 'collective mind' of 'culture' intervene, as well as Hall's mono/polychronicity construct? In spite of 'time's' ascendancy of control and order, quantitative studies assessing the relationships that manifest from culturally differentiated temporal orientations upon behavioural outcomes such as speed and accuracy, which simultaneously account for the respondent's subjective experience of time's passage, have yet to be explored. Accordingly,

Research Objective (VIII): If the subjective experience of time changes across tasks of increasing cognitive challenge, is it also subject to cultural variability? *See hypotheses Ho13 and Ho13a.*

The past five years or so have experienced a period of exponential growth in terms of empirically testing for the significance of 'Time', and its 'band of merry men' in areas of retail (e.g., Arndt *et al.,* 2006; Lindquist & Kaufman-Scarborough, 2004), innovation and creation management (e.g., Mets, 2002; Reinmoeller, 2001), consumer research (e.g., Lindquist & Kaufman-Scarborough, 2004), organisational cultures (e.g., Mets, 2002), online attitudes towards complexity (e.g., Ruiz & Reynolds, 2007), health (e.g., Kunnanatt, 2003), psychologies of stress (Batigün & Şahin, 2006), and business ethics (Svensson & Wood, 2003). Nevertheless, very little exists as to the subjective experience/ dilation of time and related managerial implications.

1.4 From Research Objectives to Research Questions

This section introduces the reader to the specific research questions (hypotheses) that have been designed to address the research objectives. These are also to be tested for cultural deviation via the performance of statistical analyses that account for nationality (British and Greek). Please see Table 1.4A to follow.

Table 1.4A: From Research Objectives to Research Questions (Hypotheses)

Research Objective (1): How can the constructs of polychronicity and Type A behavioural orientations be both conceptually and theoretically refined to clarify present-day confusions pertaining to their underlying multi-dimensionality? *See hypotheses Ho1, Ho1a, Ho2, Ho3 and Ho3a.*

Ho1: Different socio-cultural orientations manifest different behavioural response rates (accuracy and speed). In timed situations, the clock-oriented, high-tech cultures attain higher levels of accuracy and speed than event-oriented, low-tech cultures.

Ho1a: High-tech cultures are both monochronic and polychronic in terms of preferred (mind-based) temporal orientation.

Ho2: Different cultural and/ or specific temporal orientations (i.e., monochronic, polychronic or both) manifest differential expectations of achievement.

Ho3: Males are more monochronic than females, whereas females are more polychronic.

Ho3a: Men are more achievement strivings and impatient/ irritable than women, as are cultures of a highly developed western orientation steeped in advanced states of technology.

Research Objective (II): The second major research objective driving this thesis is to test for relationships across self-efficacy and 'mind polychronicity' (preferred temporal orientation). Is this relationship culturally invariant within the context of global schools of thought? *See hypotheses Ho4, Ho5.*

Ho4: Higher levels of psychometric intelligence and lower levels of role ambiguity engender greater levels of self-efficacy.

Ho5: Polychronics show greater signs of self-efficacy compared to Monochronics.

Research Objective (III): What are the effects of perceived control of time upon preferred temporal orientation (mind polychronicity) and satisfaction across cultures? *See hypothesis Ho6, Ho6a.*

Ho6: Cultures high in perceived control of time incorporate more monochronic tendencies in the approach to task-to-time management.

Ho6a: Technology, culture and personality affect satisfaction. For high-tech, clock-oriented cultures, self-efficacy and perceived control of time are significant predictors. For low-tech, event-oriented cultures, self-efficacy and achievement strivings are significant predictors.

Research Objective (IV): What are the predictors of a positive Type A behavioural orientation towards work? Conversely, what are the main predictors of stress-related outcomes such as role ambiguity? *See hypotheses Ho7 and Ho8.*

Ho7: Cultures high in emotion polychronicity (P-time) are more positively oriented towards work than cultures low in emotion polychronicity (M-time). Greater levels of achievement strivings and lower levels of impatience/ irritability are also argued to manifest.

Ho8: Role ambiguity is more characteristic of high-tech cultures than nations more socially/ P-time oriented. Lower levels of achievement strivings, self-efficacy and life satisfaction are also argued to manifest.

Research Objective (V): What are the relationships across speed, impatience/ irritability, and achievement strivings, and how is this differentiated according to culture? *See hypothesis Ho9.*

Ho9: Speed correlates more so with the II (impatience/ irritability) than with AS (achievement strivings), and in a negative direction.

Research Objective (VI): What is the relationship across preferred temporal orientation and role overload; specifically, are cultures categorised as P-time i.e., the Greeks, particularly adept at handling role overload in view of socio-cultural tendencies towards 'many-at-a-time'? *See hypothesis Ho10.*

Ho10: A negative relationship is hypothesised to exist between polychronic time use and role overload, and especially for cultures more socially/ P-time oriented (i.e., the Greeks), than those more individualistic (i.e., the British).

Research Objective (VII): What is the specific interplay across mind polychronicity (i.e., preferred temporal orientation), speed and accuracy? *See hypotheses Ho11 and Ho12.*

Ho11: Preferred polychronic time use (IPV) and speed will be negatively correlated, i.e., high polychronic time use relates with faster reaction time speeds.

Ho12: Preferred polychronic time use (IPV) and accuracy of response are positively related.

Research Objective (VIII): If the subjective experience of time changes across tasks of increasing cognitive challenge, is it also subject to cultural variability? *See hypotheses Ho13 and Ho13a.*

Ho13: As the complexity of cognitive challenges increase, the subjective experience of the passage of time decreases. Clock-time, high-tech cultures subjectively experience greater time to pass by than low-tech, event-oriented cultures.

Ho13a: Monochronics will be more adept than polychronics in providing accurate subjective estimates of an objective passage of time whilst performing a simple, non-taxing activity.

1.5 Motivations and Contributions

1.5.1 Managerial Motivations

In view of the rising popularity of research on the subject of 'Time' over recent years, there exists a grave need to clarify concepts i.e., polychronicity and Type A behaviour patterns to address disparate conclusions and managerial implications. These issues affect our workers, our consumers, academics, and future generations, including the children of today, and every nation and individual. Why? One reason is that *no one* escapes the forces of 'Time' and its 'Band of Merry Men'- particularly those of societies increasingly high-tech in orientation.

In addition, the specific links across achievement strivings, impatience/ irritability, and Type A behaviour have not been tackled in a way that the present thesis tackles these variables. To explain, a specific distinction is conveyed concerning traits of personality, i.e., achievement strivings and impatience/ irritability vis-à-vis Type A behavioural orientations towards either stress or work.

In view of the cultural angle driving the present thesis, should one assume that 'achievement strivings' always tends towards desired outcomes of performance (Britton & Tesser, 1991; Macan *et al.,* 1990; Spence *et al.,* 1987; Spence, Pred & Helmreich, 1989)? Also, does 'impatience/ irritability' always tend towards negative Type A behavioural orientations (Barling & Charbonneau, 1988, 1992; Spence *et al.,* 1987 & 1989)? Considering that the majority of research investigating these bi-dimensional relations has been performed in America, can it be assured that these relations are not simply a product of cultural conditioning, symbolic of the 'American Dream'? Hitherto, before managers and academics assume that 'all that happens in America also happens in Britain', this thesis offers findings contrary to such assumptions.

The term 'Time Management' needs to be revamped. The concept specifically dealt with is 'activity-to time-management', which is essentially of the 'Mind'. This thesis offers a new way to acknowledge 'Time' not only as an objective phenomenon, but one that is highly subjective, personal and unique to each individual and culture. The subjective experience of time examined by the present thesis aims to convey findings relevant to cross-cultural marketing research by accounting for task, context, and complexity. In this way, the dual relevance of 'clock' and 'event' time is also managerially addressed, presenting new research pertaining to the relevance of dual monochronic *and* polychronic technologies.

The present research effort brings conceptual clarity to constructs such as polychronicity and Type A behavioural orientations to reach a state of synthesis. For example, developed from thesis and anti-thesis, polychronicity has largely been addressed in terms of its endpoints- either monochronic or polychronic, accompanied with a handful of research efforts that conceptualise the midrange as 'neutral'. To bring about a state of synthesis, the present thesis conveys an alternative conceptualisation of the continuum's midrange, representative of a 'dual monochronic and polychronic' approach. The dual approach is valid as long as the majority of responses to relevant measurement scale items are not indifferent. Accordingly, a neutral category assumes the majority of scale item responses are indifferent (i.e., neither agree nor disagree).

A number of managerial implications arising from the international marketing research undertaken by the present thesis are relevant to the worldwide realm of universities.

Universities represent 'global schools of thought' and have been sampled in pursuit of innovative research findings, as well as to ensure a 'contextually grounded' research endeavour (Winter & Prohaska, 1983). Additionally, *both* monochronic (clock-governed) *and* polychronic (multiple courses and examinations) orientations are arguably characteristic of the global learning environment.

The present study offers a number of managerial implications relevant to organisational and national cultures. To convey this inherently cognitive process of managing 'Time', which is enabled according to one's emotional state and actions, if not 're-actions' (Friedman & Rosenman, 1974), 'Activity to Time Management' is essentially 'Mind Management'; 'Time' is of the 'Mind'. Hitherto, it is argued by the present thesis that the experience of 'Time' is deeply personal. Also, it is argued that the 'experience' of the passage of time (be it according to the clock, i.e., monochronic cultures, or the event, i.e., polychronic cultures), it is inherently a learned process stemming from 'Culture's Management of Time'.

Essentially then it is not 'Time' that gets managed, per say; realistically speaking, it is actually the 'Mind' that gets managed for the successful performance of activities over time to prevail. Accordingly, a number of managerial implications are identified relevant to the fields of education and training.

Also with reference to the subjective experience of time, to propose a new sought-after commodity, the 'Dilation of Time' (Einstein, 1921; Mainemelis, 2001; Mohanram, 2006), is innovatively positioned by the present thesis as 'new consumer experience', to affect the consumer in a most novel and favourable way (see Ch. 8 Managerial Implications). Primarily, the 'dilation of time' is tied in with consciousness, 'The Mind' (Mohanram, 2006; Reanney, 1995), discussed further in the literature review, parts (I) and (II).

1.5.2 Academic Motivations

To empirically test Hall's (1989) culturally anthropological insights, do high-tech societies incorporate a dual approach combining *both* monochronic and polychronic approaches? To answer this question a tri-categorical approach to the construct of polychronicity is conceptualised by the present thesis to incorporate the dual approach.

The dual approach category is positioned as conceptually distinct from a categorisation labelled as 'neutral' by ensuring that the majority of scale item responses pertaining to a measure of preferred polychronicity are not indifferent.

Inspired by the vast amount of literature reviewed for the purposes of the present thesis, it is apparent that an elemental framework to address complex constructs of 'coping', such as the Type A behaviour pattern and polychronicity is overdue. Hitherto, as specifically inspired by Bandura's (1977a, b, 1982) social cognitive learning theory, the 'Emotion-Mind-Action Complex' (EMAC) is conceived.

Another innovative approach offered by the present thesis, is the employment of a relatively new scale designed by Sutil *et al.,* (1998) pertaining to the coronary-prone Type A Behaviour Pattern. Specifically, a bi-dimensional approach is applied to investigate a measure predictive of coronary-prone Type A initially administered in Spain.

Pertinent to the present thesis, is this bi-dimensional reality identical across cultures? For example, is 'activity level' consistently perceived to be more in line with a positive work orientation across all cultures as it was found with the Spanish population? Specifically, how do British respondents perceive 'activity level'? Does 'activity level' orient the British towards stress, or are such relations in line with Sutil and colleagues (1998) research on a Spanish population, which loads 'activity level' as more of an orientation towards work?

Finally, the passage of objective versus subjective time, during administrations of increasingly complex tasks has yet to be tested for cultural variability. The 'Dilation of Time' is argued by the present thesis to bear important consequences upon an individual's state of mind, emotion, and action (i.e., the effects of 'time-flying' versus 'time-dragging'; 'time's running out' versus 'all the time in the world'). Accordingly, comparative, theoretical research efforts that span academic fields, i.e., international marketing research, strategic global management, consumer behaviour, organisational behaviour, cross-cultural psychology, and also the health sciences, can all benefit from applying methodologies that compare the subjective passage of time vis-à-vis the objective passage of clock-time.

1.5.3 Research Contributions

The present thesis provides a conceptual approach inspired by comparative, theoretical research that allows for a more refined understanding of the intricate interplay across preferred temporal orientation (mind polychronicity) and the Type A behaviour pattern (behavioural polychronicity), which accounts for the multi-dimensionality concerning both these complex constructs. As inspired by Bandura, it is argued by the present thesis that the complexity of structure driving the construct of self-efficacy and Type A also applies to polychronicity, and may even be applicable to other mechanisms of coping, if not overarching conceptualisations of 'culture' and 'time'.

This thesis also contributes to research via the introduction of objective performance indices (i.e., speed and accuracy applicable to time-related research) that provide a benchmark for comparison. A major advantage of a standard benchmark approach concerns the ease of replication across cultures and/ or contexts that are theoretically justified.

This thesis also offers a series of refined approaches deemed useful for hypothesis testing. Also offered is a validation of cross-cultural relationships and influences, not previously addressed. For example, the interplay of self-efficacy, perceived control of time, and achievement strivings has not been examined before as specific predictors of life satisfaction, whilst also accounting for cultural variability. Another research contribution stemming from the present thesis is the highly important and influential role of 'context', whereby even the most culturally specific orientations of time are subject to environmental conditioning, i.e., task-specific requirements and context.

Another major research contribution comes in the form of using the subjective experience of time's passage concomitant to objective measures of performance to further understanding into the 'Dilation of Time', which is steeped in 'Mind'. The relevance of understanding how the subjective experience of time may vary across cultures and how this could impact upon eventual behaviour patterns is also covered by the present thesis.

Furthermore, the use of subjective time estimation (STE) methodologies, concomitant with increasingly engaging tasks vis-à-vis more objective measures of speed and accuracy, serve to reveal new and exciting research questions, as well as elucidate upon the finer intricacies of the international arena of marketing research. For an overview of the research limitations and future recommendations please see chapter 8.

1.6 Chapter Summary: Introduction

As introduced by this chapter, the goal of this thesis is to explore the relationships argued to exist across conceptualisations of time, space and context to elucidate upon the workings of cognitively driven coping preferences. Many of the relationships proposed have yet to be empirically addressed by researchers of temporal orientation across all disciplines.

Thus far, a brief background to set the scene has been presented to show how in response to technology, subsequent changes to space and time may naturally occur due to a change in motion (speed), which in accord with Einstein's (1921) theory of relativity, shows how differing locations in space and rates of speed can change the 'Time' you experience (i.e., space-time dilation).

This thesis also offers findings outside of the American borders to contribute innovative implications resulting from a comparative and theoretical design of research. Hitherto, this thesis aims to add to the richness of conceptualisation and interpretation gleaned from time-related multidimensional fields of enquiry, i.e., Type A Behaviour and polychronicity.

Having introduced some of the main themes relevant to this thesis (time, speed, accuracy, the impacts of technology and the cultural role of 'activity-to-time management'), the next chapter serves to present the bigger picture of time pertinent for addressing the research questions at hand. Specifically, the multiple meanings of time indicative of its multidimensional aspects are presented to convey its perceived reality across differing disciplines, cultures and personalities. The forthcoming review of the literature is designed to provide essential background information, in conjunction with the specific theory-driven rationale for why further research into 'Time' is vitally important to marketing and research in general.

To summarise, advancements in technology possess certain knock on effects of 'high speed' and 'high accuracy' expectations, which may provoke specific multitasking mentalities, emotional response, and/ or behavioural approaches. And although the driver of 'technology' is globally serving to change temporal and spatial horizons, for the vast majority this change is totally outside of conscious awareness. In spite of the subliminal qualities of 'Time', this thesis aims to reveal that there may be much to learn from dilating 'Time', advancing upon its 'tangible' relevance into one more 'intangible'; that is, to 'take time out', and knowing how to be 'time-less' (Mohanram, 2006; Mainemelis, 2001).

CHAPTER 2: LITERATURE REVIEW I

"The clock, not the steam engine, is the key-machine of the modern industrial age."
Lewis Mumford (1895–1990)

2.1 Introduction

In this chapter a review of the research pertaining to the field of preferred temporal orientation is presented to ascertain the finer intricacies and implications of culture's management of time. The focus of the literature review in its entirety (parts I and II) is to convey the main contributions gleaned from theoretical and empirical investigation that address the interplay of cognition, emotion, and behaviour in terms of time-related behaviours and consciousness. Specifically, 'Literature Review I' sets the desired 'research scene', positioned to elucidate upon epistemological contributions as to existing time-related mentalities and 'activity-to-time' management approaches, orchestrated by an ever-increasing pace of technology and innovation.

Thus to commence with the research background, a multidisciplinary approach on 'Time' is presented, followed by its multiplicity of meaning. Leading on from this, a presentation of temporal management and orientation involving a review and analysis of the monochronicity-polychronicity continuum of 'activity (one at a time vs. many at a time)-to-time (clock or event) management', as well as its relations with speed- identified by the present thesis as a characteristic marker of contemporary times, are provided. Speed is also a significant attribute of increasingly high-tech societies, aspiring for a competitive advantage in the global economy via efficient and effective performance.

2.2 Time - Its Multidisciplinary Scope of Interpretation

Today's 'global village' is one preoccupied with issues relating to time and timing (Ancona *et al.,* 2001b; Blount & Janicik, 2001; Goodman, Lawrence, Ancona & Tushman, 2001; Reanney, 1995; Zhang, Goonetilleke, Plocher & Liang, 2004). For example, in the realms of business, marketing and organisational research the value of time as an economic resource increasingly pervades contemporary consciousness (Hall & Hall, 1990; Lindquist & Kaufman-Scarborough, 2004). For example, expressions such as 'just-in-time', 'time to market', 'flexi-time', 'part-time', and 'lead-time' serve to contribute to everyday temporal terminologies (Goodman *et al.,* 2001). What is more, in

presenting a 'new research lens of time' relevant to both cultures and organisations, Ancona *et al.,* (2001a: 646) state "the variables of interest in this new lens include timing, pace, cycles, rhythms, flow, temporal orientation, and the cultural meanings of time."

In economics representations of activity that are rigid in nature make use of concession rates to quantify time's worth and decisions concerning inputs of short supply are primarily based on the rewards from assets or speculation, as well as the consumer-related behaviours of individual entities (Blount & Janicik, 2001; Becker & Mulligan, 1997). In business, ideas that trade 'time' for 'money' as the ultimate exchange factor include creative initiatives, such as 'time banks', (<http://www.timebanks.org/how-it-works.htm>; <http://www.tve.org/ho/doc.cfm?aid=1336>), and schemes such as 'in-kind contribution' (<http://eurofundungnw.org.uk/downloads/nwnote05.pdf>).

Across the sciences time is elemental in all processes of life and governance (Hall, 1989), ranging from absolute models of time to those more relative and entangled (Einstein, 1921; Davies, 1990). Time is also a prominent feature in the expression of art; be it drama, dance or music (Hall, 1989; Goodman *et al.,* 2001).

Psychologists have focused on personal time including the way in which individuals experience the flow of time in a variety of settings and contexts, as well as psychological, emotional and behavioural states (Conte, Schwenneker, Dew & Romano, 2001; Fraisse, 1984; Hall, 1989). Sociologists have theorised that the surrounding social environment moulds temporal experiences of an individual (Durkheim, 1995; Flaherty, 1999; Landes, 1983). In areas of cultural anthropology, "Time is a core system of cultural, social and personal life. In fact, nothing occurs except in some kind of time frame. A complicating factor in [say] intercultural negotiations is that each culture has its own time frames in which the patterns are unique. This means that to function effectively abroad it is just as necessary to learn the language of time as it is to learn the spoken language" (Hall, 1989: 3).

Relevant to the thesis at hand, "Much of the existing sociological, anthropological, and psychological work on perceptions of time involves theories or studies that concern how people from various cultures differ in their perceptions of and behaviors towards time"

(Waller, Conte, Gibson, & Carpenter, 2001: 588). Accordingly, different cultures have different perceptions as to the value and usage of time (Arndt *et al.,* 2006; Hall, 1989; Hall & Hall, 1990; Heirich, 1964; Lewis, 1995). Lewis (1995) found that Americans for example, are more linear-active and try to do as much as they can as quickly as they can, while Southern Europeans and Latin people place less of a priority on time consumption. "In Latin America, for example, where time is treated rather cavalierly, one commonly hears the expression, 'Our time or your time?' 'Hora americana, hora mejicana?'" (Hall, 1959: 19).

It is evident that time appears across all major disciplines, and ultimately to facilitate a common ground, 'Time' distinctively serves to unite these supposedly divergent interests and fields of study. For example, there are four main, but distinct fields of research deemed critical areas of knowledge, when considering the fundamentals of organisational research in terms of temporality (Ancona *et al.,* 2001b). These are sociology, psychology, anthropology and social psychology (Ancona *et al.,* 2001b).

Hence, to provide an eclectic understanding of 'Time' the thesis at hand accounts for many theoretical and empirical lines of research, not only spanning the intricacies of marketing (i.e., consumer behaviour, cross-cultural negotiations, personal selling, retail management, customer relation management and satisfaction) but also areas of neuroscience, physics, biology, mathematics, and as mentioned, the social (human behavioural) sciences. Nevertheless despite its prolific applicability and adaptability, 'Time' eclectically persists as one all-pervasive force conditioning human behaviour and cognition that remains greatly under-researched as a force to be reckoned with (McGrath & Kelly, 1986).

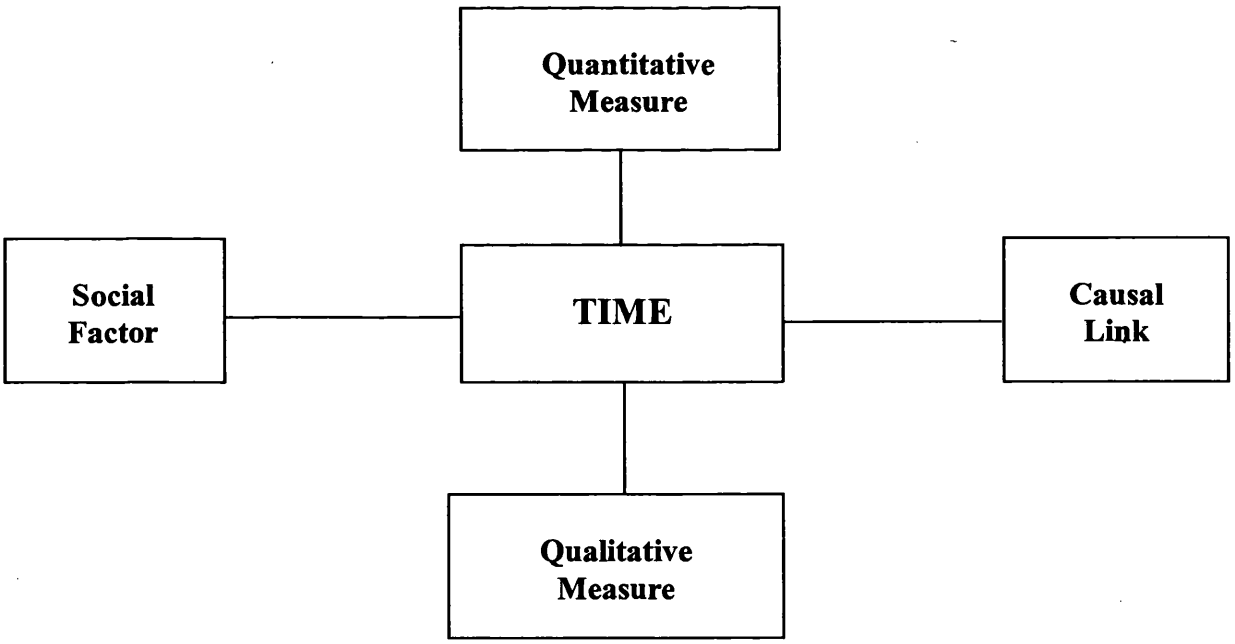
As a form of governance and control, time has greatly influenced many realms of human activity, (e.g., work demands i.e., clocking in), yet what needs to be addressed by present day research efforts are the ways in which time, in and of itself, affects not only human cognition and behaviour, but also one's *subjective experience* of time's passage. Little is understood about how time influences the individual and groups of individuals, such as national cultures, particularly as it has been ignored (if not taken for granted) in methodological considerations (Heirich, 1964; Mosakowski & Earley, 2000; Zerubavel, 1981). Thus, in order to convey the bigger picture of time and its highly subliminal

influence, the following section introduces time with respect to its vast scale of applicability, and diverse scope of interpretation.

2.3 Time - Its Multiplicity of Meaning

Time is a useful measuring device, which aptly facilitates explanations of the what, how, when and why of cultural and organisational change (Heirich, 1964). Time as a causal link has encouraged researchers to perceive time as a 'setting', indicative of space-time relationships, as well as a 'sequence' of events relating to time-time relationships (Heirich, 1964). However, in explaining today's world of dynamic interaction and change, analytical models rarely capture reality and the course of change over time (Ancona *et al.,* 2001b; Heirich, 1964). Time, in and of itself, is proposed as a 'new research lens' (Ancona *et al.,* 2001a), and in the study of social change time can be used in at least four differing and distinctive ways (see Figure 2.3A); each with direct implications for theory and research (Heirich, 1964).

Figure 2.3A: The Dimensions of Time (Heirich, 1964).



In essence there are many different types of time, and coordination of the differing types of time depends on all parties partaking in the same conception of 'time'- at least for the particular activity at hand (Ancona *et al.,* 2001b). Conceptualisations of time have largely been considered in terms of dichotomies, including quantitative versus qualitative

time; clock versus event time; linear versus cyclical time; objective versus subjective time; individual (personal) versus social time; continuous versus discrete time; digital versus analogue time; local versus national time; profane versus sacred time; and natural (e.g. solar and lunar cycles) versus artificial clock (rationale time)[3] (Argüelles, 2002; Fraisse, 1984; Hassard, 1989; Reinmoeller, 2001). (For a diagrammatical representation of the multiple meanings of time please refer to Appendix 2A).

A related point is the predominantly dichotomous-endpoint-dealings undertaken by researchers as to the monochronicity-polychronicity (MC-PC) continuum. In view of relatively recent explosion of 'polychronicity' into epistemological and methodological matters of research, studies have missed the significance of the combined approach (located across the midrange of a scale), as a viable stratagem for managing activities over time. In view of this, it is the aim of the present research effort to bring about more triune realities of Time'- specifically, a preferred temporal orientation that accommodates the combined monochronic (MC) and polychronic (PC) approach (dual MC & PC).

Time as an abstract quantity supports the economic-utilitarian philosophy of time, and "involves a definition of time as an entity which is segmentable into various quantities of duration, and therefore, is countable and measurable" (Zerubavel, 1981: 59). Time as a measure of quantitative relationships necessitates a choice of scale measurement: *nominal, ordinal, interval,* or *ratio*[4], and requires the use of different analytical procedures to ascertain meaningful results (Churchill, 1999; Mayer & Sykes, 1996). "The quantitative view of time is most evident in the case of schedules and time budgets. The main reason why rigidifying the duration of activities in our daily life is so necessary

[3] In view of vast amount of current research on natural versus artificial time, additional findings are presented later in this section as well as section 3.1.8: "Spacetime" and section 3.1.9: "Time as a Frequency and the 4th Dimension."

[4] A *nominal* scale consists of numbers to elucidate identity, i.e. national insurance numbers. Its only purpose is to identify individuals based on assigned numbers. If in a study males are coded "1", and females are coded "2" the use of a nominal scale has been made (Churchill, 1999; Mayer & Sykes, 1996). An *ordinal* scale indicates that the order of the numbers is the property of focus. The numbers 1, 2, 3, and 4 are ordered, and the larger the number, the greater the property. The ordinal scale also implies identity, since the same number would be used for all objects that are the same (Churchill, 1999; Mayer & Sykes, 1996). An *interval* scale indicates that the intervals between the numbers are meaningful, in that the numbers tell us how far apart the objects are with respect to the attribute considered. Thus, the differences can be compared (Churchill, 1999; Mayer & Sykes, 1996). A *ratio* scale differs from an interval scale in that it possesses a natural or absolute zero, one for which there is universal agreement about its location, with height and weight as examples (Churchill, 1999; Mayer & Sykes, 1996).

in an age of schedules is that the expected duration of events is of primary concern in any process of scheduling" (Zerubavel, 1981: 60).

Time is also a qualitative measure of societal change and cultural difference (Hall, 1989; Heirich, 1964; Ruspini, 1999). "Different time periods may have different 'qualities' because temporality is not necessarily a homogeneous entity [each second is like every other second]. Whereas the quantitative conception of time stresses its homogeneity, the qualitative view of time emphasizes its heterogeneity" (Zerubavel, 1981:111). By collectively applying the concept of time as a causal link and quantitative measure, certain qualitative occurrences concerning the process of cultural change and cultural distance can be hypothesised (Heirich, 1964).

For all organisations the "utterly essential dimension of planning is time... Yet time is the one dimension of planning that never gets discussed. It is treated as if it were a 'constant' that everyone understands" (Ewing, 1972: 439). This 'constant' linearly quantifiable concept of time is defined as 'standard' or 'clock' time (Bluedorn & Denhardt, 1988; Clark, 1985; Gurvitch, 1964; Hassard, 1989). This type of time is most commonly represented in the social sciences (Clark, 1985), as well as in management and organizational literature (George & Jones, 2000; Lee & Liebenau, 1999). Clock time suggests linearity, past to present to future (Bluedorn & Denhardt, 1988; Clark, 1985; Gurvitch, 1964), enabling infinite divisibility, into quantifiable units that are homogeneous, uniform and regular (e.g. McGrath, 1988). This "objective" concept of time is "unitary" [subject to only one interpretation], "mechanical" in nature, composed of discrete moments [one thing at a time], and open to "precise measurement" (Bluedorn & Denhardt, 1988: 302).

Literature on temporal research has promoted the view that gains and benefits from increased productivity can be derived with implementations of time management behaviours (Macan, 1994) and social entrainment models (McGrath & Kelly, 1986; Stevens & Seers, 2004). For instance, maxims such as 'Time is money' (Kaufman-Scarborough, 2006; Macan, 1994; Taylor & Mackenzie, 1986) alongside literary works that encourage a control of time (Macan, 1994), establish a consciousness and perception that conceptualises time as a quantifiable economic resource on a par with money (Feldman & Hornik, 1981; Hall, 1989; Hornik, 1984).

Relevant to the fields of marketing and consumer behaviour the topic of temporal orientation has initiated much interest into the research of shopping time and behaviour, i.e., the management of consumer activities (Feldman & Hornik, 1981; Kaufman-Scarborough & Lindquist, 1999a,b; Lindquist & Kaufman-Scarborough, 2004). Also of significance, is the role of time-related perceptions in consumer research (Graham, 1981, 1982; Hornik, 1984; Lindquist & Kaufman-Scarborough, 2004), time management behaviours (Francis-Smythe & Robertson, 1999a), temporal paucity (Kaufman-Scarborough & Lindquist, 2003; Lindquist & Kaufman-Scarborough, 2004), periods of waiting (Hornik, 1981; Lindquist & Kaufman-Scarborough, 2004) and organizational research (Blount & Janicik, 2001).

Specifically, the conduct of consumption is a pricey pursuit, and a free opportunity to 'take some time and space out' still entails managing a limited scope of resources, i.e., facts, funds, and vigour (Feldman & Hornik, 1981; Hornik, 1984). In fact it is argued that when deciding to buy, consumers are equally aware of their allocations of time as they are of their spending levels (Feldman & Hornik, 1981; Hornik, 1984), though people still suffer from time anxiety and debt. Despite research into these areas of consumption, little is known on how the subjective experience of time (i.e., whilst shopping, waiting, or being entertained) affects one's actual/ perceived quality of experience.

Consequently, the quantification of time as some kind of resource has greatly shaped Western society, manifesting in modern business and private-life practises (Hall, 1989; Kaufman-Scarborough, 2006), favoured time management behaviours, and problems in intercultural communication (Hall, 1989). Values related to task prioritisation, planning, scheduling, and list making (Ruiz & Reynolds, 2007) have served to shape both conscious and subconscious thoughts and behaviours. As a result, patterns of thought attempt to live in harmony with impositions of the external mechanics of clock time, at a risk (Helman, 2001).

As a consequence, training in time management has been heralded as the tool for enabling such behaviours. This is despite the fact that little or no empirical research has been conducted to validate these conventional assumptions. One main exception is Macan's (1994) 'Test of a Process Model', which introduced a model that incorporated

an individual level variable 'perceived control over use of time' as a factor responsible for mediating the relationship between time management training and behavioural outcomes, such as job satisfaction/ performance, and job-induced/ somatic tensions.

The model developed serve to counter traditionally assumed assertions; namely, managing time is akin to less pressure, which in turn equates with greater employee efficiency, satisfaction and health, and eventually a more successful organisation (Macan, 1994; Schuler, 1979). In view of the fact such claims had not been empirically tested, Macan argues that such conceptualisations of 'time management behaviours and outcomes' need to operate through an individual's 'perceived control over time' to engender success. "Thus, it is not the time management behavior per se that affects these outcomes, but the perceived control over time that these behaviors afford the individual" (Macan, 1994: 382)[5].

The following paragraphs serve to introduce the Western development of temporal cultural conceptualisations, in theory as well as practice, followed by dichotomies of time, which help to elucidate upon the multiplicity of temporal interpretations. Hence, time to date in the West has been perceived as an 'absolute' (always the same), to imply a system of time that is totally unrelated to other cultural developments (Doob, 1978).

The greatest of minds have directed their efforts to understanding the notion of physical time. For example, Sir Isaac Newton conceptualised time as an elementary absolute of life, and by most accounts, Newton and his supporters envisaged time as rigid and constant, to utilise time as a handy point of reference for quantifying actions (Hall, 1989). Nevertheless, such interpretations of Newton's efforts represent one side of 'Time's' multiplicative reality and the true breadth of meaning behind it; another face of 'Time' was revealed by the arrival the Einstein's 'Special and General Theory of Relativity of Time' (Einstein, 1921; Hall, 1989).

With undeniable conviction, Einstein showed how time was relative (Einstein, 1921; Hall, 1989). With persuasive conviction, he speculated that as a timepiece (i.e., a clock or a watch) drew near to the speed of light, it would decelerate. For example, Einstein

[5] Though Macan (1994) refers to the variable as "perceived control ***over*** time" the scale is labelled, "perceived control ***of*** time". As a result, these terms are to be used interchangeably.

asserted that an astronaut on an express voyage through space could depart from this planet, and revisit one hundred years on, to discover all those s/he once loved were now dead and gone, though hardly aged at all (Einstein, 1921; Hall, 1989). This according to Hall (1989: 21) "is not just a theory, but a physical fact, with far-reaching implications for mankind".

The story does not end though. Niels Bohr during the 1920s and 1930s was a hefty contender for the Einstein's relativity of time in the miniature world of quantum mechanics. As Einstein found the probabilistic character of quantum mechanics hard to embrace, he generated a number of 'gedanken' (thought) tests intended to refute Bohr's new assumptions relating to the miniature of the quantum world. In reaction, Bohr drew attention to the inaccuracies of his opponent Einstein, regarding failures to recall a major premise pertaining to Einstein's very own theory on general relativity (Kilcoyne, 1996, see <http://www.sunderland.ac.uk?~hs0bcl/h_nb.htm>). Interestingly, Einstein is reported for telling Bohr, "God doesn't play dice". Bohr's response was highly profound; he retaliated with the statement, "Stop telling God what to do" (<http://www.sunderland.ac.uk/~hs0bcl/h_nb.htm>).

Seldom is absolute (physical) time accurately perceived by individuals- its determination demands reference to extensions and social reference points, such as clocks, watches, calendars, and the sun, to accurately reckon time (Argüelles, 2002; Blount & Janicik, 2001; Fraisse, 1984). And yet one could ask according to whose time system is 'accurate time'? Is it according to clock time, or more eclectically to that of the planet's universal sense of evolutionary time? This latter temporal perception introduces a concept more specifically referred to as natural (solar & lunar) time (Argüelles, 2002; Blount & Janicik, 2001; Fraisse, 1984). Moreover, in terms of modern physics findings concerning relativity theory and quantum physics have challenged traditional Newtonian-based assumptions concerning time (McGrath & Rotchford, 1983).

Hitherto, in the modern scientific world of the West, the established temporal view is that of a 'physicalist' outlook, employing a standard temporal reference framework based on the mechanics of clock time, the Gregorian calendar, and the Christian era (Argüelles, 2002; Zerubavel, 1982). Clock time, did not take form until 1780, when Geneva began to use 'mean time' in place of 'solar time' (Zerubavel, 1982). The only official standard

of time in effect up until as late as the mid-nineteenth century, was that of local time, whereby every village, town or city employed its own system of time reckoning. Local times were uncoordinated with each other, as no locality needed to know of the time systems concerning other localities (Zerubavel, 1982).

In particular, communication and travel in such times did not require any regular provision of services, which demand exact measures of timekeeping. This is descriptive of the period before the industrial revolution- a time when punctuality was far from being as culturally valued as it is in the present day (Thompson, 1967; Zerubavel, 1982). Changes to the temporal structuring of society, in differing, yet, uncoordinated localities, did not commence until the initial revolutions in communication began (Bagwell, 1968; Wright, 1968; Zerubavel, 1981).

The British mail coach began in 1784 and was the first public service to supply regularity, managing its service in line with fixed schedules (Howse, 1980; Zerubavel, 1981). Given the inherent relation between temporal regularity and punctuality, the British Post Office dedicated itself to systematise the mail coach facility in adherence to strict schedules, rendering further practise of locally based systems of time reckoning as futile (Zerubavel, 1981). Hence, for any attempt made to coordinate mail coaches across localities, the need to standardise time as uniform was paramount (Bagwell, 1968; Wright, 1968; Zerubavel, 1981, 1982).

Representing the first attempt in history to synchronise different communities with one another, Great Britain was the first nation to materially manifest 'Time' as a constant; standardised in sync with the Greenwich Royal Observatory- the nation's most accurate observatory (Davies, 1978). Changes in transportation together with increases in manufacturing works were factors largely responsible for disseminating the impact of punctuality and precise time keeping as desirable ends across the general public (Mukerjee, 1943; Zerubavel, 1981).

Such values represent the cornerstone of the railroaders' world and significance- even the odd minute counts as crucial in scheduling and providing a regular and reliable service (Zerubavel, 1982). As clock-driven obsessions with scheduling and punctuality became firmly embedded in the consciousness of an achieving British society, timetables

orchestrated an industrial revolution that came to impact the entire planet (Howse, 1980; Zerubavel, 1982). Hence, for a single timetable to successfully coordinate an entire railroad service there had to be a "single, uniform standard of time" (Zerubavel, 1982: 7).

To expand upon the multiplicity of meanings regarding time, linear (clock) time can be dichotomised with cyclical time, where events are observed to repeat themselves, over and over again as with nature's biological time, marked by the four seasons- spring, summer, autumn (fall) and winter (Lewis, 1996; Mosakowski & Earley, 2000). Even so, people also personify a variety of emotional states (i.e., fear, ambition, desire), to allow the present moment, which is experienced as 'now', to differentiate and place in order a series of events that progress from the past into the future; that is, linear time (Bluedorn & Denhardt, 1988; Mainemelis, 2001).

The linear view of time is an abstract approach that underlies temporal conceptualisations in classical physics and mathematics, whereas the cyclic view of time "seems virtually essential to many aspects of the biological sciences. Psychology and other human sciences draw from both of these viewpoints" (McGrath & Rotchford, 1983: 60). Consequently, cyclical time and linear time are able to synchronically exist, as two overarching modes of temporality (Halpern & Christie, 1996; Mainemelis, 2001). "In either case, the notions of past, present and future, and recurrence are entirely contained in the unfolding present moment" (Mainemelis, 2001: 551).

Time is also "an ordering principle that co-ordinates, orients, and regulates interactions between people and groups" (Adam 1990: 42). This categorisation (type) of time is referred to event/ social time that Clark (1985) defined as socially constructed, based on related sociological events. He stated that each organisation evolves its own system of time reckoning, viewing time as a multi-dimensional variable, and subject to differing interpretations. "Although all societies have some system of time reckoning, some idea of sequence and duration, the mode of reckoning clearly varies with the economy, ecology, and technical equipment; with the ritual system; and with the political organization" (Goody 1991: 31).

Research has found that people refer to collective cultural understandings, and societal norms to give time value (Durkheim, 1995; Zerubavel, 1981), or in some cultures, no

value at all. "To the old-time Navajo time is like space- only the here and now is real. The future has little reality to it" (Hall, 1959: 23). With perspectives from writers such as Durkheim (1995) time has often been perceived as a social construct, rather than a natural condition, for example.

As a frame of reference, time is evaluated as one of the most precise and accurate standards in Western cultures. Time is an indicator of the value individuals in Western civilisation "attribute to an object or performance, or to the person with whom they spend their time. Time appears to have a more inclusive character than any other standard...For instance, it is more inclusive than money; in a capitalistic [free market economy] society, some people have more money, some have less; in a communistic [centrally-controlled economy] society, money may [be scarce or] not exist, but time units are equally the property of all in any type of society: it is a treasure for everyone, in equal measure" (Moreno, Jennings & Sargent, 1940: 62).

Such work clearly demonstrates that "time is a variable and not a constant" (Bluedorn & Denhardt, 1988: 315). For instance, Gurvitch (1964) identified eight types of social time[6] in addition to "ecological time"- a type of social time in harmony with the natural, external environment (1964: 40). In a similar stream of thought to social time is organisational time, which enables the co-ordination and synchronisation of group activities, across many types of time (Gherardi & Strati, 1988).

Another example of a temporal dichotomy is objective versus subjective time (Ancona *et al.,* 2001b; Mosakowski & Earley, 2000). "The basic contrast between 'objective' and 'subjective' time is that the former is characterized by concrete or measurable quantities of time which people actually have to work with, and the latter is based on people's perceptions of the amounts of time available, relative to the things they have to do" (Kaufman-Scarborough & Lindquist, 1999b: 290). This has obvious implications in areas of planning, scheduling, co-ordination, and event structuring (Hall, 1989; Mosakowski & Earley, 2000; Slocombe, 1999), i.e., whether the perceived duration of

[6] The eight types of social time are: Enduring time- time of slowed down duration; Deceptive time; Erratic time- time of irregular pulsation between the appearance and disappearance of rhythms; Cyclical time; Retarded time; Alternating time- time alternating belay delay and advance; Time in advance of itself or time pushing forward; Explosive time. For more information concerning these types of time please refer to Gurvitch (1964).

time whilst engaged in activity is equivalent to actual durations of time as measured by the clock, as well whether deadlines are successfully met or missed.

All the same, in spite of the fact that the value of objective time has been accepted and propagated (Barnett, 1997; Carroll & Swaminathan, 1991), there is a definite lack of management literature on the subjective value of time (Marmorstein, Grewal & Fishe, 1992; Mosakowski & Earley, 2000), a gap in research addressed by the present thesis.

From the perspective of culture, "microtime" is a recently developed term by Hall (1989), to describe a temporal product of primary level culture (PLC).[7] "Its rules are almost entirely outside conscious awareness. It is culture specific; that is, it is unique to each culture" (Hall, 1989: 24).

To illustrate microtime, Hall (1989: 45 & 46) recounts "Years of exposure to other cultures demonstrated that complex societies organize time in at least two different ways: events scheduled as separate items-one thing at a time-as in North Europe, or following the Mediterranean model of involvement in several things at once. The two systems are logically and empirically quite distinct. Like oil and water, they don't mix. Each has its strengths as well as its weaknesses...doing many things at once: Polychronic, P-time. The North European system-doing one thing at a time-is Monochronic, M-time." (See section 2.4.1.1.).

In considering how time is related to the mind, difficulties arise when contemplating if time is actually a genuine aspect of objective reality, as the experience of time and its flow is a personal, 'subjective' experience (Dispenza, 2006). For example, the times when we see the sunrise and sunset, it was once perceived to be an objective, 'observed' reality. Yet, thanks to scientific discovery and revelation we have developed the tools to undertake accurate empirical enquiry and it is known that the supposed movement of the sun around the earth is a perceptual distortion. Present day discoveries in the field of quantum mechanics reveal that time and space are in fact illusionary, although this may be hard to believe (or even experience for that matter) (Dispenza, 2006; Goswami, 2006;

[7]"PLC has core components which pattern our thinking and which gives us sets of underlying assumptions for arriving at the 'truth'" (Hall, 1989: 6). Hall also refers to these hidden paradigms, primary level culture (plc), as core culture, or basic level culture.

Hameroff, 2006). So, 'life is but a dream' and the reality we 'perceive' is subject to our states of consciousness, and there is actually no separation between you and I- we are all entangled; we are all one (Dispenza, 2006; Goswami, 2006; Hameroff, 2006).

Thus, here enters another instance where disciplines differ in temporal interpretations- whether time is viewed as real (having direct effect and tangible in nature) or not real (being only an abstract dimension). As already touched upon, "mathematics and physics seem to adopt one stance, time as an abstract dimension, whereas the biological sciences seem to incorporate the idea that time is an essential ingredient in many life processes (e.g. gestation, healing, and metamorphosis). Again, psychology and other human sciences have been of two minds on this matter" (McGrath & Rotchford, 1983: 61). Accordingly, the worldview of time in mathematics and physics is that of an intangible, abstract reality, whereas the biological sciences understand time via the mechanics of living processes- very real, and of direct effect. Psychology serves to bridge the gap.

As a related point, if consciousness were non-existent, would the experience of time be non-existent as well? (<http://www.utm.edu>). Aristotle raised this issue by questioning "Whether, if soul [mind] did not exist, time would exist or not, is a question that may fairly be asked; for if there cannot be some one to count there cannot be anything that can be counted..." (Greenberg, 2003: 1; <http://www.utm.edu: 223a>). Though no definitive conclusion has been reached, Aristotle stated that the answer is dependent upon whether time remains countable in absence of an observer (Greenberg, 2003; <http://www.utm.edu). Strange as it may seem, this level of intelligence fits in with groundbreaking discoveries made in the field of Quantum properties. "In other words, measuring those properties is what brings them into existence. 'Rather than passively observing it, we in fact create reality'" (Brooks, 2007: 32).

Aristotle's disparity foretells of modern-day refinements between physical and psychological time. Physical time refers to the 'time' that a clock measures, as demonstrated by physicists who define 'speed' as the rate of change of position with respect to time. Psychological time is personal time and is demonstrated by how slowly time seems to pass for an individual who is waiting for the kettle to boil (<http://www.utm.edu>; Hall, 1989). "Hence, physical time is public time. Psychological time is private time" (<http://www.utm.edu: 1>).

Two concepts fundamental to psychological time are time as 'succession' versus time as 'duration'. According to Fraisse (1984: 2) the concept of succession "corresponds to the fact that two or more events can be perceived as different and organized sequentially; it is based on our experience of the continuous changing through which the present becomes the past". Alternatively, the concept of duration "applies to the interval between two successive events. Duration has no existence in and of itself but is the intrinsic characteristic of that which endures" (Fraisse, 1984: 2). Both interrelate and coexist, as without succession, duration is non-existent (Fraisse, 1984; Levin & Zakay, 1989).

Time can also seemingly contradict itself. For example, "To appreciate the artificial nature of standard time, consider the use of one-hour differentials between neighbouring time zones. While these certainly facilitate the conversion of times from one zone to another, they make very little sense from a purely natural standpoint. Whereas solar-time differentials among communities essentially progress in a *continuous* fashion, standard-time differentials create clock-time *discontinuities*. The abrupt one-hour differential that zone boundaries sometimes create between communities that are within walking distance of one another is totally unjustifiable from a purely physiotemporal standpoint" (Zerubavel, 1982: 19). Alternatively, one may argue that nature and the processes of life are paradoxically both continuous and discrete, operating synchronically and in absence of contradiction (Condon, 1970; Hall, 1989).

In addition to the examples of temporal dichotomies, research further elucidates upon how time can also be perceived as epochal (novel) [today is somehow different from all other days]. This is a type of time totally abstract from "clock time", as with spiral time[8], and the experience of timelessness (Hall, 1989; Mainemelis, 2001; Mosakowski & Earley, 2000; Zerubavel, 1981). "Timelessness is the experience of transcending time and one's self by becoming immersed in a captivating present-moment activity or event" (Mainemelis, 2001: 548). Academics and writers purport that the experience of a

[8] Spiral time distinguishes a world that is accelerating. Linear time itself is accelerating, relentlessly pushing toward a shift into what is called spiral time. Our daily existences occur with regards to linear time, where concepts of time and space create schedules according to a 24-hour clock, and move from point A to point B. Spiral time is not the same; it is where the 'Muse' functions. In spiral time, we lose track of hours and minutes (<http://www.wordjourneys.com/essays_f/muse_cont.htm>).

timeless present moment is a doorway to creativity and happiness (Dewey, 1934; Sandelands & Buckner, 1989; Mainemelis, 2001).

The following account by Ackerman (1999: 31), featured also by Mainemelis (2001: 551) is set against a backdrop of 'full of fun' absorption. Specifically, "...only the present moment matters, one's history and future vanish. One does not remember one's past, needs, expectations, worries, real or imaginary sins. The deep-play world is fresh, wholly absorbing, and full of its own unique wisdom and demands. Being able to temporarily step outside of normal life- while keeping one's senses alert- is indeed like being reborn. To erase all memories and yearnings- to be vigorously alive without self-awareness- can provide a brief return to innocence."

Thus, the experience of timelessness is a moment *out of time* characterised by *direct experience*, which needs to be distinguished from *ordinary experience*. *Direct experience* refers to encounters of the instantaneous moment in the present, consisting of perceived impressions that are in and of themselves atemporal; of an external reality marked by non-linear patterns of change and heterogeneity (Mainemelis, 2001; Pinker, 1997).

Multidisciplinary temporal perspectives advocate an individual's subjective experience of the passage of time to be the result of the ability of consciousness to separate stability from change, and to then implement this distinction in behavioural control, and for causal inferences (Mainemelis, 2001; Pinker, 1997). As instants of direct experience are determined by consciousness, these instants are connected to one another, and qualified as 'inner duration' (durée) (Bergson, 1960). Without inner duration, there would be no sense of *becoming*, only *being*; that is, instantaneous experience (Bergson, 1960; Mainemelis, 2001).

"*Ordinary experience*, then, is the experience of the present moment as integrated in a sequence of other moments and events- as a tiny link attached to an infinite chain of experiences and instants. Ordinary experience presupposes the notion of time, but direct experience is timeless" (Mainemelis, 2001: 550). Bergson (1911) perceived inner duration as analogous to that cinematography; consciousness documents a number of 'reality snapshots', and maintains a record of them by way of inner duration. These

snapshots are successively arranged alongside each other to create the illusion of homogeneous, linear progressions of motion, via an invisible uniform medium of 'time'- though 'time' exists only in the paraphernalia of human experience.

The benefits of experiences *out of time* include the generation of intense creativity, innovative opportunities, and new approaches to knowledge management (Mainemelis, 2001; Reinmoeller, 2001). In contrast to moments *out of time* are moments experienced *in time*, which refer to a succession of "what has been, what might have been, what might come, and what has to be done" (Mainemelis, 2001: 563).

Every instance experienced is made up of *depth* and *succession* (Mainemelis, 2001; Wood, 1989). The depth of the eternal moment of now symbolises a sense of intensity akin to 'direct experience'; succession is that of everyday, 'ordinary experience'- a series of 'the here and now' that amount to one's experience of 'self' and 'being' (Mainemelis, 2001; Wood, 1989).

Consequently, in light of the limited resources concerning a human's attention span (see section 3.2), greater focus of one's consciousness on succession, leads to lesser amounts of attention available for experiencing the depth of direct experience. "But when the depth of direct experience in the unfolding moment is high, attention is withdrawn from the self, and time as an experience ceases to exist. This state is experienced as *timelessness*" (Mainemelis, 2001: 551).

Arguments concerning the subjectivity and flexibility of time posed by Bergson (1960) are highly relevant. In particular, as the concept of external time is contingent upon inner duration, time appears to slow down, race or stop, consistent with one's level of attention, and emotional states. Contemporary empirical research adds strength of support to varying subjective experiences of time's passage as a result of factors such as stimulus complexity and characteristics akin to observers (Hall, 1989; Mainemelis, 2001; Ornstein, 1970).

For example, if the performance of a task seems worthless, boredom occurs as one's level of attention is engaged toward the self, and time is perceived to slow down. In light of activities that are seemingly threatening, attention is once again drawn to oneself and,

anxiety surfaces and time may seem to slow down or pass by speedily. At times when activities at hand optimally measure up to one's expectations, attention transcends from the self to that of the activity, as well as from matters of objective time to that of the timeless insightfulness of immediate experience (Ornstein, 1986; Mainemelis, 2001; Mohanram, 2006).

In a nutshell, the following excerpt sourced from Schutz's (2000) collection of literary profundity introduces how time dilates and varies in its impact upon consciousness:

Time Is...
Too Slow for those who Wait,
Too Swift for those who Fear,
Too Long for those who Grieve,
Too Short for those who Rejoice;

But for those who Love,
Time is Eternity.
Henry van Dyke (1852-1933)

Time is a complex subject and the density of language descriptive of time-related phenomena tells of its multitude of meaning (Ancona *et al.,* 2001b; McGrath & Rotchford, 1983; Palmer & Schoorman, 1999), with measurement dependent upon the observer (Brooks, 2007).

As an example of Time's multidimensionality and multiplicity of meaning, Ancona *et al.,* (2001b) present a convenient approach for determining distinct categorisations of time involving three chief categories constituting a temporal research framework. 'Banana time', as with 'polychronicity', are illustrative examples to explain the framework comprised of (1) conceptualisations of time: i) types of time ii) socially constructed/ shared meaning of time, (2) activity mapping, and (3) how individuals relate to time (Ancona *et al.,* 2001b).

Despite these three aforementioned distinct categorisations of time, that is (1) conceptualisations of time: i) types of time ii) socially constructed/ shared meaning of

time, (2) activity mapping, and (3) how individuals relate to time, there are certain variables that load onto more than just the one of these three categorisations (Ancona *et al.,* 2001b). And central to this thesis, the "monochronicity-polychronicity" continuum developed by Hall (1989) is one cultural conceptualisation of 'microtime' that spans all three categories (see section 2.4.1.1). To elaborate, Hall originally conceptualised the term 'polychronic' to describe cultural disparity concerning 'activity-to-time' (clock or event) management.

This addresses the first category concerning shared meanings of time. Secondly, in terms of activity mapping, the continuum not only offers the monochronic, 'one-at-a-time' or polychronic 'many-at-a-time' approach, but also combined approaches of varying degree, such as the dual monochronic and polychronic approach characteristic of high-tech cultures (Hall, 1989). Thirdly, in terms of how actors relate to time, in applying the Theory of Reasoned Action (TORA) care of Slocombe (1999), a preferred temporal orientation can serve to affect how proficiently people believe they are managing/ coping with life; for example, is the 'time-to-activity' strategy employed a cause of dissonance or personally approved?

A similar tale exists with "banana time"- a temporal tool of social conduct, communication and punctuated behaviours typically exhibited by a clique of machinists (Ancona *et al.,* 2001b; Roy, 1960). And in light of the above three categorisations (Ancona *et al.,* 2001b), banana time, as a conceptualisation of time, is a socially constructed coping device initiated to alleviate monotony. In terms of mapping activities over time (the second category), it punctuates a point in time, as with 'break-time', 'tea-time' or 'lunchtime'.

Thirdly, in terms of how people relate to time, 'banana time' amounts to a personal experience; for example, different people experience differing alleviations from a coping device, i.e., 'banana-time' (Ancona *et al.,* 2001b; Roy, 1960). To present a concise description of how differing conceptualisations of 'mapping activities to time' occur, Table 2.3A provides a useful starting point (Ancona *et al.,* 2001b: 515).

Table 2.3A: Conceptualisations of Time

Temporal Category	Description	Sample Variables
Single activity mapping on the time continuum	How an activity is located	Scheduling, duration and rate of completion
Repeated activity mapping of the same activity multiple times on the time continuum	An example is that of assembly line processes	Rhythms, cycles, frequency and intervals
Single activity transformation mapping of change processes	When an activity alters in nature in response to a marker [reference point], as in learning	Life cycles, midpoint transitions, interruptions and deadline behaviour
Multiple activity mapping of 2 or more activities on the time continuum	An example being that all the activities of an organisation are mapped collectively	Sample variables include activity relocation, time allocation, ordering and synchronisation
Comparison of multiple temporal maps	The mapping of multiple temporal maps	Entrainment, patterning, and temporal symmetry

Source: Ancona *et al.,* 2001b: 515

The last category in the table features the term 'entrainment' and requires further explanation. Entrainment is a way of being in-sync (Condon, 1970; Farmer & Seers, 2004; Hall, 1989; McGrath & Kelly, 1986) and can be an organising feature of the workplace (Ancona *et al.,* 2001b; Farmer & Seers, 2006; McGrath & Kelly, 1986). Stemming from the study of biological processes (Farmer & Seers, 2006; Hall, 1989; McGrath & Kelly, 1986), entrainment, revealed by circadian rhythms, show how the cyclic flow of a person's internal tempo is subject to control and adaptation from external forces that are characterised by similar tempos (Farmer & Seers, 2006; Hall, 1989; McGrath & Kelly, 1986). For example, "Fireflies have a tendency toward entrainment, which can be observed as they blink in unison. Electronic oscillators will, if their frequencies are close enough, entrain with the fastest frequency, while pendulum clocks running side by side will entrain if the pendula are the same length" (Hall, 1989: 229).

Nature's entrainment is not simply limited to workings of the external world, as even humanity and its making are affected by the rhythmic processes of natural time (Farmer & Seers, 2006; Hall, 1989; McGrath & Kelly, 1986). 'Nothing escapes nature', as

marked by the micro-rhythms that bind us all together (Condon, 1970; Hall, 1989; McGrath & Kelly, 1986).

In planning for the future, each organisation needs to reckon time in accordance with a vast range of cyclical phenomena, including local and global economic conditions; industry conditions; developments in technology; seasonal adaptations and cycles (Ganitsky, Rangan, & Watze, 1991; Clark, 1985). This too is entrainment, which in the context of the organisation involves the combining and harmonising of time-related phenomena, into a unified and coherent system of time reckoning (Ganitsky *et al.,* 1991; Hall, 1989). "...IJV [International Joint Venture] entities having temporal asymmetry and attendant synchrony must actively manage their time-based differences. This is made difficult because partners often attribute many of their differences to their managerial systems, styles and cultures rather than to their time reckoning systems and time entrainment mechanisms in which they are embedded" (Ganitsky *et al.,* 1991: 20).

Rhythms are also argued to account for all sorts of physic experiences, based on some type of entrainment that occurs when two central nervous systems connect (Condon, 1970; Hall, 1989). Condon (1970) has verified again and again that when people communicate, both self-synchrony and interpersonal synchrony exist, and brain waves intertwine to become a single combined sequence. In other words, when we converse with one another our central nervous systems interconnect like two cogs (Condon, 1970; Hall, 1989). To assess individual conduct over time Condon (1970) employed highly specific time-motion analysers designed to move back or forth a frame at a time. Condon succeeded in discovering the core constituents that relate to how behavior is organised. To elaborate, in terms of human behaviours, 'time is organisation', and Condon's research serves to deepen such an understanding.

A particular attribute that distinguishes Condon's research from other studies of behaviour relates to his use of a constant, synchronous record over time. Condon measured physical, observable changes in bodily disposition displayed by his subjects, which were then analysed in conjunction with spoken communication. Hence, by monitoring the occurrence of sound and behaviour via thousands of 4 ½ second sequences of a family eating dinner, Condon produced specialised sync-sound 16mm movies to log behavior as a continuous scale. Condon also ascertained that the six

different brain frequencies of a person relate to precise constituents of the self-synchrony rhythm scale, with brain wave frequencies associating with the spoken word in definite ways, as illustrated below in Table 2.3B.

Table 2.3B: Brain Wave Frequencies & Speech Associations

Brain Wave Frequency	Form of Speech	Duration (seconds)
Delta	Utterances	1-3 per second
Theta	Words	4-7 per second
Alpha	Short words & phones (sounds)	8-13 per second
Beta I	Short phones	14-24 per second
Beta II	Phones	25-40 per second

Source: Condon, 1970; Hall, 1989

These 'Brainwave Frequencies of Language and Consciousness' pertaining to self-synchrony convey how every human rhythm is created within one's very being (Condon, 1970; Hall, 1989). Anomalies in self-synchrony are evidenced by speech impediments, i.e., stammering, strokes, and the many different types of graceless displays of behaviour that present an awkward sense of self (Condon, 1970; Hall, 1989). Such research suggests the definition of self is profoundly fixed in rhythmic synchrony. In particular, "rhythm is inherent in organization, and therefore has a basic design function in the organization of personality" (Hall, 1989: 180). What's more, Hall (1989) reveals the importance of sound by stating, "it will ultimately be demonstrated that synchrony begins with the myelination of the auditory nerve about six months after conception" (pg. 177).

Elementary rhythms appear to merge body movement and speech as one to form the very existence of an individual, empirically shown by how the person's entire physique partakes in such rhythms and allied hierarchic intricacies (Condon, 1970; Hall, 1989). In fact, rhythmic expressions of self may be one of the most significant, yet elementary traits of personality that helps to distinguish people (Hall, 1989), as with the sound of a person's voice.

A cultural example of the relationship between rhythm and personality is given by the diversity of music produced across different nations. To go into detail, "Because there is

a beat to music, the generally accepted belief is that the rhythm originates in the music, not that music is a highly specialised releaser of the rhythms already in the individual. Otherwise, how does one explain the close fit between ethnicity and music?" (Hall, 1989: 178)

In terms of how actors relate to time (Ancona *et al.,* 2001b) two subcategories are involved: *temporal perception (perspective)* variables (how actors perceive the time continuum), and *temporal personality (structure)* variables (how actors behave with respect to the continuum; that is, the way in which an actor interacts with time) (Ancona *et al.,* 2001b; Hall, 1989; Koehler-Jones, 1995).

Temporal perceptions (perspective) account for the fact that the experience of time alters across individuals and circumstances, relating to how the passage of time is perceived. "By the perception of time we mean the understanding and knowledge about time acquired through the senses. For individuals, vision, hearing, and touch- through their tight interconnections with the brain- all contribute to the sense of time" (Ancona *et al.,* 2001b: 518). Illustrative sample variables include 'time flying' and 'time crawling/ dragging' (Hall, 1989).

According to Graham (1981) temporal perception is a central concept relevant to the construction of a perceptual bank, and many other perceptions are argued to be subject to bias depending on an individual's perception of time. Difficulties are prone to occur, particularly when it is assumed by a researcher that all respondents share identical perceptions of time, or that the respondent's perception is equivalent to that held by the researcher.

The Western perception of time and its subsequent allocation strongly relates to a concept of time, which defines itself as a consumer commodity, and is a concept, which embodies the notions of choice, allocation and utility. Even so, although this perception of time as a consumer commodity seems so natural to the Western world, it is not unanimously shared, or even recognised. So where is time not money? Well, one answer is, 'Where 'Time' is 'Consciousness' (Mohanram, 2006; Prabhupadā, 1986).

"While today's scientists are familiar with the concept of time dilation, they are largely unaware of the more profound concept of consciousness dilation, described in the Vedic literature. Consciousness, the *Vedas* declare, is a fundamental characteristic of a living being. It is the subjective awareness of one's self. Although consciousness is a fundamental truth, explanation of its origin and nature has eluded modern science. The Vedic literature offers a non-mechanistic model of consciousness. It is described not only as that which is transcendental to matter (composed primarily of earth, water, fire, air, ether, mind, intelligence, and false ego), but also as the controlling and moving force behind it. Consciousness is the symptom of the soul...Viewed in a different way, an expanded consciousness leads to an expanded sense of time" (Mohanram, 2006: 36).

And what is this expanded sense of time? "The Vedas say that in world of pure consciousness, or the spiritual realm, there is no passage of time. Thus, it can be said that timelessness is the absolute reality and material conditioning creates various rates of subjective passage of time. Einstein would probably agree with this statement" (Mohanram, 2006: 36 & 48). Hitherto, for cultural groups that apply India's ancient Vedic wisdom, the assignment of precise time slots for specific activities is most peculiar (Graham, 1981, 1982; Hall, 1982; Hall & Hall, 1990).

To understand these other points of view as well as the Anglo view of time, Graham (1981, 1982) conceptualises the perception of time according to three main categories: linear-separable (clock-time, i.e., North Europeans and Americans); circular-traditional (eternal-time/ timelessness, i.e., India's cyclic and ancient view of time) and procedural traditional (event-time, i.e., Navajo time- "When it is the 'right' time"), which coincides with examples given by Hall's (1959, 1989) research on the continuum of polychronic-time and monochronic-time.

Hence, on an individual level, temporal perceptions (perspectives) are symptomatic of cultural and sub-cultural influences (Hall, 1989; Koehler-Jones, 1995; McGrath, 1988). As with other cultural values, individual temporal perceptions (perspectives) change and evolve very slowly (McGrath, 1988). Yet, the adoption of cultural values differs across individuals subject to issues such as realism; social approval/ estrangement; social standing (Koehler-Jones, 1995). Hence, the adoption of a temporal perspective is also

determined by an individual's personality (Conte & Gintoft, 2005; Cotte & Ratneshwar, 1999; Francis-Smythe & Robertson, 1999b; Koehler-Jones, 1995).

In terms of individual-level personality variables, a great number of psychological studies inform of a variety of outcomes that may arise from differing degrees of personal control, including consequences upon performance (Macan, 1994), job satisfaction (Greenberger, Strasser, Cummings & Dunham 1989; Macan, 1994), and stress (Macan 1994; Thompson, 1981).

An individual's *temporal personality (structure)* is defined by how an individual perceives time to function and operate; the elements of which are knowledge, cognitions, attitudes and beliefs, as well as motivation, and capability (Francis-Smythe & Robertson, 1999b; Koehler-Jones, 1995; Lennings, Burns & Cooney, 1998). "Two important elements of the temporal [personality] structure are pattern and flow. These have to do with the way time moves from the past, through the present and into the future. Patterns of time may be circular, elliptical, linear or otherwise. Flow is a term that includes ideas about rates of change as well as consistency or uniformity of change" (Koehler-Jones, 1995: 2).

Research across disciplines indicates that individuals have an inbuilt orientation toward the flow of time (Bluedorn & Denhardt, 1988; Cottle, 1976; Das, 1987). To demonstrate, "...the American Dream is the French Nightmare. Americans generally start from zero and what matters is the present performance and their plan to 'make it' in the future. This is *nouveau riche* for the French, who prefer *ancien pauvre*; they have an enormous sense of the past and relatively less focus on the present and future than the Americans... In certain cultures like the Americans, Swedish and Dutch, time is perceived as passing in a straight line; a sequence of disparate events. Other cultures think of time more as moving in a circle, the past and present together with future possibilities. This makes considerable differences to planning, strategy, investment and views on home-growing your talent, as opposed to buying it in" (Trompenaars & Hampden-Turner, 1997: 10).

Moreover, "Individual orientation towards the future, in particular may differ in terms of the relative cognitive dominance of the near versus the distant future. This is termed...individual 'future time perspective'" (Das, 1987: 203).

Two variables important to *temporal personality (structure)* are *temporal orientation* and *temporal style*. *Temporal orientation* however, also encompasses the notion of temporal perception (perspective), in addition to characteristics, such as how an actor conceives time (i.e., linear vs. cyclical) and what part of the continuum is most salient to the actor (past, present or future). "Temporal orientation, therefore, refers to a broader, more complete set of characteristics that specify an actor's approach to time" (Ancona *et al.,* 2001b: 519).

With regard to *temporal style* four categorisations dominate- 'clock', 'organic', 'strategic' and 'spasmodic' (Ancona *et al.,* 2001b; Butler, 1995). Collectively, temporal styles encapsulate different ways to comprehend, define, as well as respond to time, which serve to indicate how tightly the connections between past, present and future exist (Ancona *et al.,* 2001b; Butler, 1995). For instance, organisations in unpredictable industries of constant change and flux, may find a more spasmodic style of operation is deemed preferable to that of, say, a clock time temporal style of operation, as in such industries the past is not so closely linked to the future. Furthermore, management may play the role of influencing the rate of change, via innovation, thus enabling greater flexibility in decision-making. Alternatively for organisations in industries characterised by slow movement and predictability, a more clock time temporal style of operation may be preferable, especially if predictions of the past enable foresight into the future (Ancona *et al.,* 2001b).

"The Americans view of the future is linked to a view of the past, for tradition plays an equally limited part in American culture. As a whole we push it aside or leave it to a few souls who are interested in the past for very special reasons. There are a few pockets, such as New England and the South, where tradition is emphasized. But in the realms of business, which is the dominant model of United States life, tradition is equated with experience, and experience is thought of as being very close if not synonymous with know-how. Know-how is one of our prized possessions, so that when we look backward it is rarely to take pleasure in the past itself but usually to calculate know-how, to assess the prognosis for success in the future" (Hall, 1959: 21). In contrast, Hall explains that the governance of the past in Iran is of sacred importance, and further unlike the

Americans, notions of punctuality, promptness, and planning into the future seem of little value.

In summary, temporal conceptualisations have raised much debate, and certain philosophical topics have remained unsettled and persistent (Heath, 1956; McGrath & Rotchford, 1983; Mosakowski & Earley, 2000). For example, as guided by McGrath & Rotchford, (1983) many queries have been brought to mind, including 'if many types of time exist, what of construct validity?' And 'can time be equally valid as a subjective passage, as well an objective passage?' Another area of discussion covers how time and motion co-mingle, and whether, as suggested by the Heisenberg principle[9] (Davies, 1990; Brooks, 2007; <http://www.aip.org/history/Heisenberg/p01.htm>) they are intrinsically indeterminate, or at times entwined though still theoretically at odds.

In light of modern quantum mechanics and the theory of relativity, philosophical discussions on time have been resurrected, ultimately serving to recreate cultural interpretations of time formerly accepted. For instance, Einstein's discoveries regarding the relativity of time, symbolises a change from Newton's traditional conceptualisation of time as linear and absolute. Furthermore, modern physics has supported the stance that time is divisible, yet also deems time as non-continuous, which implies that it is not uniformly divisible, as lower bounds for time units may exist (McGrath & Rotchford, 1983). Consequently, time may actually be more epochal and less homogeneous, thus unsettling the prevailingly linear, cultural construal of time, which governs the majority of existing corporations (McGrath & Rotchford, 1983).

As noted by McGrath & Rotchford (1983), these truth-seeking enquiries "are not matters to be 'resolved', in the sense of seeking a correct answer. Rather each culture develops a dominant conception of time that reflects a set of choices or preferences on these issues. In that sense they get 'resolved' for any one culture at any one time" (pg.61). Thus far this thesis aims for the reader to recognise the differing, yet interrelated dichotomies of time (i.e., quantitative and qualitative; subjective and objective) that interact and raise research questions, and which generate the testing of causal hypotheses.

[9] The Heisenberg Principle relates to the *uncertainty principle* in quantum theory and originates from Werner Heisenberg (1901-1976), best known as the founder of quantum mechanics. "The more precisely the position is determined, the less precisely the momentum is known in this instant, and vice versa."(Heisenberg, uncertainty paper, 1927) (<http://www.aip.org/history/Heisenberg/p01.htm>)

Thus, in generating a theoretical perspective for measurable thoughts and behaviours related to the power of time, one consequently appreciates that time is not merely a measuring device to gather objective 't' (time) data from point a to b; in actual fact, it pervades in our memories, everyday ways and dreams to manifest and influence each individual uniquely, according to one's personal beliefs, as well as the values of one's culture.

2.4 Time - A Cultural Construct

All human events and behaviours occur over time, and in time (Jones, 1988; Heirich, 1964). However, the norms, interpretations and meanings of events, and the time in which they take place, vary enormously across individuals and cultures (Hall, 1989; Jones, 1988; McGrath & Rotchford, 1983). "Whilst most social scientists who consider time in relation to culture see it as an aspect of culture, Hall (1989) goes further to assert that time is culture. On this grand note, one might revise the Cartesian criterion for being thus: *Tempus Fugit, ergo, sum!*"[10] (Jones, 1988: 21).

There are many conceptualisations of culture. "Because culture is experienced personally, very few individuals see it for what it is-*a program for behavior*. Members of a common culture not only share information, they share methods of coding, storing and retrieving that information. These methods vary from culture to culture. Knowing what kind of information people from other cultures require is one key to effective international communication" (Hall & Hall, 1990: xiv). Brislin (1993) defines culture as an organisation of shared beliefs, values, ideals and assumptions concerning existence, and which direct certain acts and behaviours.

For Samovar and Porter (1972: 3) culture "manifests itself both in patterns of language and thought in forms of activity and behavior. These patterns become models for common adaptive acts and styles of expressive behavior which enable people to live in a society with a given geographical environment at a given state of technical development". Thus, cultures incorporate cognitive frameworks, shared understanding, behavioural rules and perceptions (Hall & Hall, 1990; Hofstede, 1984).

[10] "Tempus Fugit" is a Latin phrase from Virgil, and translates into "Time Flies", whereas "[Cogito], ergo sum" translates into "[I think], therefore I am".

Hofstede (1991, 1984 & 1998) is highly regarded for his work on cultural variability, commonly referred to as "Hofstede's Dimensions". Five dimensional values were shown to characterise national culture differences: individualism versus collectivism; masculinity versus femininity; power distance; uncertainty avoidance, and (the most obvious temporal dimension) short-term versus long-term orientation (Hofstede, 1984, 1998; Kotabe & Helsen, 2000; Triandis, 1993, 2001). His definition of culture is "to human collectivity what personality is to the individual" (1984: 21), and it involves a shared programming of the mind, which differentiates members of one group from that of another (Hofstede, 1984, 1991 & 1998; Innis, 1964; Triandis, 1993, 1994). It is stressed however, that culture is the property of the group and not of the individual.

Kluckhohn & Strodtbeck (1961: 11-13) and Schein (1992) elucidate upon the construct of culture to provide the basics of observed variations in values crucial to all cultural societies. Firstly, the character of innate human nature is questioned; that is "human-nature orientation", which concerns three logical elements, good, good-and-evil, and evil. Secondly, the relation of man to nature is questioned: "man-nature orientation", which features three points of call- subjugation-to-nature, harmony with nature, and mastery over nature. Thirdly, the temporal focus of human life is questioned: "time orientation", namely, past, present and future. Fourthly, the modality of human activity is questioned: "activity orientation"- a threefold conceptualisation across being, becoming, and doing. Finally, the modality of man's relationship to other men is questioned: "relational orientation", comprised of three central elements, lineal, collateral, and individualistic.

To develop upon the above-given dimensions whilst accounting for the assumptions made by different groups about the general nature of reality, truth, time and space, Schein (1992: 95) states "Language and conceptual systems certainly reflect directly fundamental assumptions about time, space, and truth. Status systems, reward systems, rules for intimacy and for the channelling of aggression all reflect deeper assumptions about the nature of human nature, human activity, and human relationships. Moreover, religion and ideology can certainly be seen directly connected to deeper assumptions about truth, time, and space, and especially, about human nature."

In comparison, Trompenaars & Hampden-Turner (1997: 8) discuss culture across three factors: "relationships with other people; those which come from the passage of time; and those which relate to the environment". Nevertheless, limited empirical research has been conducted that feature these measures, or even make use of them across cultures (Reynolds, 1999).

It is important to distinguish organisational culture from national culture, as cultures manifest themselves from the periphery into deep immersion, through rituals, values and hero figures. National cultures differ mainly in terms of values, and organisational cultures in terms of rituals, symbols and heroes, classified collectively as practises (Clark, 2002). National culture has been defined as "the body of values, practises and identities deemed to make particular nations different from others" (Schlesinger, 1997: 372). "What applies to national and regional cultures [however] also applies to corporate cultures" (Stewart, 2001: 1). Therefore, though national cultures differ from corporate cultures mainly in terms of values, the culture of the national environment in which an organisation conducts business, inevitably influences the process of management via programming the collective mind of its members, its management, and its researchers (Hofstede, 1984, 1991; Triandis, 1993).

Hence, in providing a broader picture of cultural time, the dominant Western viewpoint is one oriented to the future, as well as active and individualistic (Koehler-Jones, 1995; Lewis, 1995). As already introduced, "Popularly we subscribe to a linear, monotonic progression of time from the past, through the present, into the future but we have little use for the past. Our values are largely near-term while we concentrate on the immediate growth ahead. Our desire to continue economic abundance encourages us to overload the present and near future with planning. Both rapid change- related to technology- and 'freedom' benefit from short-term perspectives" (Koehler-Jones, 1995: 1). For example, the development of the United States has been driven by a number of legacies- a prevalent one being its individualistic-orientation. Consequently, high levels of achievement qualitatively characterise the prevailing ethic of the United States (Jones, 1988; McClelland, 1961).

In other cultures such as the Native Americans, and those that characterise southern Europe and Latin America, alternative conceptualisations of time and the future govern

(Hall, 1989; Koehler-Jones, 1995; Lewis, 1995). "To the Navajo, the future was uncertain as well as unreal, and they were neither interested in nor motivated by 'future' rewards- a foundation on which many...government programs were based" (Hall, 1989: 29). Furthermore, in contrast to the West's individualistic orientation toward time, the subliminal force of social time as a cultural constraint on individuals, demands further examinations into the socio-cultural factors, which bring it into being (Durkheim, 1995).

"Belief systems, believe it or not, are functions of time. What you believe defines the time you are living in. Any belief system is held in place by the calendar and sense of time in which it is encoded" (Argüelles, 2002: 2). In contrast to the Western philosophy of time- linearly quantifiable, clock-driven, perpetually driven into a future to keep up with technological progression, Mayan time science is specific in its understanding of time as the universal cause of synchronisation (Argüelles, 2002; Stray, 2005).

Moreover, it is argued that the Western conceptualisation of time is not in harmony with the existent cyclical patterns and synchronic character of time. In actual fact Mayan time science purports that the labours of a flawed temporal conceptualisation are to break down before a cyclic end point in 2012. According to the Mayans there resides an inability to understand or even acknowledge the bigger if not more accurate picture of time; a result of an entirely artificial and mechanistic timing sensibility (Argüelles, 2002; Stray, 2005). Argüelles (2002) states that all reality flows from one's consciousness, and the greatest polluter of consciousness are the complaints of 'no time'. What is more, it is advised that to take hold of one's mind, one needs to take charge of one's time (Argüelles, 2002).

India's view of time is eternally cyclical in conceptualisation, perceived as phases that are recurrent. For example, just as we experience the four seasons year after year, the soul also moves in cycles to pass from one body to another (Prabhupadā, 1993; Schein, 1992). The knowledge required to appreciate this type of temporal consciousness is given in the "Bhagavad-gītā As It Is"- a teaching from the Vedas. To elaborate, "The Sanskrit verbal root of veda... means knowledge. Any knowledge you accept is veda, for the teachings of the Vedas are the original knowledge" (Prabhupadā, 1993: v).

In view of India's perception of life as an endless cyclical process, it is stated in the "Bhagavad-gītā As It Is" [2:13] (Prabhupadā, 1986) that, "As the embodied soul continuously passes, in this body, from boyhood to youth to old age, the soul similarly passes into another body at death. A sober person is not bewildered by such a change". Such writings in addition to lectures by Prabhupadā also explain how virtually every native of India, from the farmer to the Heads of State, take matters such as reincarnation for granted (the cycles of life and death/ leaving one's body and entering another).

In terms of these differing beliefs, influences, and interpretations across cultures, temporal perspective and orientation are factors that demand closer examination, particularly as time relates to how cultures develop as well as how people of different cultures experience the world (Das, 1987; Hall, 1989; Lewis, 1995; Mosakowski & Early, 2000; Munn, 1992; Schein, 1992). "The basic understanding is that one's concept of time is culture-based" (Cotte & Ratneshwar, 1999: 187).

Research from across disciplines demonstrates that time is a multifaceted concept, as many different types exist, and of which are perceived differently across cultures (Clark, 1985; Cotte & Ratneswhar, 1999; Gurvitch, 1964; Hall, 1989). It is also purported that differences in time perspective are more elementary to an understanding of human behaviour than cultural or individual idiosyncrasies (Hall, 1989; Jones, 1988; Levine, West & Reis, 1980). This is further evidenced by the fact that cross-cultural differences in time perceptions are reflected in behaviour, such as daily rhythms, and temporal pacing (Hall, 1989; Levine *et al.,* 1980; Schein, 1992).

In an organisational setting, subjective temporal horizons of individual actors are manifest as a part of their culture, and as defined by Schein (1990: 111), organisational culture is "...a pattern of basic assumptions- invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration- that has worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

Interestingly, this present discussion of culture and temporality exhibits a great number of similarities regarding how both constructs subliminally affect behaviour. Nonetheless,

time's affect on behaviour is not on a conscious level for many. Individuals know how they want to spend their time but they do not necessarily know how to use or experience it (Greengard, 2001; Mitchell, 1994). In fact, "Cultural concepts of time are not immediately perceptible or distinct but when they are examined it becomes apparent that they represent strong normative forces affecting both the behaviors and cognitions of members of a culture" (Koehler-Jones, 1995: 1).

2.4.1 Temporal Management and Orientation

Hall (1989) proposed that an individual's temporal orientation is predominantly a cultural manifestation, which may be used as a means for gaining insights into culture. And although the literature identifies a variety of socio-cultural influences deemed to affect management of activity-to-time behaviours, i.e., polychronicity (Manrai & Manrai, 1995), culture is one salient theorised influence (Cotte, & Ratneswhar, 1999; Hall, 1989; Zhang *et al.,* 2004).

When scheduling events the influence of culture shapes whether people prefer point or range referents (Blount & Janicik, 2001; Hall, 1989), which further coincides with cultures that run on either clock or event time. Examining existence in accordance with clock time, as found in North American and Northern European societies, one finds that the starting and completing of activities adhere to pre-determined agendas that are in keeping with planned dates and times. Time-related inclinations and expectations are very much aligned, as evidenced by how individuals allot time with little room for negotiation, and assuming activities to take place when expected (Blount & Janicik, 2001; Hall, 1989).

In comparison, existence according to event time, as with Southern European, Native America, Latin America cultures (Hall & Hall, 1989), and more ancient countries, i.e., in India and Asia in general, events come to pass in relation to others. Expectations of duration are vague, as an event will take as long as it takes. Schedules are subject to flexibility, and timing is handled with qualities such as experience (Blount & Janicik, 2001; Hall, 1989). "Thus, in clock time cultures, temporal referents tend to be more specific, whereas in event time cultures, they tend to be more fluid" (Blount & Janicik, 2001: 569).

In terms of actually scheduling behaviour, Hall (1989) explains that in the work environment of polychronic (P-time/ PC[11]) cultures, the organisation determines "what" is performed via an analysis of employee activities, leaving the individual to determine the scheduling of "how" and "when" each activity is performed. As emphasised by Hall, (1989: 50) "For an employer to schedule a subordinate's work for him would be considered a tyrannical violation of his individuality- an invasion of the self." For those people in monochronic (M-time) cultures the situation changes drastically, as it is the employer's responsibility to schedule the activity, leaving analyses of work activities to the individual.

Das (1987) emphasised that individuals differed in how they experience the passage of time, and that such differences are of influence when determining a preference for either short or long range planning. "An important aspect of an individual's temporal orientation is the length of his or her time horizon and the planning function in modern management makes the concept of time horizon and individual differences regarding it very important" (Bluedorn & Denhardt, 1988: 308).

From a consumer's point of view such a temporal horizon may guide how frequently goods are purchased, the preferred rates of adoption, and an individual's preferences for stockpiling behaviour (Schiffman & Kanuk, 2000). In view of temporal research in the realms of consumer behaviour, studies have focused on how and where people allocate their time resources as individual entities as well as within communities, to further encourage empirical research on individual uses of time (Kaufman, Lane & Lindquist, 1991a; Robinson, 1977).

Cultural differences in time perspective can be understood with reference to the proximity of goal setting behaviour, as determined by differing cultures (Jones, 1988). "Achievement is defined generally in terms of successful goal-directed behavior. People set goals, then adopt strategies and behaviors intended to attain those goals. Goals typically are to be met at some point in the future, and behaviors carried out in the present are expected to increase the probability of reaching the goals. Thus achievement

[11] To refer to the concept of polychronic time use P-time and PC are terms to be used interchangeably. Likewise M-time and MC refer to the concept of monochronic time.

is related to goal setting and attainment, both of which are set in the future" (Jones, 1988: 23).

In accordance with this view, a future time perspective is a cognitive process deemed essential for achievement (Nuttin, 1985). The preference of maintaining a future time perspective over time is a function of the belief that there is a high expectancy that present behaviours raise the probability of attaining future goals; as well as a function of the tendency to value goals whose attainment occurs only in the future.

The latter tendency suggests, "that an emphasis on, and greater value of *distal* goals is a characteristic of future time perspective. In support of this implication...during cultural evolution, different ecological requirements placed specific demands on temporal perspectives. Those cultures that evolved in mild climates in general were not required to consider future goals in the formulation of present activities. The year-round availability of sustaining goods, and the general absence of threatening environmental changes, permitted a focus on *proximal* goals that could be satisfied in the present or relatively near future. In contrast, inclement climates placed future considerations at the forefront of adaptability and survival" (Jones, 1988: 24). Thus, to survive and prosper in such 'inclement' conditions the logic in placing higher levels of value on planning, which accounts for the future, is easily recognisable.

To elaborate upon the concept of preferred temporal orientation the following section introduces Hall's infamous monochronicity-polychronicity continuum, to reveal possible variations to the theme of "activity-to-time" (clock-time or event-time) management.

2.4.1.1 Monochronic and Polychronic Time

"Time is one of the fundamental bases on which all cultures rest and around which all activities revolve. Understanding the difference between monochronic [sequential] time and polychronic [synchronic] time is essential to success in international business" (Hall & Hall, 1990: 179). The scope of variability regarding time is demonstrated by Hall's polychronicity-monochronicity continuum, which describes a cultural construct comprising different ways of organising activities (with regards to temporal management and allocation).

Though the continuum has been described as consisting of intermediate preferences (Bluedorn & Denhardt, 1988; Kaufman-Scarborough, & Lindquist, 1999; Lindquist & Kaufman-Scarborough, 2004; Slocombe, 1999), these intermediate preferences are, as yet, undefined by the literature in terms of actual measurement. Specifically, it is the aim of the present thesis to conceptualise the midrange category of the IPV (Inventory of Polychronic Values) or MPAI3 (Modified Polychronic Attitude Index 3) as a 'dual MC & PC approach', and 'neutral' for when the majority of scale responses are scored as 'indifferent' (neither agree or disagree).

Polychronicity is a temporal variable of culture, which emphasises a prioritised orientation towards people and the completion of events (Ancona *et al.,* 2001b; Arndt *et al.,* 2006; Hall, 1989; Onken, 1999). In contrast, monochronic cultures adhere to clock time rather than social or event time as pre-determined schedules and deadlines dominate, to duly determine and schedule behaviour (Arndt *et al.,* 2006; Hall, 1989; Mets, 2002; O'Hara-Devereaux & Johansen, 1994).

Monochronic time is tightly compartmentalised with the schedule deemed as sacred, compared to polychronic time, which is more process-oriented, open-ended, and prioritises the completion of a task or communication as more important than the schedule (Hall, 1989; Mets, 2002; O'Hara-Devereaux & Johansen, 1994; Schein, 1992). Monochronic time epitomises a one-track, clock-time mentality characterised by discrete units of measurement, linearity and task achievement, whereas polychronic time emphasises a multi-track event-time mentality, allowing many events to occur simultaneously with no precise end in sight (Adler, 2002; Mets, 2002; O'Hara-Devereaux & Johansen, 1994).

Here are two very distinct ways that both individuals and cultures may be temporally oriented: monochronically or polychronically (Hall, 1989; Kaufman-Scarborough, 2006; Mets, 2002; Schein, 1992), whereby people of such orientations are referred to as monochrons and polychrons respectively (Kaufman-Scarborough, 2006; Ruiz & Reynolds, 1999). Monochronic time is objectively measured by the clock, and thus, ordinarily determined prior to the performance of one's activity via the means of planning and scheduling (Hall, 1989; Kaufman-Scarborough, 2006; Mets, 2002; Schein, 1992). Moreover factors such as speed, promptness, punctuality, and conciseness are of

great value in conceptualising monochronic time. Accordingly, such a view of time is perceived as a highly focused and efficient time management approach, employed by individuals to deal with responsibilities related to living and employment (Hall, 1989; Kaufman-Scarborough, 2006; Mets, 2002).

In comparison, the polychronic mode of time management accounts for several intricate factors that revolve around the use of instinct and intuition. Hence, the polychronic approach to time greatly values factors such as imagination, inspiration, intuition, dedication, and flexibility. For individuals that prefer to perform tasks polychronically, a tendency to prioritise relationships over timetables is strongly evident and goals such as bonding, trust, satisfaction and quality of life have an effect on decision-making (Hall, 1989; Mets, 2002). The monochronic approach towards measurement, thoughts, and behaviours can readily be applied to tasks that are chiefly predictable like putting out the rubbish (Hall, 1989; Mets, 2002) or changing a light bulb. However, it is not applicable to such things as creating music, art, love, and innovation (Hall, 1989; Mets, 2002).

There also exists a lot of terminology across disciplines that is symbolic of polychronic time use, to include 'joint production', 'dove-tailing', 'parallel activities', 'primary-secondary' activities, and 'concurrent' activities (Kaufman *et al.,* 1991a; Kaufman-Scarborough, 2006). Even so, to clarify the finer details, Kaufman-Scarborough (2006: 68) proposes, "...that dovetailing is a unique time-use approach in which one activity is begun then monitored while another activity is being pursued. Such a definition is in contrast to strict polychronicity, in which several activities can actually be ongoing at the same time, such as shopping whilst socializing with one's friends. Thus an important distinction can be made in that strict polychronicity characterizes two ongoing activities, while dovetailing is composed of one ongoing activity and one that occurs intermittently, or two activities that are interchanged, rather than simultaneous."

This line of reasoning mirrors that raised by Arndt *et al.,* 2006, whereby distinctions are drawn between behaviours that are 'multi-tasking' (polychronicity) and 'task-switching' (more akin to dovetailing). Even so, with at least three different behaviours occurring simultaneously the opportunity for both multi-tasking and multi-switching to concurrently occur is also apparent.

Interest in multi-tasking activities is a topic of growing interest as demonstrated by researchers involved in leading time studies that became aware of the sizeable effect the addition of polychronic time use patterns may well have on the analysis of time (Kaufman *et al.,* 1991a,b; Kaufman-Scarborough, 2006; Robinson, 1977).

An interesting observation is how objective and subjective aspects of time reckoning (Feldman & Hornik, 1981; Hornik, 1984) seemingly correlate with culturally shaped patterns of time use; namely, monochronic and polychronic activity patterns respectively (Kaufman-Scarborough & Lindquist, 1999a,b). Though not empirically tested, objective methods of time reckoning may correlate with monochronic time behaviours, particularly in terms of adhering to activities that are 'objectively' scheduled by the clock. In contrast, subjective time is argued to be of the mind; rooted in perceptions. Furthermore, it is argued subjective time estimates are more oriented by the event rather than clock-particularly as time estimates are made relative to the activities that need to be performed, and thus, constitutes more of polychronic (event) consciousness (Kaufman-Scarborough & Lindquist, 1999b). In addition, polychronic and monochronic cultures have also been likened to societies that are collectivist and individualist, respectively (Khaled, Barr, Noble, Fischer, & Biddle, 2006)

Until recently, it was widespread practise in the field of consumer research to only reckon and interpret time use patterns on the grounds of standard clock (objective) measurable characteristics, i.e., studies on a consumer's use of time via time diaries (Hornik, 1984; Jackson-Beeck & Robinson, 1981), modeling of credit card accounts (Hornik, 1984; Kinsey, 1981) and strategic consumer shopping alternatives designed to re-establish temporal balance, as well as increase efficiency and satisfaction (Holman & Wilson, 1982; Hornik, 1984). As a consequence, the value of an individual's subjective feelings and experience of time as a measurable variable has been overlooked (Feldman & Hornik, 1981; Hornik, 1984; Kaufman-Scarborough & Lindquist, 1999b).

As such, former studies fell short of meeting the needs of social scientists, not satisfied with reckoning time purely in terms of accounting (Hornik, 1984). They sought to attribute some measure of value to the use of time; be it the subjective significance of an event, or satisfaction resulting from activity (Hornik, 1984; Feldman & Hornik, 1981). To elaborate, "Despite the pivotal importance of time as both a cause and effect, students

of consumer behavior have either treated it as a given, or have dealt with it indirectly in terms of the goods and services that occupy time. They use the term 'lifestyle' to characterize a set of consumer decisions relating to the acquisition of goods and services. In reality, the decisions in question are based on the allocation of time among the various activities involved in their consumption, something that might more accurately be described as 'timestyle'" (Feldman & Hornik, 1981: 407).

Fortunately, change is inevitable, and times have changed. In present times, many researchers have designed improved methods to study time use patterns, acknowledging the worth in measuring time perceptions to aid interpretations of empirical research (Conte *et al.,* 2001; Fraisse, 1984; Graham, 1981, 1982; Hornik, 1984).

Hence, with specific reference to consumer time, a useful categorisation of an individual's decision-making as regards the allocation of time seems somewhat sensitive to the following distinct aspects: "(1) the activity within the 'time space'; (2) the personal, psychological space of the consumer as it relates to the needs and perception and evaluation of alternative need-satisfying activities; and (3) the presence of environmental or situational factors that constrain choice" (Feldman & Hornik, 1981: 408).

Furthermore, it is argued that proper advancement in such research will only become apparent when researchers undertake a dialectical approach involving two kinds of empirical validation. In other words, to apply numerical and objective findings to comprehend social situations, and applying observations of a situation to comprehend one's numerical and objective findings (Calder, Phillips & Tybout, 1981; Graham, 1982; Hornik, 1984; McGrath & Kelly, 1988).

As can be seen, the remit for temporal research is fast expanding and any conceptual model of temporal activity demands an in-depth enquiry of all eventualities and potential patterns of behaviour; not just those that are only present in one's cultural environment for example. "It is impossible to know how many millions of dollars have been lost in international business because monochronic and polychronic people do not understand each other or even realize that two such different time systems exist" (Hall & Hall, 1990:16). Hence, though different types of time use exist, any type(s) may need to be

considered to bring about success in cross-cultural trade and communication. For a summarised evaluation of monochronic and polychronic time patterns please refer to Table 2.4.1.1A below.

Table 2.4.1.1A: Monochronic and Polychronic Time Differences in Business

Monochronic Individuals	Polychronic Individuals
Perform one task at a time	Perform many tasks at once
Concentrate well on the task at hand	Are easily distracted and vulnerable to interruptions
Time commitments, such as deadlines and schedules are taken seriously	Time commitments as an objective to be achieved only if possible
Low context- high need for information	High context- already have information
Committed to the job	Committed to people
Religiously adhere to the schedule and plans	Plans are often and easily changed
Prefer not to disturb others and follows norms of privacy, politeness and consideration	More concerned with relationship building than with privacy
Show consideration for private property and rarely lend or borrow	Borrowing and lending is often and easily done
Promptness is emphasised	Promptness is based on the relationship
Accustomed to short-term relationships	Strong tendency to form lifetime relationships

Source: Hall & Hall, (1990)

Citizens of an industrialised social environment have ordinarily been more monochronic in the ways they manage time (Hall, 1989; Lewis, 1995). Additionally, those with a linear-orientation towards time processing have been defined more so as monochronic, yet increasing work demands are polychronic in nature and demand simultaneous attention (Adler, 2002). "Now people are required to be able to master fluid and flexible temporal regimes, flexibility being key: indeed, teleworking highlights a move towards more 'task-oriented' working where work is focused on the task, not the time taken to carry it out. This in turn promotes less separation between 'work and leisure', as the working day lengthens or shortens according to what is to be carried out, not to clock time" (Francis-Smythe & Robertson, 1999b: 276).

Nevertheless, "Monochronic people tend to sequence communications as well as tasks. They would not be inclined, for instance, to interrupt a phone conversation in order to greet a third person. Polychronic people can carry on multiple conversations simultaneously- indeed, they would consider it rude not to do so" (O'Hara-Devereaux & Johansen, 1994: 3). Thus, polychronicity also describes the behaviour of an actor who treats unplanned events and interruptions as equal to planned events (Arndt *et al.,* 2006; Bluedorn, Kaufman & Lane, 1992). It seems reasonable to assume therefore that in assessing the impact of increasing demands, polychronic individuals will be more proficient than monochronic individuals at allocating appropriate resources of attention, and will experience lesser degrees of negativity relating to time urgency, such as impatience and irritability, in coping with unanticipated events.

In view of such findings it is important for researchers to account for situational context (i.e., home versus work environment) when making comparisons of response behaviours (Feldman, & Hornik, 1981; Francis-Smythe & Robertson, 1999b; Kaufman-Scarborough, 2006). This is particularly appropriate, as today's world of commerce is becoming a culture that now accepts taking work home, as well as accepting the need to check e-mails over the weekends and holidays to avoid feeling overloaded and stressed (Brady, 1999; Greengard, 2001; Kaufman-Scarborough, 2006; Rau-foster, 2000). Also to account for is that the success of both polychronic and monochronic orientations is determined by the context of work to be performed (i.e., job requirements and task complexity), and that each approach may need to be matched to different circumstances and settings (Bluedorn & Denhardt, 1988; Conte, Rizzuto & Steiner, 1999; Ruiz & Reynolds, 2007; Schein, 1992).

Traditionally, the monochronic approach to managing time has emphasised the separation of business and pleasure, led by the belief that they do not mix. Yet, mixing business and home-related tasks seems essential today, and demands more of a polychronic approach (Hall, 1989; Francis-Smythe & Robertson, 1999b; Kaufman-Scarborough, 2006).

"Efficient polychronic people...can become extremely valuable to the company, because what they do would take more than one person. They become essential and usually have a secure job. However, these people are usually so efficient that they become

unpromotable...Interestingly, what we have found is that those who are monochronic are more easily promoted because another person can more easily fill their job. This creates a 'ceiling effect' for many efficient polychronic people, who, while being appreciated in their companies, see their efficiency as a block to a quicker promotion" (Adler, 2002: 2).

"We may find that in turbulent business times such as the 1990's, polychronic-time planning could have unforeseen advantages: after all, relationships tend to outlive the most objective data. Furthermore, polychronic workers function with far greater comfort and assurance in that sea of information, which threatens to swamp monochronic cultures" (O'Hara-Devereaux & Johansen, 1994: 4).

Polychronicity is a multi-faceted construct of culture, and as with banana time (section 2.3) it encompasses three distinct categorisations of time that build a temporal framework (Ancona, *et al.,* 2001b). To recap, firstly in terms of multiple meanings, polychronicity as a conception of time is a socially constructed shared meaning (Ancona *et al.,* 2001b) and as expressed by Hall (1959), those holding the same view of time develop similar perceptions of desired behaviour and acceptable social norms.

Secondly, as an approach to the processing of information it refers to the mapping of activities over time; that is polychronic groups map a number of activities synchronically- many at a time, and monochronic groups map activities sequentially- one at a time (Ancona *et al.,* 2001b).

Lastly in attempt to describe an individual it refers to how actors relate to time, which in itself is a cultural manifestation (Ancona, *et al.,* 2001b; Hall, 1959; Hall, 1989) and as according to Hall (1959) polychronic and monochronic time systems are culturally defined with preferences indicated by interactional norms (i.e., individualistic versus collectivist) and patterns of time allocation (i.e., working hours and lunch breaks). "The Japanese for example, in the official business side of their lives where people do not meet on a highly personalized basis, provide us an excellent example of tight M-time" (Hall, 1989: 55).

Polychronicity is a concept of growing relevance within, say, the realms of business, consumer behaviour, marketing strategy, and cross-cultural research (Zhang *et al.,* 2005).

Consequently, research into the functions of polychronicity in terms of individual decision-making, as well as cultural and organisational systems and behaviours has depended upon the search for a reliable and valid tool of psychometric measurement. To date, efforts to quantify polychronicity have included the 'Polychronicity Index' (PI) by Haase *et al.,* (1979); the 4-item Polychronic Attitude Index (PAI) (Kaufman *et al.,* 1991a); Bluedorn, Kalliath, Strube & Gregg's (1999) 10-item Inventory of Polychronic Values (IPV); Kaufman-Scarborough & Lindquist's (1999a) Polychronic Attitude Index 3 (PAI3), as well as the modified version, (MPAI3) (Lindquist, Knieling, Kaufman-Scarborough, 2001). On the flipside, Frei *et al.,* (1999) created a scale to measure monochronicity.

All in all, and in accord with Nunnally (1978), the IPV by Bluedorn *et al.,* (1999) is highly reliable (Zhang *et al.,* 2005), producing a series of alpha coefficients at values 0.80 or higher, with a median of 0.84. Psychometrically, the IPV demonstrates the attributes of a sound (valid and reliable) scale apt for measuring the extent of polychronicity that operates as part of an organization's culture, also applicable as a measure of individual-level polychronicity.

Speed is a culturally temporal variable that is argued to correlate with polychronicity and is discussed in greater detail in the following section.

2.4.1.1.1 Polychronicity and Speed

A key feature of a polychronic culture is the capacity to be definitive in decision-making, as well as deliberate upon many alternatives at once (Hall, 1959; Mets, 2002; Onken, 1999). As the importance of gaining a competitive advantage grows, efforts by big business and global schools of thought need to transcend old and formerly established notions (D'Aveni & Gunther, 1994). Hence, in an age of increasingly competitive markets, new rules for hypercompetition emerge to develop a series of new advantages that disrupt (as opposed to maintain) the status quo (D'Aveni & Gunther, 1994). Poignantly, one realises that nothing will stay as it is, because time and change are unavoidable and at times interchangeable.

In implementing strategy, a successful hypercompetitive organisation enacts multiple strategies with surprise and speed, accompanied by both "simultaneous and sequential

strategic thrusts" (D'Aveni & Gunther, 1994: 31). "One of the factors that support a firm's success is that of organizational culture. Shaping the firm's culture in a way that enhances a firm's likelihood of success is one strategy that is difficult for competitors to imitate, and therefore, one of the most powerful strategies to implement" (Onken, 1999: 241).

"However, as a source of potential competitive advantage, cultural variables such as speed and polychronicity values have been largely ignored by scholars and managers alike" (Onken, 1999: 241). With respect to D'Aveni & Gunther's (1994) findings, if most industries are actually to become increasingly hypercompetitive "then it becomes a question of how to survive and compete in these industries" (Onken, 1999: 241). Taylor *et al.,* (1984) found in a study on research productivity, that the simultaneous performance of work on many projects was positively related to effective performance.

Eisenhardt (1989) found executives enacted enhanced decision-making strategies via the simultaneous deliberation of multiple alternatives. The study focused on fast strategic decision-making, in attempt to clarify research on how decision-making speed shapes performance measures of organisations steeped in environments characterised as high-velocity. Hitherto, "polychronic behavior and speed of decision making seem to be characteristics that enhance firm performance in hypercompetitive environments" (Onken, 1999: 234).

Contrary to such findings, cross-cultural research has characterised polychronic/ P-time cultures as exhibiting slower paces of life, with less regard for precise time-keeping and punctuality, as compared with monochronic/ M-time cultures (Hall, 1989; Levine & Bartlett, 1984; Levine *et al.,* 1980). Research undertaken on cultural differences that exist with respect to 'speed'/ 'pace of life' (Levine & Bartlett, 1984), evidence culturally-differentiated data on the speed with which certain transactions in life occur, how time is reckoned, and how time-related behaviours are judged and evaluated.

For example, it was found by Levine (1988) that in contrast to the United States, lack of punctuality and success goes 'hand in hand' in Brazil. It is not enough to attribute Brazilian lateness to a lack of caring, experiences with less accurate timepieces, or the virtual "lack of any public clocks" (Levine, 1988: 48), particularly as "Rules of

punctuality and tempo are closely intertwined with the more fundamental beliefs and values of a culture. It is assumed that those with high status and control will arrive late for appointments and that those of less importance will arrive on time. Lack of punctuality is more than merely acceptable in people with high status in Brazil. It is a badge of success. Successful people are expected to be unpunctual" (Levine, 1988: 49). The opposite is argued for societies such as America (and maybe even Britain) as resentment breeds for influential professionals, such as doctors, who may keep their patients waiting (Levine, 1988).

What is apparent is that in this world of ever-advancing technology, and rising temporal demands (especially, in high-tech e-commerce environments), individuals across many different cultures are reacting to technology to try and keep up with the ever-advancing pace of the hypercompetitive nature of their work. Workplace stress for sales employees is synonymous with 'time conflict' (Arndt *et al.,* 2006; Singh, 2000). Examining values within the work context of high temporal demands across different cultures, reveals that individuals placed in such environments are ever more experiencing very negative effects of working in hypercompetitive industries (Greengard, 2001; Lu, 2000; Krishna, 2000; Sheehy, 2000).

In the workplace the memos, e-mails, and project deadlines are incessant, enhanced by ever-escalating progressions in technology that take up more time. When time is not assigned to the workplace, employees and society on the whole, are always on the go, raising children, shopping, and housekeeping. In addition, the recurring cycle of relentlessly travelling to work, waiting for others, and hurrying through mealtimes merely render feelings of impatience, anger, and intolerance, as in spite of how fast one runs to keep up, it rarely ever seems fast enough (Greengard, 2001; Lu, 2000; Krishna, 2000; Sheehy, 2000).

"Workplace stress has extreme consequences in Japan, where the suicide rate among men has risen over the last 15 years. According to the [U.S.] government's Statistics Bureau, the highest suicide occurs in men from 35 to 44 years old, making it the 13th most common cause of death for men...Take the triple suicide in March 1998, when three Japanese men- all heads of car part companies- took their lives on the same night. The reason they gave? Poor company finances" (Lu, 2000: 1).

Such changes in the dynamics of contemporary lifestyles and employment are contributing to the rise of harm caused to a person's state of health and productivity. Conflict can be easily predicted, especially when considering that the Western workforce is one predominantly geared to a more monochronic style in temporal activity- partly as a consequence of twentieth century revolutions in industry, transportation and telecommunications. Moreover, it is assumed that a society ill-equipped with alternative temporal approaches for managing multiple activity patterns are prone to suffer consequences in their attempts to cope with working in environments that are becoming increasingly hypercompetitive.

In particular, it is argued that as a drain on a person's resources and energy, the increasing speed of hypercompetitive demands and work industries, which are increasingly polychronic in nature, will inevitably cause conflict and leave people feeling more and more overwhelmed and overloaded (Greengard, 2001; Lu, 2000; Krishna, 2000; Sheehy, 2000). Hitherto, today's work-related expectations are increasingly associated with rising levels of stress and anxiety (Brady, 1999; Lu, 2000; Manardo, 2000; Krishna, 2000).

Moreover, as a potential source of conflict, "an assessment of the congruence between preferred polychronicity and the requirements of the job (i.e., person-job fit) might reveal relations between a poor fit and health outcomes" (Conte *et al.,* 1999: 277). To test such a relation methodology employed by Slocombe & Bluedorn (1999) might be of use. These authors discovered that the congruence involving an individual's preferred level of polychronicity and experienced work-unit polychronicity was associated with greater organisational loyalty and commitment, as well as perceived fairness of performance appraisals (Conte *et al.,* 1999; Slocombe & Bluedorn, 1999).

In the context of work-related polychronicity, findings in the field of organisational studies seem in favour of a positive relationship between speed and polychronicity, whereas polychronicity in a purely cultural context seems to suggest more of an inverse relationship between speed, as measured by pace of life, and polychronicity. Reasons for why relate to the fact that polychronicity is a multidimensional construct, and corresponding scale measures, i.e., the IPV (Inventory of Polychronic Values) for

example, focus only on mind-based 'preferred time use patterns' (as opposed to the more socio-cultural, and emotional aspects of polychronicity). To illustrate, formative research conducted on polychronicity by Haase *et al.,* (1979) lead to a Polychronicity Index, which "taps the manner in which the person characteristically prefers to structure his activities and interpersonal relationships within the context of time and space" (pg. 272).

Thus, as with 'Time' the construct of polychronicity is multiplicative, and as revealed by Ancona *et al.,* (2001b) (see section 2.3: Time – Its Multiplicity of Meaning) polychronicity may be (i) *conceptualised* as shared meaning of time, (ii) a *way* of mapping activities over time, and (iii) represent *how* individuals relate to/ perceive time. Likewise, Palmer & Schoorman (1999), clarify the finer implications of polychronicity along similar lines, via a three-dimensional model consisting of 3 distinctive facets: polychronicity as i) context (culturally variant as to how a message is located- low and high); ii) time use preference (preferred temporal patterns); and iii) time tangibility (i.e., clock time MC/tangible and event time PC/intangible). Nevertheless, confusion still abounds and specifically with Type A behavioural patterns. Hitherto, this thesis offers an additional, more generic framework to enable greater clarity: the 'Emotion-Mind-Action' Complex (see chapter 4 section 4.2 and Figure 4.2A).

In view of such recent clarifications to the construct of polychronicity, no empirical research to date has investigated the cultural aspect of polychronicity, which accounts for a combined MC & PC approach. This is most surprising particularly as Hall (1989) states that a combined MC & PC approach is actually characteristic of high-tech societies- one example being Britain (Bradsher, 2007; <http://english.peopledaily.com/cn>; Piga & Poyago-Theotoky, 2005; The Economist US, 2001). Research into the dual approach is expected to benefit from enquiries relating to whether cultures of differing temporal orientations manifest differential measures of productivity, as well as eventual orientations towards stress or work. What is more, does any particular temporal culture show itself to be better equipped with respect to its approach to, and use of time?

By employing objective measures of speed and accuracy across diverse temporal cultures, measures of both time and productivity can be comparatively examined across

such diverse temporal orientations that battle to exist in today's changing world of ever-advancing technology and global competition. Thus far, the focus of research has been to expand upon the reasons for why the cultural continuum of time (monochronicity-polychronicity) is to be tested. Due to differential manifestations of behavioural norms across temporal cultures, outcome variables such as speed and accuracy are valid performance measures that benchmark the effects of cultural and individual idiosyncrasies, as well as sources of economic and personal success, i.e., efficiency and effectiveness, and personal achievements, respectively.

Hitherto, speed is a prospective indicator of efficiency as well as an objective (clock-based) measure of time, whereas accuracy may be measurable via test scores and an individual's level of intelligence; a stable individual-level difference, quantifiable via intelligence tests. The following section identifies methodological issues, which specifically relate to empirical temporal research on *polychronicity, speed, and accuracy.* For a methodological review of the main issues pertaining to cross-cultural management research, see Nath (1968).

2.5 Methodological Issues

Thus far, it becomes clear why 'Time' (temporal orientation) is proposed as a justifiable and illustrative variable for investigating the reasons for why certain cultural groups may be significantly different in decision-making, activity-to-time orientations, and task completion strategies, which are duly expected to impact upon measures of 'speed and accuracy' behaviours. Though numbers are on the rise, only a few marketing and management-oriented studies incorporate time as a direct causal variable of theoretical and empirical value (Lindquist & Kaufman-Scarborough, 2004; McGrath & Kelly, 1988; Mitchell & James, 2001; Mosakowski & Earley, 2000; Ruiz & Reynolds, 2007).

In actual fact, "Normally, the lag between measurement is chosen because of convenience, not theory, since theory rarely specifies the exact length of the causal lag" (Kenny, 1975: 894). Thus, by objectively measuring response behaviours in terms of the time lag between causes and effects (i.e., question posed and answer received), as well as the differences in rates, methodological shortcomings in time theory building are suitably addressed (McGrath & Kelly, 1988). This is of particular significance, especially as it was found in a review conducted by McGrath & Kelly (1988:19) that "the duration of the

interval between cause and effect is left unspecified in our theoretical formulations and in our interpretations of concrete findings."

To reiterate this position, in a paper presented by Bergstrom, Gershon & Lunz (1994), response time was assessed to determine effects resulting from item and examinee characteristics. In the context of both work and educational settings, individual performance levels were assessed by objectively measuring outcomes of speed and accuracy via the use of computerised tests (Bergstrom *et. al.,* 1994). With regards to examinee characteristics the only variable that significantly predicted variance between examinees was 'test anxiety'. All other examinee characteristics, gender, age, native language, and ethnicity did not predict any variance between examinees.

With respect to item characteristics response time was found to increase with increasing items, test length, and relative increasing item difficulty. Bergstrom and colleagues found that the examinee characteristics developed for the study did not relate to response time, yet more controllable factors, such as position of keyed response and item length did relate to response time.

In contrast to Bergstrom's study, this thesis purports that time [temporal orientation] is in and of itself, a plausible explanatory variable for investigating the reasons for why certain cultural groups are significantly different in response times. It is argued that patterns of time use are both culturally and individually influenced, which features as a core concept regarding this current research project. This is an approach designed to fill gaps in current research efforts, and conveys great meaning- especially when only a few studies have focused upon time as a direct causal variable of theoretical and empirical worth (Mosakowski & Earley, 2000). Similarly, outside the research fields of 'intelligence and reaction time' the subjective estimate of time (STE) has also been neglected from empirical investigation as a viable variable of predictive importance.

Hence, in order to tackle methodological shortcomings regarding objective and subjective temporal measurement one is encouraged to further investigate the significance of objective time as driven by theory, as well as account for relations with the more subjective side of time. In addition, how do these objective and subjective factors relate to measurable outcomes of performance and stress?

To reiterate, following an extensive review of the literature, no studies have been found that conceptualise the polychronicity continuum's midpoint (i.e., the IPV; Inventory of Polychronic Values) as a combined monochronic *and* polychronic approach for managing activities to time. If anything, the majority of studies conceptualise the continuum according to the endpoints only and the few studies that do acknowledge the value of the midrange category, argue that this category is neutral. Though this may be the case if the majority of the items of the scale are answered with an indifferent response (i.e., neither agree nor disagree), previous studies have not clarified this elemental point.

2.6 Chapter Summary: Literature Review I

It is interesting to see 'Time' is *the* most pervading force in current society, and yet remains a totally personal encounter. And despite the fact that the ways people 'cope' with life and its stressors are paramount to understanding 'high-speed, high-accuracy survival' little is known as to the actual mechanics at play, in terms of the actual coping processes involved, arguably mediated by cognitive appraisal (Folkman & Lazarus, 1980; Folkman *et al.,* 1986a,b; Kirmeyer & Diamond, 1985). Also, out of conscious awareness is one's relationship with 'Time'. Yet, how many of us even *have the time* to think about 'Time'?

To conclude this section, the way each individual handles stress or life crises is subject to mind- choice, interpretation and forms of coping that require mastery (Ogden, 2004), and answers may not always be readily available or even clear-cut as to what reactions are most optimal in avoiding harm.

To introduce the following chapter, 'Literature Review II' builds upon the research background presented in 'Literature Review I' by identifying the main constructs that relate to the interplay of polychronicity, performance, speed and accuracy. To ascertain an all-round impression of how variations in speed and accuracy manifest across cultures, key individual-level characteristics and traits of personality are discussed. The overt Type A behaviour pattern (TABP) is also featured due to its overlap with polychronic time use behaviours; specifically 'action-driven polychronicity', i.e., performing many tasks simultaneously and/or frequent switching between many tasks. Also introduced, are the stress-related outcomes of role overload and role ambiguity, which result from

work/information overload (a characteristic feature of global schools of thought, i.e., universities), as well as measures of satisfaction– a desirable end for most.

The following chapter also identifies the socio-demographic indicators (education, gender, age and employment), alongside traits of personality deemed relevant to tap the key antecedents of speed, accuracy, and other relevant performance-related outcomes, i.e., an orientation towards work and/ or stress. Hence, guided by theoretical reasoning and empirical findings, the measures of personality to be incorporated into this thesis include achievement strivings and impatience/ irritability, as well as self-efficacy and perceived control of time. Furthermore, an additional variable to expand upon is the role of subjective time estimation in relation to outcomes of task performance of varying complexity.

CHAPTER 3: LITERATURE REVIEW II

"It has become appallingly obvious that our technology has exceeded our humanity."
Albert Einstein (1879–1955)

3.1 Introduction

To open the part II of the literature review, related constructs including key socio-demographic indicators, such as education (Kaufman *et al.,* 1991a; Robinson, 1977), gender (Arndt *et al.,* 2006; Hall, 1989; Lindquist & Kaufman-Scarborough, 2004) and age (Arndt *et al.,* 2006; Cotte & Ratneshwar, 2003; Lindquist & Kaufman-Scarborough, 2004) have been a typical feature of empirical study concerning preferred temporal orientation, and are thus proposed for further empirical investigation.

In terms of chapter at hand, traits of personality deemed relevant to tap the key antecedents of speed, accuracy, as well as outcomes oriented towards work or stress are specifically presented. In particular, and as guided by empiricism and epistemology, the measures of personality incorporated by this thesis include achievement strivings and impatience/ irritability (correlates of time urgency; a core subcomponent of TABP), as well as self-efficacy and perceived control of time.

To set the scene and bring the afore-mentioned variables together into a framework, research has presented certain individuals as being more conscious of the passage of time than others (Conte *et al.,* 1995; Conte *et al.,* 2001; Kaufman-Scarborough & Lindquist, 2003). Heightened awareness of the passage of time, alongside strict adherences to schedules and deadlines, are characteristic of *time urgency*- a stable individual-difference variable (Conte *et al.,* 1995; Landy, *et al.,* 1991). The need for speed in increasingly competitive environments is viewed as a competitive advantage, and may lead individuals of certain cultural conditioning to become time urgent and undergo adaptive responses to role overload by performing many things at once; that is to perform polychronically (Frei *et al.,* 1999; Friedman & Rosenman, 1974; Haase *et al.,* 1979). Nevertheless, and as already noted, polychronicity is a multidimensional variable, and performing multiple tasks simultaneously is only one of its aspects (see Table 2.4.1.1A)

(Arndt *et al.,* 2006; Friedman & Rosenman, 1974; Haase *et al.,* 1979; Palmer & Schoorman, 1999).

Consequently, polychronicity also relates to time urgency, and therefore, speed (D'Aveni & Gunther, 1994; Onken, 1999). A trade-off of speed is inevitably accuracy (SAT)[12] (Sanders, 1990; Sheehy, 2000), and a mediating factor in attaining desired levels of speed and accuracy in today's day and age is *technology* (Rubin, 2001) (see also section 3.1.7).

Accordingly, 'Time' relates to the *context* of events or activities, which occur in and over time (Hall, 1989; Reinmoeller, 2001). For example, "*Polychronicity* in the realms of knowledge management includes exploring and exploiting the benefits of multiple temporal *contexts* in sequence or simultaneously" (Reinmoeller, 2001: 5). Thus, to convey a comprehensive depiction of a 'culture's management of time' vis-à-vis temporally related measures of performance, speed and accuracy, the following sections introduces related constructs commencing with a discussion of *personality, choice and reaction time.* This is followed by a discussion of Type A behavioural orientations, the 'Emotion-Mind-Action Complex', and other key constructs proposed as relevant to the present thesis.

3.1.1 Personality, Choice and Reaction

As stated by Hasse *et al.,* (1979: 274) "polychronicity is strongly rooted in cognitive and perceptual styles and abilities." And as a central construct under examination, the importance of personality (in addition to culture) upon temporal orientation is to be made apparent. And how, prey tell, does personality come about? Well, Mind (intelligence) is argued as the ultimate mediator whereby an affirmation of action is experienced from congruence across matters of the heart and thought (Dispenza, 2006; Monti, 2006; Walsch, 1997).

In an evolutionary documentary, "What the Bleep!? Down the Rabbit Hole" the mind, thoughts and behaviours are discussed in relation to new insights gained from science; specifically quantum physics. A number of scientists present the implications of miniature waves of possibility, addressing the 'What-Ifs' of our perceived realities,

[12] Speed-Accuracy Trade-off: (SAT)

including matters of Consciousness in the worlds of 'quantum', 'Time' and 'creation' (Dispenza, 2006; Goswami, 2006; Hameroff, 2006).

Dispenza (2006) relays the discoveries made in quantum physics over the past 20 years to explain how the brain can be either 'proactive' or 'reactive' when it comes to firing thoughts and new ways of response. One option is to consciously think about engaging a new and novel way to react to then allow the firing of new synapses (frontal lobe activity). Or one can merely allow a previously created neural net to fire and thus, react as one did in the past. What is more, old habits can be quick to create, particularly as the same event need only to occur twice before the brain starts working in a way to presume 'this is how it always is' and before one knows it, it becomes a habitual response.

So it seems the reason for why 'old habits die hard' is simply down to a chain of neurons that have already fired, re-firing! Unfortunately, this can also tend to a lot of our members of society not even engaging the frontal lobe, which actually enables us to think anew. And as this is the one thing that differentiates us from the animal species- the size of our frontal lobe- if it is not being used, what would be the point of it?

It is against this backdrop that emotions upon self-reflection in one's mind eye (the frontal lobe) can be assimilated, and thus become accepted by an individual. Alternatively, one's emotions could be looked upon as erroneous and create uncomfortable feelings of dissonance, and 'dis-ease'. Consequently, choices of reaction are down to each and every individual and whether people accept their imperfections or despise them. Accordingly, this creates feelings of either congruence or incongruence across aspects of oneself and one's personality. Thus, "A thing is only right or wrong because you say it is. A thing is not right or wrong intrinsically" (Walsch, 1997: 48). Yet, in those times of self-reflection, it is *'the Mind'* that thoughts enter into that determine how reality is perceived and experienced (Dispenza, 2006; Goswami, 2006; Hameroff, 2006). Though it should be noted that the 'Mind' is not the same as intelligence (particularly as some would even say that 'intelligence' is a gift) (Prabhupadā, 1993).

For example, in investigating relations across teacher burnout, stress, personality and social support, Mo (1991) proposed a model of 'Teacher Burnout' identifying the

occupation, in and of itself, as a critical cause of stress experienced by teachers. Key initiators of stress involved events organised by the school, as well as the role teachers are expected to play; that is, role conflict and role overload. Yet, in conjunction with the above paragraph, "Whether potential stresses are appraised as stressful depends on the teachers' background characteristics" (Mo, 1991: 5), measured by work experience, marital status, and social systems of support (Mo, 1991).

Identified as an important outcome, the Type A Behaviour Pattern (TABP) is particularly relevant to the thesis at hand, primarily in view of its polyphasic tendencies, as well as the amount of inconsistency gleaned from findings as to its relations with not only performance, but also stress. Hitherto, the following sections are to commence with a discussion of the TABP and other related outcomes of stress, namely role overload and role ambiguity. After that the variables deemed most significant to addressing afore-mentioned research gaps are presented. Conclusively, part II of the literature review involves an examination of the potential antecedents (in addition to preferred temporal orientation) of desired and undesirable outcomes of performance.

3.1.2 Type A Behaviour Pattern (TABP)

Formative research investigating the function of personality as an antecedent and/or mediator of the stress-illness association has focused upon observable outcomes such as the Type A Behaviour Pattern (TABP) (Booth-Kewley & Friedman, 1987; Friedman & Rosenman, 1959; Ishizaka, Marshall & Conte, 2001; Jepson & Forrest, 2006; Kirmeyer & Diamond, 1985; Ogden, 2004). Specifically, the importance of cultural, familial and environmental factors that shape Bandura's (1977a,b, 1986) social learning theory that has been applied to self-efficacy, is a psychological premise that has been further adapted to the examination of Type A behavioural differentials (Price, 1982; Wright, 1988).

Price (1982) presents a cognitive social learning model of Type A of social and cultural antecedents, which forms a basis for the development of the overt behaviour pattern. The model examines environmental and personal antecedents, in addition to specific vehicles of socialisation, i.e., family, schools, and the mass media, proposed to facilitate the learning of the Type A behaviour pattern via the transmission of sociocultural norms to the young.

Friedman & Rosenman (1974: 67) defined Type A as "an action-emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time, and if required to do so, against the opposing efforts of other things or people." Accordingly, characteristic traits of Pattern A include a continued aggressive drive for successful achievements and acceptance; competitiveness with ambitions to win; polyphasic involvements with pressures of deadlines; exceptional mental and physical alertness (Friedman & Rosenman, 1974; Jenkins, 1978; Jenkins, Rosenman & Friedman, 1967; Jenkins, Zyzanski & Rosenman, 1976; Matthews, 1982; Sutil *et al.,* 1998).

Also exhibited is a routine tendency to speed up the rate and pace of bodily and cerebral functions (Friedman & Rosenman, 1959; Jenkins, Zyzanski & Rosenman, 1971a,b; Rosenman & Friedman, 1961), yet only deemed to manifest when appropriately challenged by the environment (Bortner & Rosenman, 1967; Carver, Coleman & Glass, 1976; Sutil *et al.,* 1998). The Type A coronary-prone behaviour pattern (Glass, 1977; Jenkins *et al.,* 1976; Matthews & Haynes, 1986) has also been described to function as a variable measured continuously, spanning from extremely high levels of Type A behaviour to its non-existence; Type/ Pattern B (Friedman & Rosenman, 1974; Jenkins, Rosenman, & Zyzanski, 1974; Matthews & Brunson, 1979; Taylor *et al.,* 1984).

To clarify, "Pattern A[13] behavior is characterized by extremes of competitive achievement striving, time urgency, and aggressiveness. Pattern B is defined as the relative absence of Pattern A characteristics. Pattern A is not a set of personality traits, however. It is an overt behavior pattern that is elicited in susceptible individuals by appropriately challenging circumstances" (Carver, *et al.,* 1976: 460).

Thus, here lies the reason for why this construct of behaviour is referred to as the "Type A *Behaviour Pattern*", agreed upon by many as an action-emotion complex provoked by environmental stimuli perceived as uncontrollable and unpredictable (Carver *et al.,* 1976; Evans, Palsane & Carrere, 1987; Friedman & Rosenman 1974; Jepson & Forrest, 2006; Kirmeyer & Diamond, 1985; Kunnanatt, 2003; Weidner & Matthews, 1978).

[13] Pattern A-Pattern B and Type A-Type B are to be employed interchangeably, as abbreviations for the Type A [coronary-prone] Behaviour Pattern (TABP) and the Type B [non-coronary-prone] Behaviour Pattern. Moreover, Type As is an abbreviation for Type A individuals, and Type Bs for Type B individuals (Glass, 1977).

Nevertheless, it does seems that this point needs to be emphasised, particularly as a growing number of research efforts conceptualise Type A as a set of personality traits (Batigün & Şahin, 2006; Jex, Adams, Elacqua & Bachrach, 2002; Miles & Johnson, 2002; Mo, 1991; Moriana & Herruzo, 2006).

It is easy to see how confusion can occur particularly as certain personality traits (i.e., achievement strivings and impatience/ irritability) have been used to validate certain observable attributes that tend towards overt behaviour patterns, i.e., Type A. Even so, as Jepson & Forrest, (2006: 185) make clear, "Research examining *personality traits in connection* with stress and stress-related illness has focused upon Type A behaviour patterns...*Type A has been associated with a variety of personality traits*...including impatience, hostility, irritability, competitiveness and achievement strivings" (bold and italics added). Thus, as defined by Plutchik (1980: 173), a trait is "a tendency or disposition to react to interpersonal situations with certain emotional reactions." Conversely, Pattern A is an overt behaviour pattern provoked by certain kinds of environmental stimuli perceived as appropriately challenging (Carver *et al.,* 1976; Sutil *et al.,* 1998).

Though it is relatively straightforward to distinguish a personality trait from an elicited observable behaviour, in a final attempt to demarcate the provoked behaviour pattern, it is worthwhile to see how Type A was initially assessed. First and foremost, "Given that the Type A behavior pattern is a reaction to a situation, Friedman and Rosenman developed, as a means of evaluation, the Structured Interview (SI), to elicit a subject's responses to challenges faced in daily living situations including the frequency, intensity, and mode of expressing anger and hostility. Interviewers were instructed to provoke subjects and also to record behaviors including explosive speech, time-urgency, and motor characteristics" (Lachar, 1993: 143).

The motivating force behind research into the TABP concerned its role as a predictor of coronary heart disease (CHD) (Bortner & Rosenman, 1967; Friedman & Rosenman, 1959; Glass, 1977; Kirmeyer & Diamond, 1985; Price, 1982; Rosenman & Friedman, 1961; Matthews, 1982; Matthews & Haynes, 1986). Quintessentially, research into the TABP by cardiologists originated from the disciplines of health and industrial psychology to elucidate upon the patterns of behaviour adopted for pursuits of

employment and relaxation, but also for its relations with coronary heart disease (Evans *et al.,* 1987; Friedman & Rosenman, 1974; Lachar, 1993; Landy *et al.,* 1991; Kunnanatt, 2003).

Reasons for why stem from the lack of predictive quality gained from established factors such as high blood pressure, obesity, age, diabetes, cholesterol levels, smoking and physical inactivity, not able to fully account for the preponderance of CHD cases over recent decades (Houston, 1988; Jenkins, 1971). Strictly speaking then, an appropriate measure of the TABP is one that is predictive of the onslaught of coronary heart disease (Sutil *et al.,* 1998), rather than less fatal problems with health (i.e., headaches, respiratory problems, sleep, indigestion) that have been shown to relate to certain personality traits/ variables, i.e., achievement strivings and impatience/irritability (Conte, Mathieu & Landy, 1998; Spence *et al.,* 1987 & Spence, Pred & Helmreich, 1989).

Even so, one should not be quick to think that all achievement strivings and impatience/irritability, for example, tends towards overt Type A, especially as not all elements of the overt behaviour pattern are 'toxic' (Conte *et al.,* 1995; Booth-Kewley & Friedman, 1987; Frei *et al.,* 1999; Spence *et al.,* 1987 & 1989). To delve deeper, how do these traits of achievement strivings and impatience/ irritability vary across cultures? Do they manifest differential effects upon performance, as well as eventual orientations towards either stress or work? What elements are most predictive of a 'toxic' outcome? Though the questions are plentiful, and are to be addressed as best as possible by this thesis, the first question to consider is, 'what is a 'toxic' outcome?'

To identify the 'toxic' element of Type A, "Coronary heart disease is the term given to cardiovascular diseases that are characterized by an inadequate supply of oxygen to the heart. The major symptomatic forms of CHD are angina pectoris, that is, severe chest pain, and myocardial infarction (MI), that is, heart attack. Coronary atherosclerosis (narrowing of the coronary arteries) is considered the common substrate for the different forms of CHD" (Houston, 1988: 1).

Of significance is the role of 'Mind'/ 'Consciousness' (Folkman & Lazarus, 1980; Folkman *et al.,* 1986a,b; Dispenza, 2006; Goswami, 2006; Hameroff, 2006; Kirmeyer & Diamond, 1985). Specifically, Type A Behaviour Patterns are significantly related to

cognitive appraisal and coping (Folkman & Lazarus, 1980; Folkman *et al.,* 1986a,b; Kirmeyer & Diamond, 1985). "Cognitive appraisal refers to the gathering of information about what is wrong and evaluating the event's significance for personal well-being" (Kirmeyer & Diamond, 1985: 184).

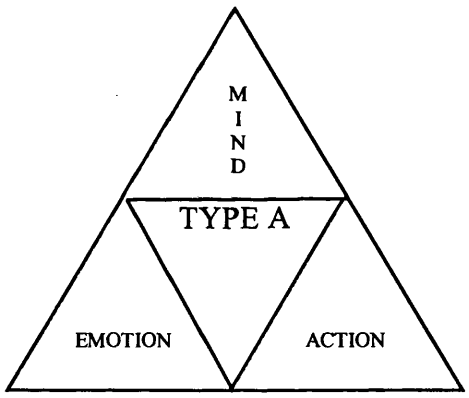
"Coping is defined as the cognitive and behavioral efforts made to master, tolerate, or reduce external and internal demands and conflicts among them. Such coping efforts serve two main functions: the management or alteration of the person-environment relationship that is the source of stress (problem-focused coping) and the regulation of stressful emotions (emotion-focused coping)" (Folkman & Lazurus, 1980: 223). In a paper by Matud, Camacho, Hernandez, Marrero, Carballeira, López & Rodríguez, (2004) entitled "Stress and Health in Spanish Women" an emotional coping style features to mediate the onslaught of depression, anxiety, and social/ somatic dysfunction symptoms. "Although stress measures accounted for approximately 14% of the variance, personal and social variables were also relevant, most noticeably emotional coping style, self-esteem, and social support" (Matud *et al.,* 2004: 738).

Emmons & Diener (1986) investigate the interplay of personality and emotion to ascertain whether certain kinds of people experience particular sets of emotions more so than others in particular settings. In accordance, a number of theories have been developed to conceptualise an interactive interplay of personality and emotions, to include arguments that such defining traits of an individual are a consequence of emotion(s) (Emmons & Diener, 1986; Plutchik, 1980). And if emotions were not hard enough to understand and deal with in the first place, based on a person's *display of emotion*, certain other individuals (if not groups of individuals and/or cultures) will then invariably pass judgment on that person's *personality* traits (Emmons & Diener, 1986; Plutchik, 1980).

In positioning Pattern A as a *behavioural outcome/coping style* of emotional and cognitive processes stimulated by a taxing environment, (as opposed to an *antecedent* of emotional and cognitive processes, i.e., a personality trait), 'Figure 3.1.2A' below displays a new, though straightforward model of how to conceptualise the TABP.

This amended complex serves to incorporate the value of cognitive appraisals and coping styles (Dispenza, 2006; Kirmeyer & Diamond, 1985). Hence, a new dimension, the medium of 'Mind' is incorporated into the 'action-emotion complex' of Type A Behaviour as initially conceptualised by Friedman & Rosenman (1974), and is coined as the 'Emotion-Mind-Action-Complex' (EMAC) of the Type A Behaviour Pattern (TABP). The theory that facilitates this approach as viable relates to that presented by Bandura's social cognitive learning theory (1977a,b, 1982) designed specifically for the construct of self-efficacy (see chapter 4, section 4.3.3.1). Yet, as can be seen, Bandura's social learning model is useful for other forms of coping, such as the Type A behaviour Pattern.

Figure 3.1.2A: The Emotion-Mind-Action-Complex (EMAC) Defining the Type A Behaviour Pattern



In terms of the above interplay upon Type A behaviour, 'coping' and 'appraisal' are essentially cognitive processes of the 'Mind' that enable an opportunity for one to self-reflect and deal with 'emotional' reactions/ expressions accordingly (if at all) (Folkman & Lazarus, 1980; Folkman *et al.,* 1986a,b; Dispenza, 2006; Goswami, 2006; Hameroff, 2006; Kirmeyer & Diamond, 1985). Such appraisals and efforts employed to 'cope' combine to affect an eventual implemented 'action' and serve to render states of congruence or incongruence that manifest as either Type A behavioural orientations towards stress or work (Folkman & Lazarus, 1980; Kirmeyer & Diamond, 1985).

"A measure of Type A... may be considered as valid if it demonstrates its relationship to other validated measures of the TABP, and if it can be shown that it helps to predict the appearance of a coronary disorder" (Sutil *et al.,* 1998: 43). And based upon clinical

observations performed over the past 50 years, a number of defining research efforts have occurred, connecting the overt Type A behaviour pattern to the increased incidence of CHD (Friedman & Rosenman, 1959; Houston, 1988; Price, 1982; Spielberger, Johnson, Russell, Crane, Jacobs & Worden, 1985; Sutil *et al.,* 1998).

Accordingly, with an aim to clarifying the research concerning Type A, certain empirical efforts may need to be revisited. For example, those that proclaim Type A to be set of personality traits rather than 'overt behaviour patterns' (though potentially attributable to certain types of people), is fundamentally dependent upon the nature of the task and environmental provocation (Bortner & Rosenman, 1967; Carver *et al.,* 1976; Sutil *et al.,* 1998).

Preliminary survey-based research include the Western Collaborative Group Study (WCGS); a large research project focused on the incidence of CHD across American middle-aged men (Friedman & Rosenman, 1959; Houston, 1988; Price, 1982; Spielberger *et al.,* 1985). And as already introduced, initial classification of subjects as either Type A or B was enabled via the use of clinically interpreted standardised interviews (SIs). Yet, such measurement across large groups is not always feasible and incurs heavy costs in terms of financial expense and time (Landy *et al.,* 1991).

As a consequence the use of self-report measures constitute the more prevailing standard instrument for data collection, and traditional options include the Bortner scale (Bortner, 1969), the Jenkins Activity Scale (Jenkins *et al.,* 1971a,b & Jenkins, Zyzanski & Rosenman, 1979), and the Framingham scale (Haynes, Levine, Scotch, Feinleib, & Kannel, 1978). In capturing Pattern A's core constituents of 'speed/ impatience', 'job involvement' and 'hard-driving behaviour', the Jenkins Activity Survey (JAS) boasts first-rate construct validity (Lachar, 1993).

On the downside, Edwards, Baglioni, & Cooper (1990) scrutinised the Bortner scale (Bortner, 1969), the Jenkins Activity Scale (Jenkins *et al.,* 1971a; Jenkins *et al.,* 1979), and the Framingham scale (Haynes *et al.,* 1978) measures of Type A. It was found that the measures contained problems namely inherent within conceptualisations of the time urgency construct (as with overt Pattern A itself) as unidimensional, alongside errors in measurement, and discrepancies surrounding core constructs. What is more, in terms of

the JAS, hostility and aggressiveness deemed elemental in matters of personal dissonance have not been accounted for (Lachar, 1993).

"Most studies that have assessed Type A behaviors with self-report instruments have failed to show any demonstrable relationship between behavioral disposition and cardiac disease states. One reason may be that self-report measures are oriented towards the assessment of stable traits, not situation-specific behaviors" (Lachar, 1993: 144). Hitherto, the problems surrounding Type A are accentuated as "It appears that every researcher working in the Type A domain has his or her conceptualisation and accompanying operational definition of the Type A construct" (Booth-Kewley & Friedman, 1987: 344).

Accordingly, in order to replicate findings cross-culturally, efforts to establish comparability and equivalence may prove problematic (Craig & Douglas, 2000; Reynolds *et al.,* 2003; Usunier, 1993). For example, in a study by Harding & O'Looney (1986: 413) "the proportion of British respondents using each JAS response category does not reflect the proportion of Type As and Type Bs in the population as the design of the JAS for American samples originally envisaged. Thus, more emphasis may be being placed on some items than on others because of this cultural difference in the use of available response categories...Jenkins himself has...admitted that the JAS has missed certain aspects in its measurements...Thus it would appear that the SI is using information in making its assessments that is simply not currently available from the questionnaire assessments of Type A behaviour."

As already hinted at, recent research on the TABP reveals that only some of its attributes are deemed harmful (Conte *et al.,* 1995; Booth-Kewley & Friedman, 1987; Frei *et al.,* 1999; Spence *et al.,* 1987). In terms of performance measures, the TABP is a construct that reflects attributes similar to those experienced by successful sales representatives (Lee & Gillen, 1989), and high achieving academics (Arndt *et al.,* 2006; Matthews, Helmreich, Beane & Lucker, 1980; Taylor *et al.,* 1984).

Thus, certain cases of Type A individuals have demonstrated many a trait deemed favourable for the performance of high quality work. For instance, Type A's have been shown to concentrate their attention upon task performance, and pay no heed to other

factors present in the situation, such as the immediate environment, which might divert their focus from performing the task at hand and potentially diminish performance (Glass, 1977; Matthews & Brunson, 1979; Matthews *et al.,* 1980; Taylor *et al.* 1984). Furthermore, Type A's also declare to experience lower levels of tiredness and other bodily effects as compared to Type B's (Matthews & Brunson, 1979), though this behaviour has been proposed as a consequence of fatigue suppression (Carver *et al.,* 1976; Glass, 1977), a concept discussed later on in the thesis.

Even so, research also exists to counter the claims of productive gains of performance care of the Type A behaviour pattern (Barling & Beattie, 1983; Lee & Gillen, 1989; Metteson, Ivancevich & Smith 1984; Mo, 1991). For example, in Lee & Gillen's (1989) study concerning the effects of the TABP and perceptions of self-efficacy upon sales performance, the Type A behaviour pattern was found to be unrelated to both self-efficacy and sales performance. Such results imply that a more detrimental relationship exists between Type A and performance measures, i.e., sales quantity. For findings relating to self-efficacy see section 3.1.5.

Likewise, consistent relations have also failed to manifest across the Type A behaviour pattern and stress (Frei *et al.,* 1999; Sager, 1991). Admittedly, the majority of research investigating the mechanics of Type A and stress-related outcomes implicate Type As experience a much tougher time of it than their Type B counterparts, and especially in terms of work and role overload (Brief, Rude & Rabinowitz, 1983; Evans *et al.,* 1987; Frei *et al.,* 1999; Matud *et al.,* 2004).

However, research does exist that runs counter to this afore-mentioned Type A-Stress relationship. For example, in an examination of Type A behaviour, stress, performance attributions and subjective workload, Froggatt & Cotton (1987: 95) found "Type As did not perceive the role overload or underload as more stressful than did Type Bs". To explain this finding, the authors propose that the lack of Type A and Type B variability obtained from self-reported stress levels may result from Type As actively seeking out those environments and situations that are definitively more challenging.

To what extent do these relations vary outside of the USA (where the vast majority of such research has been conducted)? Despite the lack of cross-cultural comparative

research into Type A (Frei *et al.,* 1999), it may be plausible to suggest that cultural deviations are likely (Evans *et al.,* 1987; Frei *et al.,* 1999; Levine & Bartlett, 1984). For example, Evans *et al.,* (1987) conducted research across samples drawn from both America and India to find definite cross–cultural variability concerning the Type A behaviour pattern across male bus drivers.

In another cross-cultural study on Type A by Levine & Bartlett (1984), the Type A behaviours and mind-set held by American students, significantly and positively correlated with pace and punctuality. Conversely, a similar tale failed to manifest concerning students of India (Levine & Bartlett, 1984). In response and relating to the continuum of mono/polychronicity, Frei *et al.,* (1999: 377) state, "These results suggest that monochronicity may overlap with the Type A construct in some cultures, but not in others." Yet, in view of the limited material available on cross-cultural Type A behaviour variability (e.g. Levine & Bartlett, 1984; Evans *et al.,* 1987), as well as the heavy American bias, (which nevertheless still constitutes a great service), a lot more research involving other cultures in this field is recommended.

Alternatively, in terms of 'within-country' samples outside of the US, examples of TABP research include Jepson & Forrest's (2006) study of workplace stress of teachers in Britain and Kunnanatt's (2003) study of managerial performance among executives of the banking world in India. Also, Matud *et al.,* (2004) elucidate upon Type A, stress and health in Spanish women, and Mattioli, Bonatti, Zennaro & Mattioli's (2005) study based in Italy concerns the interplay of personality, socio-economic factors, acute life stress and acute lone atrial fibrillation.

In response, the effects of Type A upon performance and stress demand more clarification via the use of a psychometrically sound measure of the construct that is universally accepted (Booth-Kewley & Friedman, 1987), and which also allows for differential effects, 'toxic' and 'non-toxic' that account for those more desired orientations towards work, as well as those not-so-desired orientation towards stress (Sutil *et al.,* 1998).

Why? Well, it is highly likely that evaluations of the construct as a global measure are misleading due to its noticeably differential effects; positive and negative (Conte *et al.,*

1995). "Sooner or later the dramatic individual differences that can be observed among persons classified as Type A need to be accounted for, as well as intra-individual differences across time and situations. A useful theoretical model of the Type A problem would allow us to predict and explain factors that might account for these observed differences, and improve our measuring tools so as to better identify persons who might be at risk" (Price, 1982: 24).

Since, recommendations have been made by Edwards *et al.,* (1990: 452) asserting, "global measures of TABP be abandoned in favor of measures of TABP dimensions that collectively reflect the constellation of behaviors constituting the TABP." Reasons for abandoning the global Type A reside in the fact that not all elements of Type A are 'toxic' (Spence *et al.,* 1987; Sutil *et al.,* 1998). Fortunately, the ERCTA scale developed by Sutil *et al.,* (1998) is argued to not only be a predictive measure of CHD, but also improves upon traditional measures and conceptualisations of Type A espousing a unidimensional behaviour pattern. Specifically, the ERCTA scale is bi-dimensional in approach, and accounts for eventual orientations towards either work or stress. Also of importance is the need to make suitable assessments of Type A Behavioural Patterns that are distinct from those that assess personality traits.

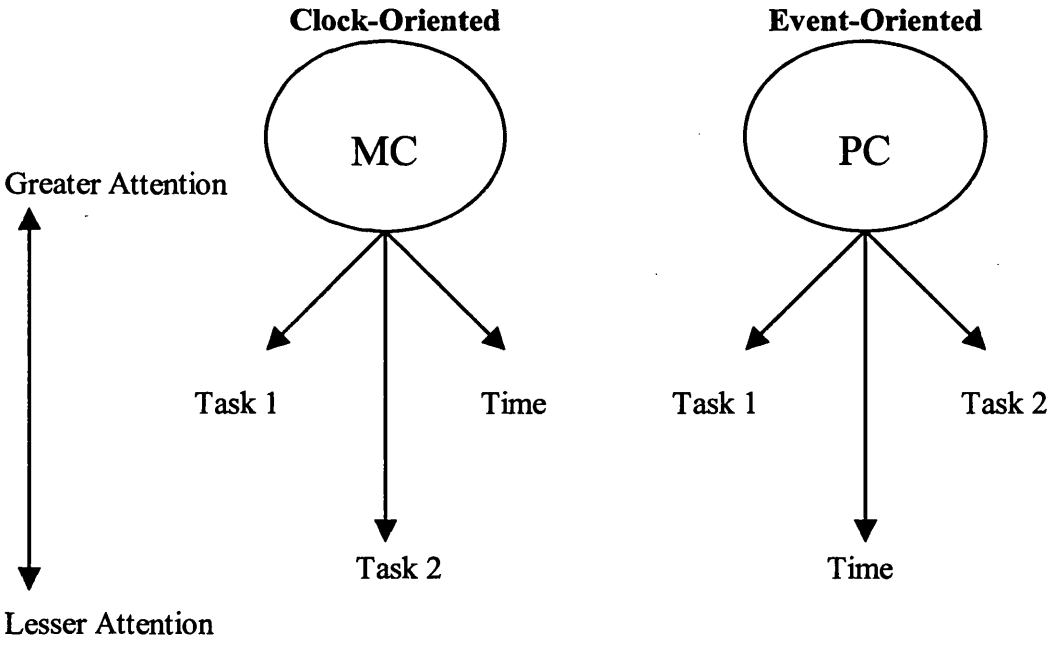
In view of the focus of this thesis upon the mono/polychronicity continuum, some overlap exists with the TABP (Frei *et al.,* 1999; Palmer & Schoorman, 1999). For example, on a par with a more monochronic orientation, Type A's have been found to concentrate their attention on the core areas of their environment and the task at hand, and less so on the peripheral issues than Type B's. This leads one to reason that in a test situation requiring an individual to equally manage and attend to two or more concurrently attempted tasks in a given period, Type A's are assumed to perform less proficiently than Type B's (Matthews & Brunson, 1979). To reiterate, the "...major hypothesis was that Type A's focus their attention on central aspects of their environment, consequently they attend less to peripheral aspects than Type B's do" (Matthews & Brunson, 1979: 2082).

Accordingly, Type A's have been found to actively inhibit outside distractions to enable improved levels of performance (Matthews & Brunson, 1979). Implications of such behaviour suggest that such active lack of attentiveness may also lead Type A's to

suppress physical health symptoms, as a result of their low salience (Carver *et al.*, 1976; Glass, 1977; Matthews & Brunson, 1979; Weidner & Matthews, 1978).

The theoretical premises that govern the allocation of attention are particularly salient issues. Specifically, the theories relate to temporal information processing (see section 3.2.1), which assume humans have a limited capacity of attentional resources, whereby the "Focusing of attention is said to occur when performance on the secondary task is poor and performance on the central task is the same or good, compared to a referent" (Matthews & Brunson, 1979: 2082). Such focusing aptly describes the performance of Type A individuals as compared to a Type B's. With respect to the differences that may exist between monochronic and polychronic individuals in an approach to tackling two tasks or more at a time Figure 3.1.2B below portrays where each group may prefer to allocate greater amounts of attentional resources.

Figure 3.1.2B: The Clock versus Event Orientation Model



Thus, research on Type A's bears a number of similarities to that of monochronic cultures, particularly in terms of how attention is focused and allocated. Moreover, for Type A's, one trait consistently observed as evident in these individuals is a high concern for matters related to time and timing; namely, time urgency. Similarly, individuals of monochronic cultures are argued as more clock than event-oriented, and therefore argued to allocate greater amounts of attentional resources to time related issues than those of

polychronic cultures, i.e., start and finish times; duration; and scheduling. Alternatively, in response to role overload, Type A's may perform more polychronically than Type B's to achieve more and more in less and less time.

In view of the divergent results concerning the multidimensional Type A Behaviour Pattern (Mudrack, 1999), differential effects are expected (and some may be more desirable than others). Fortunately, the double-edged sword of the Type A behaviour pattern has been conceptually and empirically tackled by Sutil *et al.,* (1998), and is proposed for cross-cultural testing for its emergence and deviation. In addition, and as already introduced 'one need not be Type A to be time urgent' (Krishna, 2000) yet, 'time urgency is a characteristic trait of all Type As'.

In accordance with Conte *et al.,* 1995, time urgency is a multidimensional construct with definitive links to achievement striving (AS), impatience/ irritability (II) and activity level. And seeing as you do not need to be Type A to be time urgent, it is argued that achievement strivings and impatience/ irritability may function as useful predictors of the eventual overt Type A behaviour pattern. Whether this happens or not is further argued to depend upon the kind of mind it goes into (Dispenza, 2006; Goswami, 2006; Hameroff, 2006).

Specifically, the mismanagement of person's achievement striving and impatience/ irritability may lead to an outcome of Type A more oriented towards stress than work. Specifically, it is argued here that due to the differential findings from empirical research as to the role of the Type A behaviour pattern upon performance and health that it is the *conscious* and *positive* management of one's personality, time (space and context), social support that affects one's eventual orientation (Sutil *et al.,* 1998). Accordingly, response behaviours that lead to a greater orientation towards one's occupation, rather than its related strain are recommended. As the old saying goes, "One man's pleasure is another man's poison", hence, the perception of reality is subject to malleability, thanks to mind and intelligence (Dispenza, 2006).

To close this section, this thesis identifies one main reason for why the constructs of polychronicity and Type A behaviour are conceptually distinct. Primarily, in terms of the most popular conceptualisation of polychronicity, the construct of polychronicity is

indicative of a *preferred* temporal orientation, akin to a stable trait of personality and/ or culture. And although polychronicity has been shown to correlate with notions of context and time tangibility these three dimensions are still conceptually distinct (Hall, 1989; Palmer & Schoorman, 1999). The only scales that have been created to measure 'polychronicity' are those that relate to determining a 'preferred temporal orientation' (i.e., the IPV; Inventory of Polychronic Values), indicative of mind-based polychronicity.

Alternatively, Type A behaviour represents an overt *reaction* to uncontrollable and unpredictable stimuli in one's environment, and is not a personality trait (Carver *et al.,* 1976; Lachar, 1993). Hence, it is argued that the construct of polychronicity is concerned with a *preferred* temporal orientation driven by cognitive processes (Haase *et al.,* 1979), and akin to personality (Ancona *et al.,* 2001b; Conte & Gintoft, 2005; Cotte & Ratneshwar, 1999; Francis-Smythe & Robertson, 1999b; Hall, 1989; Koehler-Jones, 1995). In contrast, the reason for why Type A's may adopt 'polyphasic behaviours', i.e., multi-tasking and task-switching is due to a *reaction* elicited by uncontrollable stimuli (Carver *et al.,* 1976; Friedman & Rosenman, 1974; Kunnanatt, 2003). Other types of reaction elicited by perceived levels of stressful stimuli include role overload and role ambiguity, discussed further in the following section.

3.1.3 Stress (i.e., Role Overload and Role Ambiguity) vs. Satisfaction

Following on from research by Macan *et al.,* (1990) a number of variables have been related to measures of stress to include role ambiguity, role overload, job tension, somatic tension, life satisfaction, job satisfaction, and the Type A behaviour pattern. Accordingly, for purposes of the present cross-cultural investigation and its research objectives, additional variables of interest include role overload, role ambiguity and life satisfaction.

In terms of the darker side of multi-tasking and Type A, role overload and role ambiguity feature as insightful indictors of correlated stress patterns (Brief *et al.,* 1983; Evans *et al.,* 1987; Frei *et al.,* 1999; Matud, Camacho, Hernandez, Marrero, Carballeira, López & Rodríguez, 2004). Rizzo, House & Lirtzman, (1970) developed a six-item scale to measure role ambiguity, which relates to the predictability of one's behavioural outcomes, and the existence of environmental guidelines as well as support systems to verify if one is behaving appropriately.

Role ambiguity has been described as a sense of uncertainty pertaining to the kind of behaviour that is accepted, as well as expected of an individual in a work environment (Beehr, Walsh & Taber, 1976; Cook, Hepworth, Wall & Warr, 1981). Rizzo *et al.,* (1970: 155 & 156) define role ambiguity "in terms of (1) the predictability of the outcome or responses to one's behavior.... and (2) the existence or clarity of behavioral requirements, often in terms of input from the environment, which would serve to guide behavior and provide knowledge that the behavior is appropriate... Therefore, the items reflect certainty about duties, authority, allocation of time, and relationships with others; the clarity or existence of guides, directives, policies; and the ability to predict sanctions as outcomes of behavior."

"Role conflict is defined in terms of the dimensions of congruency-incongruency or compatibility-incompatibility in the requirements of the role, where congruency or compatibility is judged relative to a set of standards or conditions which impinge upon role performance" (Rizzo *et al.,* 1970: 155). Examples of role conflict have explicitly been defined via concepts such as person-role conflict, inter-role conflict, inter-sender conflict, and intra-sender conflict (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Rizzo *et al.,* 1970).

Of particular interest, inter-role conflict may manifest when an individual actor occupies more than one position in the role hierarchy. Consequently, conflict involving a number of roles for one individual that demand divergent or incompatible actions, or even modifications in behaviour as a function of the situation, may lead to the experience of role overload (Rizzo *et al.,* 1970). Hitherto, measurement of role overload may also help to provide an indication of role ambiguity (Rizzo *et al.,* 1970).

In addition to its relations with stress, role overload and role ambiguity in multifarious, hierarchical places of work are further proposed to intervene as significant variables that intercede upon the effects of organizational procedures concerning individual and organizational results (Bruner & Hensel, 1994). Specifically, the literature indicates that negative individual and organisational outcomes are due to the experience of role ambiguity and role conflict (Rizzo, *et al.,* 1970).

In support of theory and the literature, valid and reliable forms of empirical testing and methodical measurement have been designed and employed. In particular, Rizzo *et al.,* (1970) have addressed empirical research needs by developing and testing the constructs of role conflict and role ambiguity via the use of questionnaire measures.

Responses by managers analysed by Rizzo *et al.,* (1970) showed the two constructs of role conflict and ambiguity to be factorially independent and differentiated. Moreover, the measures derived from the two constructs correlated in anticipated directions with measures such as propensity to leave the organisation, anxiety, leadership behaviour, managerial and organisational practices, and member satisfaction.

Specifically, Rizzo and colleagues found the scales tended to correlate weakly, though positively with anxiety and propensity to leave; more robustly with leader behaviours in terms of direct rather than indirect exchanges with subordinates; and negatively with need fulfilment measures. Furthermore, in the majority of cases the scales tended to correlate with leadership and organisational practices as a model that could derive from classical theory and role theory, as well as previous research.

Though stronger correlations involving role variables and measures of anxiety or propensity to leave might have been expected, it is suggested by Rizzo and colleagues that role stress does not generate anxiety when there exists a strong desire to leave the system; that is, the option to leave is viable. In addition, and as the literature identifies, for particular levels of role stress, adaptive behaviours serve to lessen stress. It may also be reasoned that for certain individuals, factors that might ordinarily be perceived as stressful are actually gratifying. "For example, violations of the chain of command may be viewed by some as stressful and others as an opportunity to gain visibility and recognition" (Rizzo *et al.,* 1970: 162).

In terms of the more desired outcomes of life, what about satisfaction? How attainable is satisfaction if "Time obsession has been stressed as an aspect of Western culture, developed to heights unparalleled by any other nation [*comparisons made with the US-added text*] (Switzerland and Germany are exceptions), and such obsessions have been suggested as causes to conditions, such as ulcers and hypertension" (Hall, 1959: 21)?

In view of the pressures of time and society, time urgent individuals for example, may find that in their endeavours to achieve as much as is possible, unforeseen events, interruptions and obstacles are simply not accounted for. As time slips by and the work piles on, how easy it is for such individuals to feel any kind of 'satisfaction'? To measure this construct, though a number of scales evaluating general life satisfaction have been developed, a number of these scales may not be entirely appropriate for the thesis at hand (Diener, 1984; Diener, Emmons, Larsen & Griffin, 1985; Pavot, Deiner, Colvin & Sandvik, 1991). For example, a number of the actively employed scales have been designed for the more elderly of populations, including Lawton's (1975) Philadelphia Geriatric Center Morale Scale, and the Life Satisfaction Index by Neugarten, Havighurst, & Tobin (1961).

Furthermore, a lot of these scales are not entirely focused on the judgemental feature of life satisfaction, such as the Life Satisfaction Index, which incorporates an indirectly related *zest vs. apathy* factor (Diener *et al.,* 1985; Neugarten *et al.,* 1961; Pavot *et al.,* 1991). Another limiting factor connected with the applicability and usefulness of certain life satisfaction scales includes the fact that "a number of these scales are comprised of single items, which exposes these measures to a number of potential psychometric problems" (Pavot *et al.,* 1991: 150).

Consequently, such scales are expected to fail in applications singularly designed to measure life satisfaction and to accurately evaluate and measure life satisfaction as a cognitive judgemental process, there has been a call for a multi-item scale that specifically measure overall life satisfaction (Diener, 1984; Diener *et al.,* 1985; Pavot Diener, & Suh, 1998). Hence, to counter the limitations of prior efforts, the SWLS (Satisfaction With Life Scale) has been developed, tested and validated as an appropriately reliable measure of life satisfaction (Diener *et al.,* 1985; Pavot *et al.,* 1991). In terms of related areas of research life satisfaction is also investigated within the bigger picture of subjective well-being, alongside the constructs of positive and negative affect (Diener, 1984; Diener *et al.,* 1985; Diener, Oishi & Lucas, 2003; Pavot *et al.,* 1998).

To introduce the next section, time consciousness is a key component of Type A and individuals that express this pattern are known to become impatient while they are waiting, with subjective time estimates prone to be shortened in such circumstances

(Bortner & Rosenman, 1967). Consequently, time urgency relates to how individuals feel about the passage of time, a reality steeped in consciousness, identified as a relatively stable individual-difference variable (Conte *et al.,* 1998; Rastegary & Landy, 1993). As already indicated, it is also significantly characteristic of the hard driving Type A individual (Friedman & Rosenman, 1959; Rosenman & Friedman, 1961)

3.1.4 Time Urgency Correlates [Achievement Strivings and Impatience/Irritability]

A large body of time urgency literature is linked to the larger area of research concerned with Type A, and according to Friedman & Rosenman (1974), time urgency is suggested as a core constituent; the only observable trait apparent in all Type A individuals. Even so, though an individual may be prone to time urgency s/he is not automatically categorised as Type A (Krishna, 2000).

To explain, time urgency is a modern-day construct of human consciousness that manifests as time related behaviours, to include time awareness, prioritisation of tasks [making lists], and task scheduling within allocated times (Conte *et al.,* 1995, 2001). Theoretically, time urgency is positioned as a subcomponent of the Type A behavioural pattern (TABP) or Pattern A (Conte *et al.,* 2001; Friedman & Rosenman, 1974). Clinical realisations acquired over the many years of treating coronary patients, have presented an essential fund of knowledge. In particular, time urgency and hostility feature as two key components that relate to Pattern A (Friedman & Rosenman, 1974; Price, 1982).

In the past, the construct validity of the time urgency measure in assessing differential effects of Pattern A had been found as unsatisfactory thereby encouraging alternative arguments to be reasoned in favour of the "AHA![14] Syndrome" (Booth-Kewley & Friedman, 1987; Landy *et al.,* 1995; Spielberger *et al.,* 1985). Reasons for doing so were primarily based on assuming "that the time urgency measures that have been abandoned were psychometrically sound" (Landy *et al.,* 1991: 645). Thus, due to the lack of consensus and reliability pertaining to measurements of time urgency and Pattern A (as already noted), researchers were led to determine more exact tools for reckoning the two constructs with accuracy.

[14] AHA is an acronym for anger, hostility and aggression

"Previous research suggests that time urgency is likely to be related to health and performance outcomes, although there seems to be no consensus as to the direction or magnitude of those relationships. Some research indicates that time urgency may be linked negatively to performance outcomes...Other research, however, indicates that time management behaviors, which overlap with the time urgency dimensions, are positively associated with academic performance" (Conte *et al.,* 1998: 2).

Certain lines of research have elucidated that time urgency is negatively linked to outcomes of performance. For example, Glass, Synder & Hollis (1974), conducted a laboratory study on a task requiring patience, to find a negative relationship between time urgency and performance. In another study, time urgency was found to have a linear, negative relationship with performance; ability controlled for, on a problem-solving test, designed for completing a training course (Friend, 1982). As with the Type A behaviour pattern, disparities in findings have been argued to result from initial research conceptualising time urgency as a unidimensional variable (Conte *et al.,* 2001).

Via the use of multitrait-multirater approach to ascertain time urgency's construct validity (convergent[15] and discriminant[16]) it has since been argued as a multidimensional construct (Conte *et al.,* 1995; Landy *et al.,* 1991). Research by Landy *et al.,* (1991) argued that a more appropriate measure of time urgency, should account for a structure more multidimensional in nature, via the use of behaviourally anchored rating scales (BARS) to apply to self-report measures. Seven BARS measures of time urgency were identified; 1: time awareness, 2: list making, 3: deadline control, 4: scheduling, 5: eating behaviour, 6: speech patterns, and 7: nervous energy.

To attain additional validations of findings by Landy *et al.,* (1991), Conte *et al.,* (1995) employed a multi-trait, multi-rater confirmatory analysis to obtain results that reinforced and support the multidimensional component measures of the time urgency construct. In contrast to Landy *et al.,* (1991), Conte *et al.,* (1995) found support for a five-dimensional construct as opposed to seven; consisting of the following time urgency BARS; 1: time awareness, 2: list making, 3: deadline control, 4: scheduling, and 5: eating behaviour. Examinations of the construct's differential effects were undertaken by Conte *et al.,*

[15] Convergent validity establishes that there is acceptable consensus among raters.
[16] Discriminant validity establishes that there is an acceptable degree of discrimination among traits.

(1998), in attempt to determine any further corroboration of time urgency's multidimensional nature.

In addition, to elucidate upon Type A's bi-dimensional model of time urgency correlates, as developed by Spence *et al.,* (1987), personality traits achievement strivings (AS) and impatience and irritability (II) are identified as significant contributors. This bi-dimensional approach has been incorporated and validated in analyses by Conte and colleagues. Bluen, Barling & Burns (1990) conducted additional investigations to find "the hypothesised two-factor model provided a better fit to the data than the unifactorial model" (pg.214).

In terms of temporally related outcomes research has indicated that time management activities and behaviours, are differentially linked to the AS/II dimensional correlates of time urgency (Barling & Charbonneau, 1992; Britton & Tesser, 1991; Macan *et al.,* 1990; Spence *et al.,* 1987, 1989). Positively correlated relations have been found with academic performance (Britton & Tesser, 1991; Macan *et al.,* 1990) and negatively correlated with health (Barling & Charbonneau, 1992; Spence *et al.,* 1987, 1989). Hitherto, achievement strivings (AS) and impatience/ irritability (II) are two constructs that correlate with time urgency, as well as with outcomes of performance and health (Barling & Charbonneau, 1992; Bluen *et al.,* 1990; Helmreich, Spence, & Pred, 1988; Spence *et al.,* 1987; Spence *et al.,* 1989).

AS is the inclination to actively work hard towards accomplishing goals, and II indicates frustration and intolerance, in addition to an obsession with time (Spence *et al.,* 1987). AS has been found to be positively associated with job satisfaction and sales performance, while on the contrary, II was positively associated with depression (Bluen *et al.,* 1990). Spence *et al.,* (1989) found AS to be significantly associated with academic (grade point average) performance, in longitudinal and concurrent studies. Whereas with respect to II, concurrent analyses and longitudinal research evidence it is related to headaches, as well as sleep quality (Barling & Charbonneau, 1992), and respiratory and digestion problems (Conte *et al.,* 1998; Spence *et al.,* 1987).

It is of interest to note that the construct of achievement strivings relates to an individual's predominant/ preferred temporal orientation, which may be towards the past,

present or future. As introduced in section 2.4.1 [Temporal Management and Orientation], an achievement orientation is synonymous with goal-directed behaviour and attainment; namely, goals which are set in the future (Jones, 1988).

Via a predictive model, Conte *et al.,* (1998) were able to develop a nomological network that hypothetically correlated time urgency to related variables. To investigate the potential associations of time urgency, achievement strivings (AS), and impatience/ irritability (II) were employed as predictors of performance and health 18 months on. Multivariate canonical correlation analyses backed up the need for a multifaceted nomological network connecting the predicator and outcome measures. The findings also demonstrate that these two traits were differentially correlated with a number of health effects.

Thus, via the use of an in-depth nomological network (Conte *et al.,* 1998; Cronbach & Meehl, 1955) the differential associations in existence linking the construct of time urgency and certain outcome variables, such as achievement striving, and impatience/ irritability, as well as resulting differential inferences upon health and performance outcomes are established via a strategy known as cross-structure analysis (Conte *et al.,* 1998; Pedhazur & Schmelkin, 1991).

Conte *et al.,* (1999) measured time urgency by employing behaviourally anchored rating scales (BARS) and found that "the internal consistency estimates do not indicate that all of the time urgency BARS have adequate reliability" (pg.281). This problem however is not evident in the measurement of time urgency correlates, specifically the dichotomous Achievement Strivings/ Impatience and Irritability (AS/II) scales developed by Spence *et al.,* (1987). Also, in favour of AS/II, research by Ishizaka *et al.,* (2001: 352) found "The correlation between achievement strivings and impatience/ irritability (r = .17) was not significant, corroborating previous research (Spence *et al.,* 1987), which demonstrated the constructs' independence from each other."

Certain time urgent individuals relate to time as if it were an opponent (Price, 1982). A characteristic behaviour is the constant attention paid to the time remaining on tasks and deadlines, by frequently checking on the passage of time (Waller *et al.,* 2001). Furthermore, such individuals tend to schedule more activities, in the time available for

work, than is realistically possible (Friedman & Rosenman, 1974). What results is a feeling of being incessantly hurried, despite remaining efficient in one's use of time to complete scheduled activities (Waller *et al.,* 2001).

In situations when too many activities are scheduled, time urgent individuals tend to employ the use of deadlines as heuristics for task prioritisation (Rastegary & Landy, 1993). Thus, "the inward sense of urgency characteristic of time urgent individuals affects both the perception[17] and usage of time as well as reaction to increased time pressure" (Rastegary & Landy, 1993: 218).

Rastegary & Landy (1993) propose that time urgency is an important issue in understanding how individuals experiencing time pressures make decisions. More specifically, time urgent individuals are motivated to schedule a number of activities in an allocated time period; set deadlines independent to those externally imposed; employ and attend to deadlines to evaluate remaining resources of time (Waller *et al.,* 2001).

Hence, studies have identified that time-urgent individuals, in general terms, seem highly preoccupied with deadlines (Glass, Synder, & Hollis, 1974), "and individual differences in setting deadlines and focusing on deadlines recently have been associated with increased work pace" (Waller *et al.,* 2001). As already reasoned, speed is greatly related to the sense of time urgency that characterise actors, individuals and organisations (Bluedorn & Denhardt, 1998; Schneider & De Meyer, 1991).

The majority of time urgency research has focused on the individual, yet it is also feasible that the behaviours of time urgent individuals may impact upon group behaviours in deadline circumstances (Waller *et al.,* 2001). Research by Waller, Giambatista & Zellmer-Bruhn, (1999) identified that the presence of a time-urgent (time-aware) member in teams was negatively associated with the simultaneous performance of multiple tasks (or polychronic behaviour) in a deadline situation. In performing a creative task, time urgent individuals were more inclined to impose upon their fellow colleagues, schedules that were stringent and linear in orientation. The focus developed

[17] The term perception is used to refer to the result of an individual's selective attention, selective comprehension, and judgement, or an outcome of an individual's information processing, (Lord, 1985; Waller, Huber & Glick, 1995).

was one of concentrating on one primary task at a time (or behave monochronically), with regular forewarning given to the team concerning the time available for task completion.

A related issue is the measure of impromptu interruptions that individuals perceive themselves to endure without feeling stressed and overloaded- and as for attaining group consensus, this struggle within oneself due to needing to cooperate with others for some is to be expected (Kaufman-Scarborough & Lindquist, 1999b). "In attempting to achieve as much as possible, time urgent individuals often do not allow for unforeseen obstacles. If an obstacle does slow time-urgent individuals down, they often blame themselves for not having anticipated it" (Conte *et al.,* 1998: 3). Interestingly, the ability to tolerate unplanned interruptions correlates with research on preferred patterns of time use, and specifically with the monochronicity-polychronicity continuum.

As already introduced and central to this thesis, polychronicity and time urgency are related constructs (Conte *et al.,* 1999; Waller *et al.,* 1999; Taylor *et al.,* 1984). Type A is characterised by a chronic sense of time urgency (Glass, 1977; Rosenman & Friedman, 1961) is also characterised by a constant participation in many and varied functions with a continuous subjection to time deadlines (Bortner & Rosenman, 1967; Rosenman & Friedman, 1961), strengthening the relations that are also proposed to exist between polychronicity and the Type A behaviour pattern (Price, 1982).

Furthermore, as research into Type A is concerned with performance and health outcomes (Bortner & Rosenman, 1967; Friedman & Rosenman, 1959, 1969; Glass, 1977; Matthews, 1982; Price, 1982; Rosenman & Friedman, 1961), "Different patterns of time use (i.e., polychronic or monochronic) may influence the accomplishment of goals and thus performance, but may also be related to stress and other health outcomes" (Conte *et al.,* 1999: 269).

Nonetheless, in a study by Conte *et al.,* (1999) polychronicity was found to be unrelated to stress, and as an explanation for such findings the authors suggest that polychronicity might be perceived as either an 'adaptive method of time use' or a stable personality characteristic. For instance, if an actor exhibits more of a polychronic approach to time management the involvement in several activities at once may serve to alleviate stress

resulting from role overload (Conte *et al,* 1999; Haase *et al.,* 1979; Kaufman *et al.,* 1991a).

Alternatively, by requiring a monochronic actor to perform more polychronically, such behaviour may be a potential source of conflict and stress (Slocombe, 1999). Hence, conflict is expected to arise when an individual strongly prefers one method of time management, for example, monochronic time, yet is required to perform the alternative, namely, polychronic time (Mets, 2002). Likewise, conflict may also emerge as a result of attempting to apply a monochronic approach to a state of affairs that demands polychronic time, and vice versa (Mets, 2002).

In line with this stream of thought is the relationship identified between polychronicity and role overload, whereby the two variables were found to be negatively correlated, though no direction of causality has been firmly determined (Haase *et al.,* 1979; Kaufman *et al.,* 1991a). "This finding suggests that those individuals that are capable of and comfortable in combining activities are less likely to report feelings of role overload" (Kaufman *et al.,* 1991a: 396). Yet, how does this relationship vary across culture?

Despite the fact that polychronicity is multidimensional and may be defined by the performance of many tasks at once (action polychronicity), it is also a *preferred* temporal orientation (Bluedorn *et al.,* 1999; Slocombe & Bluedorn, 1999) (mind polychronicity), further defined by the extent to which citizens of a culture believe that their preferred way of performing many tasks at once is also the best way (Bluedorn *et al.,* 1999). Consequently, and as already introduced, one reason that *preferred* polychronic time use patterns may err from *behavioural* aspects of polychronicity is due to deviations across *cognitions* and *actions*. Also, the latter (actions) is perhaps indicative of 're-actions'; i.e., a response to role overload, whereas preferred polychronicity is arguably an innate and stable characteristic of culture and personality (Conte *et al.,* 1999), and thereby a totally different locus of control may also be in operation, i.e., external vs./and internal; fatalism vs./and self-determinism (Koehler-Jones, 1995).

In view of health measures and psychological well being, polychronic individuals need to be distinguished from time urgent individuals as the motivations and reasons for performing "more and more, in less and less time" are entirely different. The

performance of more, in less time, does indeed demand a polychronic view of time yet, being of a culture that is polychronic in orientation is proposed as a preferred match (than an individual of a monochronic culture) to efficiently manage today's work-world of multiple demands at once (Slocombe & Bluedorn, 1999).

3.1.5 Self-Efficacy

Investigations made on research productivity have found that simultaneous work efforts on multiple projects are positively related to effective performance (Taylor *et al.,* 1984). As a mediating force, self-efficacy has been proposed as an individual-level characteristic that determines one's actual ability to translate multiple task efforts into efficient productivity (Lee & Gillen, 1989; Taylor *et al.,* 1984). Specifically, "Perceived self-efficacy is concerned with judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982: 122).

Self-efficacy plays a key role in Bandura's (1977a,b, 1986) Social Learning Theory[18], and includes a rationale introducing three causal concepts reasoned to drive behaviour; that is, expectancies, incentives, and social cognitions. In terms of expectancies and of primary interest, *self-efficacy expectancies* relate to the expectation that an individual is proficient in executing a sought after behaviour and pertains to personal action control or agency (Bandura, 1992; Ogden, 2004; Schwarzer, 1992a,b).

Situation-outcome expectancies refer to the expectancy that a particular behaviour may be harmful. *Outcome expectancies* refer to the belief that a particular behaviour can help lower risks to health (Bandura, 1992; Ogden, 2004; Schwarzer, 1992a) and conveys a perception of the likely outcomes of one's behaviour (Bandura, 1992; Ogden, 2004; Schwarzer, 1992a,b; Srivastava & Sager, 1999).

An individual who holds a belief in being able to cause an experience or an event is able to lead a more self-determined and active life (Bandura, 1982; Krishnan *et al.,* 2002; Sadri, 1996). This 'I-can-do-it'-cognition symbolises a sense of personal agency and control over one's environment (Jerusalem & Schwarzer, 1992). It shows confidence in being capable of controlling testing environmental demands by performing adaptive

[18] Social Learning Theory is also referred to as either Social Cognitive Theory or Social Modeling Theory.

action. It can be considered as a sign of self-confidence regarding one's competence and capability in coping with work- and life-related stressors (Schwarzer, 1992b; Srivastava & Sager, 1999).

Incentives introduce the idea that behaviour is regulated by its consequences and reinforcements (Schwarzer, 1992a,b). Lastly, *social cognitions* are concerned with assessing predictors of behaviour and related intentions, as well as the reasons for why individuals fail to sustain behavioural acts they have previously committed to (Bandura, 1977a,b; Ogden, 2004).

In terms of the Emotion-Action-Complex, feelings, thoughts and behaviours of individuals are susceptible to the effects of self-efficacy (Bandura, 1992; Krishnan *et al.,* 2002; Sadri, 1996; Schwarzer, 1992a,b; Srivastava & Sager, 1999; Vinchur, Schippmann, Switzer & Roth, 1998). To expand, with regards to a person's feelings, a low, unfavourable sense of self-efficacy is linked to behavioural disorders, anxiety, depression and helplessness (Jerusalem & Schwarzer, 1992; Sadri, 1996; Schwarzer, 1992a,b). Such persons have furthermore been found to experience low self-esteem, as well as entertain detrimental thoughts with regards to personal development and accomplishments.

In terms of thought patterns a determined air of competency encourages cognitive activity and academic performance, and in terms of formulating action, self-regulated cognitions are a key contributor of the process of motivation (Dispenza, 2006; Krishnan *et al.,* 2002). An individual's level of self-efficacy may either improve or hinder motivation (Bandura, 1977a, b, 1992; Sadri, 1996; Schwarzer, 1992b). In particular, those with high self-efficacy opt to undertake more challenging tasks, as well as hold higher goals and aspirations for themselves that are adhered to (Bandura, 1992; Schwarzer, 1992b; Taylor *et al.,* 1984; Vinchur *et al.,* 1998).

The construct of Perceived Self-Efficacy implies a positive belief of oneself (Bandura, 1977a,b, 1992; Schwarzer, 1992b). This is the belief that one can carry out a new or difficult activity, or cope with problems in a variety of realms regarding human operation (Bandura, 1977a,b, 1992; Schwarzer, 1992b). Perceived self-efficacy facilitates goal setting; effort investment; persistence in the face of barriers; recovery from setbacks, and

is therefore reasoned as a resource factor of optimistic resistance and survival (Jerusalem & Schwarzer, 1992; Schwarzer, 1992b).

Moreover, mediational analyses show that when perceived self-efficacy is partialed out of investigations, motivation remains unaffected by either cognitive focus or anchoring influences. Hence, changes in perceived self-efficacy completely serve to mediate the influence of external effects on performance-related motivation (Bandura, 1992; Schwarzer, 1992b).

In addition, a series of experiments have been carried out producing results showing how self-efficacy beliefs held by subjects have been changed in response to feedback that was false, and was in no way related to an individual's actual performance (Bandura, 1992; Schwarzer, 1992a,b). For example, in a study by Jerusalem & Schwarzer (1992) the role of self-efficacy as a resource factor in stress appraisal processes was examined in a laboratory experiment. The respondents were required to perform difficult tasks under time pressure, though the feedback they received on their performance was fictitious.

It was found that dispositional self-efficacy not only enables coping with stress, but that it is already in action at the cognitive appraisal stage; an earlier phase of the stress process. It was found that individuals high in self-efficacy made more favourable evaluations of the incurred experimental stressors, compared with those low in self-efficacy. As a result, perceived self-efficacy has been shown to bear an effect on performance, even if it is unrelated to a person's true and actual ability (Bandura, 1992; Schwarzer, 1992b). Also of interest, a sense of self-competency can be attained via experience, physiological feedback or verbal persuasion (Schwarzer, 1992b).

Accordingly, the power of the mind is a force to be reckoned with; a person's actions are greatly shaped by thought patterns, as people are inclined to harbour either pessimistic or optimistic constructs of reality, in accordance with their sense of self-efficacy (Dispenza, 2006; Goswami, 2006; Schwarzer, 1992b). In action, individuals high in self-efficacy demonstrate greater amounts of effort together with longer rates of persistence, compared with those low in self–efficacy (Krishnan *et al.,* 2002). In reaction to obstacles, the highly self-efficacious individual will recover more rapidly, and continue to remain committed to personal goals. Naturally, self-referent thought has become an issue that

pervades psychological research across a number of domains, and is a key contributor in the progress of educational, social, personality, clinical, developmental, and health psychology (Bandura, 1992; Mohanram, 2006; Schwarzer, 1992b).

As with motivation, self-efficacy levels can also improve or hinder performance (Bandura, 1992; Krishnan *et al.,* 2002; Schwarzer, 1992b). For example, Bandura (1992) conducted a number of causal tests that supported the notion that perceived self-efficacy significantly contributes to performance accomplishments (as well as level of motivation), to report findings of higher levels of perceived self-efficacy accompanied with higher performance attainments.

Krishnan *et al.,* (2002), found self-efficacy to be both a direct and indirect antecedent of successful performance depending on posited relations concerning effort and competitiveness. And though the identification of the prime predictors of successful performance is a hot topic, i.e., in sales, the individual/ cultural–level variables deemed most predictive, relate to matters of enthusiasm, ability and skilfulness; variables least addressed by empirical research (Krishnan *et al.,* 2002; Vinchur *et al.,* 1998).

Research findings have also shown that a strong sense of personal efficacy is related to improved health, higher achievement, and better social integration (Bandura, 1992; Schwarzer, 1992b). In short, "Self-efficacy beliefs contribute to the course of social development as well as occupational pursuits...The developmental processes undoubtedly involve bi-directional causation. Beliefs of personal capabilities determine choice of associates and activities, and affiliation patterns, in turn, affect the direction of self-efficacy development" (Bandura, 1992: 31).

Clearly, personal self-efficacy appears to be a concept of considerable importance to further research into the workings of the human mind, and source of motivation. It may also contribute in explaining some of our individual or cultural patterns of behaviours. It is also further assumed to bear consequences upon each individual's subjective and personal experience of states, including the experience of time, space, health, happiness, depression, achievement, and work; and hence, proposed for further analyses in the following chapter of conceptual developments. Moving away from the 'mastery of self' there also exists 'the mastery of time', discussed further in the following section.

3.1.6 Perceived Control of Time

Thompson (1981) discusses how mastering control over an event may be perceived as a way of incurring less pain or stress, and focuses mainly upon theoretical evaluations concerning correlations between control and stress. "Control can be defined as belief that one has at one's disposal a response that can influence the aversiveness of an event" (Thompson, 1981: 89). Such a definition covers all types of control, such as cognitive, behavioural, information and retrospective, as well as further recognise that for measures of control to be effective, they need not be bona fide or even implemented, just simply perceived (Thompson, 1981).

Of interest, Thompson (1981) does not deal with dispositional differences across individuals as regards a belief in control. Yet, as already mentioned, in the exploration of relating time management behaviours to health, Macan (1994) proposed and identified indirect relationships of time management behaviours with somatic and work-induced tensions, mediated via a person's perceived control over time. It has been found that *preferences for organisation* as a 'time management behaviour tool', was directly related to both somatic and work-induced tensions (Macan, 1994; Nonis, Hudson, Logan & Ford, 1998).

Thus, in an effort to elucidate upon the relations concerning an individual's sense of perceived control of time, particularly with that of stress (i.e., an orientation towards stress, role ambiguity and role overload), this thesis is to develop upon such lines of research. Consequently, it is important to note that temporal perceptions (perspectives) are situation-specific, thus, one also needs to account for both the subject matter, and the context of an event (Cotte & Ratneshwar, 1999; Hall, 1989; Koehler-Jones, 1995). Additionally, patterns of cultural deviation serve as a useful benchmark to ascertain if the perceived control of time is culture-specific or more universal in effect.

Another area of cultural deviation and assimilation is the advancement of technology, discussed in the following section.

3.1.7 Technology

To introduce this section, "Time has been analysed and exploited to gain competitive advantage mostly by stressing speed and velocity to ultimately reduce costs" (Reinmoeller, 2001: 1). Electronic technologies (e.g. the Internet) have been designed to gain competitive advantage and increase efficiency (Brunell, 2000; Kaufman-Scarborough 2006; Podmolik, 2000). However, Brady (1999: 95) states "Increased efficiency is supposed to mean doing more things in the same time, not the same thing in less time."

Consequently the advent of such progress may have also introduced considerably more tasks, software and programs (including e-mails, voice-mails and project deadlines), to adapt to and manage than is humanly possible (Brady, 1999; D'Aveni & Gunther, 1994; Greengard, 2001; Kaufman-Scarborough, 2006). In a study investigating globalisation and the Internet by Manardo (2000) it was found that traffic on the Internet is doubling in size every 100 days with e-business in stages of hyper-growth.

Hence, the process of socialisation concerning time and organisations bears a great influence upon a worker's time-related behaviours. In particular, the work organisation and work generally, is argued to affect a person's approach to time and activity so greatly that s/he becomes dedicated to their job to the extent their family and friends grow to become 'residual claimants' of their time (Fraisse, 1963; Francis-Smythe & Robertson, 1999b).

"Today, things are moving so quickly...It's getting harder to keep up with everything. Every time you turn around, there's new technology to learn and new pressures to cope with. The same devices and programs which are supposed to make things easier are making things more difficult and complex" (Greengard, 2001: 38). In a world of immediate global communication is now immediate, and individuals of different temporal horizons transcend space and time (Brady, 1999; Kaufman-Scarborough, 2006). In light of 24hour Internet time and globalisation, the localised '9 to 5' trend has shifted dramatically to accommodate the demands for high-tech living and 'round-the-clock' stock market trading (Brady, 1999).

With the rise of flexi- and part-time approaches to work, less than 30% of Americans at the turn of the century occupied positions of traditional 9-to-5 hours, and numbers were still falling (Brady, 1999). Out of the total workforce, those groups working irregular or unsociable hours, i.e., the graveyard shift, are predominantly females and non-Caucasian groups (Brady, 1999). What is more, to keep up with the increasing pace of business, professional office-bound employees take work home and design workspaces in the home, engaging the speed and stress of market forces into a 'one-time' retreat away from work (Brady, 1999; Kaufman-Scarborough, 2006).

In view of technology and its pace of advancement, can human resources keep up? Einstein's response to this is given by the opening quote leading this chapter. Stress invariably enters as a relevant topic but do all societies treat stress in the same way? Which societies fully appreciate and acknowledge the value of exercise in combating stress? Would certain teachings from the East that are able to reduce anxiety, such as mantra invocation, meditation, yoga, and controlled breathing, even provide sustained relief (Lu, 2000; Prabhupadā, 1993, 2001, 1986; Krishna, 2000)?

People are not mechanical, as clock time would dictate, and people do not know how to approach, or even cope with differing temporal demands, be it cross-culturally or in hypercompetitive industries (D'Aveni & Gunther, 1994; Helman, 2001; Onken, 1998). This is greatly significant, particularly if individuals are not even conscious of the fact that differing temporal orientations and approaches even exist (Ganitsky *et al.,* 1991; Hall, 1989).

For example, a large part of disharmony in intercultural negotiations results from the lack of understanding that surrounds how considerably, differing temporal orientations, (which to a large extent are culturally-determined) serve to influence behaviour. This is of importance when undertaking efforts towards effective strategic global marketing (Hall, 1989; Ganitsky *et al.,* 1991; Mosakowski, & Earley, 2000).

Internet time provides an excellent example of the West's invention of a 'time machine' (Roodyn, 2007) designed for improving efficiency and economic growth, yet as technology keeps moving on it needs to be asked if labour forces across the globe can keep up or do we need to focus on building a fitter if not faster workforce?

In applying an e-commerce culture, the question that needs to be addressed is if whether or not the speed of the Internet is resulting in falls in levels of accuracy and productivity, in addition to poorer standards of work, and a lack of traditional values (such as quality, customer loyalty, service and long-term planning) due to this increasing obsession with time, its measurement, and speed (Adler, 2002; Brady, 1999; Sheehy, 2000).

3.1.8 Spacetime

In 1905 a new age of science and physics came into play initiated by Einstein making public his theory on Relativity (Einstein, 1921; Hall, 1989; Reanney, 1995). Rational philosophies relating to the linear notion of time as an absolute were subsequently overthrown, particularly in view of Einstein's infamous 'time dilation' effect (Einstein, 1921; Reanney, 1995). This is one of the chief anti-commonsensical maxims of relativity theory, where time is observed to slow down as matter approaches the speed of light (Einstein, 1921; Hall, 1989; Reanney, 1995). Accordingly, space and time unite to constitute the same fourth dimensional fabric (Reanney, 1995).

In addition, it is taken for granted in this material world, spatial and temporal dimensions cannot be disentangled, and the two co-mingle in various ways (Goswami, 2006; McTaggert, 2006; Munn, 1992). To provide an additional perspective, in the following section (3.1.9: Time as a Frequency and The 4th Dimension of Time), it is proposed that there is a 'Time' outside of space-time, and is 'something' anyone can potentially *tune* in to. And could there actually be more than one dimension of 'Time'?

In terms of collective conjectures regarding the nature of space the significance and utilisation of space represent the most inconspicuous facets of organizational and national cultures; particularly as beliefs relating to space, as with time, are often taken for granted, operating subconsciously, outside of conscious awareness (Schein, 1992).

The fundamental explanation for this relates to territorialism and the powerful symbolism of space as expressed in current phrases, such as 'give me space' and "Don't get in my 'space'" (Schein, 1992: 115). How many relationships end with partners often craving their 'own space', their 'own time'? Such phrases also serve to elucidate upon some

peoples need to 'own' space and time as well as possessions, behaving as the sole proprietor of all purveyed.

With both a physical and social meaning, space in the United States gains much support for the existence of four kinds of 'normal distance'– intimacy, personal, social and public distance, and that within each of these there is agreement on what it means to be 'very far' or 'very near' (Schein, 1992).

As a biologically rooted sense, distance-related reactions occur in more subtle uses of space, as in body language, as well as from 'fight or flight' decisions. These decisions may further manifest into issues related to experiences of intrusion or interruption, rendering the exercise of imposed boundaries (Schein, 1992). An outcome assumed to be more apparent in those cultures more monochronic than polychronic in orientation.

In terms of space upon types of processing and conceptualisations called upon by an individual consumer the most up-to-date research available is by Meyers-Levy & Zhu (2007), in the *Journal of Consumer Research* that indicates a consumer's experience of psychological well-being is dependent upon space; specifically, ceiling height. In particular, "homes with higher ceilings induce clearer and improved thinking, more energy, and better health" (Meyers-Levy & Zhu, 2007: 174). In addition, when ceiling height was featured as salient, the proposition that "Relatively high ceilings may prime thoughts related to freedom, whereas lower ceilings may prompt those that pertain to confinement" (Meyers-Levy & Zhu, 2007: 174), found empirical support.

Not covered by this article was the individual's perception of time, namely, its subjective passage relative to rooms of different ceiling height. And as space-time is argued to be an entangled reality by quantum physicists it may be equally appropriate to also test for how the subjective experience of the passage of time in rooms of different ceiling heights is also affected. Interestingly, research by Alton DeLong (1981) posits that the perception of time *is* mediated by space, and "The experience of temporal duration is compressed relative to the clock in the same proportion as scale-model environments being observed are compressed relative to the full-sized environment" (pg. 681).

3.1.9 Time as a Frequency and The 4th Dimension of Time

To give a brief account of how time can be conceptualised as a frequency, this section elucidates upon another side of time to that of Einstein's fourth dimensional space-time (Argüelles, 2002; Stray, 2005). In fact Argüelles, (2002) positions 'Time' as a 'grand ordering principle', argued to transcend not only space but also the speed of light.

Argüelles (2002) questions whether conceptualisations of 'Time' as a geometric certainty are entirely correct. Doubting that space, relativity, and the linearly indoctrinated arrow of time bind 'Time', Argüelles proposes 'Time' is as instantaneous as 'Mind'. In fact, 'Time' is the all-encompassing cause of synchronisation- this is the 'Law of Time'. Even so, as the Technosphere (the domain of technological consciousness) currently operates on an arbitrary 12:60 timing frequency (12 months, 60 seconds per minute), out-of-sync with the natural order of the 'Biosphere' (organic life and its processes) discord is predicted with repercussions upon the 'Noosphere' (Earth's mental envelope). As an alternative, a new, more harmonious 13:20 timing frequency/ calendar is proposed, derived from natural moon and biological cycles, and is a prominent feature of ancient Mayan wisdom.

Such understanding of 'synchronic' time is particularly reminiscent of contributions by Carl Gustav Jung (1875-1961), that is, 'synchronicity' (<http://skepdic.com/jung.html>). Specifically, synchronicity pertains to 'meaningful coincidences' and associates eventualities of comparable meaning as a concurrent reality, as opposed to a chain of linearly arranged events in time (<http://skepdic.com/jung.html>). At odds with Freud over the role of the unconscious mind Jung broke away from Freud's mould, and with beliefs in telepathy and ESP (extrasensory perception), telekinesis, clairvoyance and spirituality, Jung also contributed the notion of the 'collective unconscious' (<http://skepdic.com/jung.html>).

Argüelles, (2002) discusses the works of Russian scholar and biologist Vladimir Ivanovich Vernadsky (<http://omegapoint.org/modules/news/article.php?storyid=10>) to explain that the biosphere is a complex and interconnected system of constant change and force contained and directed by a grand design of order, in accord with the laws of nature. To be further understood via mathematics and 'unrealised geometry', the

biosphere is a living being, and as with material life in general, the biosphere is also conducted by 'Time'.

"Now here is an interesting reflection. If the biosphere as a whole system is tending toward a total whole system transformation into a state known as the noosphere, a fact perceived by Vernadsky during his lifetime, and the two unresolved issues are the issues of time and consciousness, both materially intangible dimensions, does it not seem correct that the resolution to these two issues will actually foster the manifestation of the noosphere, which is, after all, the mental envelope of Earth?" (Argüelles, 2002: 34).

To conclude this section, Argüelles presents an in-depth analysis of this event in a scientific context beyond nationalism and ideology, so humans can begin to understand they are a part of the biosphere (the collective system of all living beings), but not necessarily its ultimate, controlling mechanism. Essentially the Law of Time is positioned as the agency of revelation, and appreciating the biosphere vis-à-vis the Law of Time is argued as the means for creating a completely new world vision of hierarchic integrity, also placed as the imminent paradigm (Argüelles, 2002). For a comprehensive theoretical and practical examination of the differing systems of reckoning time (i.e., Mayan calendars, tribal prophecies, Asian/ Oriental calendars and Abrahamic religions), as well as the significance of 2012, the cyclic endpoint, see Stray (2005).

The next section briefly examines 'Time' as defined by Vedic theological works, which conveys 'Time' as 'total consciousness', which can be experienced, if not transcended via procedures including meditation, mantra, martial arts and severe austerities as made known in the Bhagavad-gītā (As It Is).

3.1.10 Theological Time

One's relationship with 'Time' (alternatively, "*Total Consciousness*"; past, present and future) is vitally important, and can either make or break one's chance of happiness, as well as mastery over this material world. And in selecting sources of spiritual teaching, one text deemed authoritative as the 'Word of God' is the Bhagavad-gītā; it is the only text in religious wisdom where God says, 'Here I am' and speaks direct to the reader. From a Vedic perspective, "Time", "Total Consciousness" is Lord Krsna (an Ancient name for God, as with Allah, Jehovah and Buddha for example). In the Bhagavad-gītā,

the Lord declares, "Time I am" (11.32), "the great destroyer of the worlds." Scripture states that under the influence of eternal time the cosmic manifestation is created, maintained and annihilated at regular intervals. Krsna explains to Arjuna, "Many, many births both you and I have passed. I can remember all of them, but you cannot" (Bhagavad-gītā As It Is 4.5).

Krsna remembered acts "He"[19] had performed millions of years ago, but Arjuna could not, despite the fact that both Krsna and Arjuna (as with all beings) are eternal in nature. This is due to the fact that whenever the Lord appears, He appears in His original transcendental form, which never deteriorates. An ordinary person bound by material nature and forgetfulness, however, transmigrates from one body to another. And from one life to the next, he forgets his former identity. But Krsna (God/ the Supersoul), the very principle of subduing time, is never under the control of time, and thus 'He' remembers everything at all times. Hence, in addressing his devotee, Krsna says, "Oh Arjuna, as the Supreme Personality of Godhead, I know everything that has happened in the past, all that is happening in the present, and all things that are yet to come. I also know all living entities; but Me no one knows" (Bhagavad-gītā As It Is, 7.26)

The Srīmad Bhāgavatam is another work of ancient wisdom, and positions 'Time' as the deadly blade of a razor (<http://www.krsna.com/gita/main/topics/Kala/essay.htm>); Prabhupadā, 2001). As time consumes our lives, it is advised that life be suitably used. 'Time' is 'Divine', and the utilisation of time to seek out the timeless and 'Absolute Truth' is proposed as the most desired and best practical use of time (<http://www.krsna.com/gita/main/topics/Kala/essay.htm>). The Narada Pancaratra by Vedavyasa advises a state of deep trance-like concentration upon the transcendental form of Krsna who is beyond the confining conditions of time and space, is a way to attain peace of mind, and enable the experience of a blissful transcendental state of love (<http://www.krsna.com/gita/main/topics/Kala/essay.htm>).

The context of time's spiritual truths however vary according to culture and though it may manifest differently, could this simply be due to the context of different languages

[19] "He" [as to opposed to "he"] is presented as it is given in the source to personify the Supreme Personality of Godhead [Krsna].

that operate a vast number of ways to express the same phenomenon/ similar idea? Accordingly, the role of context in understanding symbolisms of time is crucial and determines how effectively a message is communicated and understood (Hall, 1989), the topic of the next section.

3.1.11 Time and Context

When considering the complex of any language, it is evident that words and sentences portray different meanings depending on the *context* they are situated in (Hall, 1989; Schein, 1992). This is apparent by time's multidisciplinary scope of interpretation (section 2.2) and multiplicity of meaning (section 2.3). There thus exists a language of time and culture that is affected by context, mediated by how accurately knowledge is managed and communicated. For example, computers cannot translate (Hall, 1989). Failure lies not in the appropriate scrutiny of sentence structure (syntax) and words, but in the connection of the linguistic code to the bigger picture of the scientific playing field- the context surrounding every word, phrase, sentence and paragraph (Hall, 1989; Schein, 1992).

The issue of context is a matter of importance in any kind of communication between human beings (Hall, 1989). Cultures vary greatly with respect to the amount of total environment (context) that is perceived as communicatively meaningful (O'Hara-Devereaux & Johansen, 1994). High and low context relate to the degree of information that is accommodated, and for those in a high context culture circumstantial information is inherent (O'Hara-Devereaux & Johansen, 1994; Trillo, 1996). An example would be that of a long term marriage spanning many decades, whereby communication need not be explicit as most information is assumed, if not unspoken. For those in a low context culture more information needs to be communicated to convey accurate meaning. A typical example concerns when one is undergoing legal procedures, where no information can be omitted. Importantly, "Information, context, and meaning are bound together in a balanced, functional relationship" (Hall, 1989: 60).

Thus, high context cultures attach meaning to a large amount of stimuli associated with an explicit message, and verbal messages hold little meaning in absence of surrounding stimuli. In contrast, low context cultures omit recognition of surrounding stimuli with greater attention paid to the message itself; be it a word, sentence or gesture (O'Hara-

Devereaux & Johansen, 1994). Additionally, high context cultures demand a relatively close relationship be it business or pleasure, whereas low context cultures (Americans and North Europeans) need more contractual affirmation and will not leave deals to assumptions (Hall, 1989).

As the perception of context is a cultural pattern, most cultures can be located on a high/ low context scale. For example, according to Copeland & Griggs (1985) the people of Japan, China and the Arab states are high context; in contrast, the German-Swiss, German and Scandinavian cultures are low context. "It appears that all cultures arrange their members and relationships along the context scale, and one of the greatest communication strategies...is to ascertain the correct level of contexting of one's communication" (Hall, 1989: 61).

In applying the importance of context from that of nations to organisations, managerially geared efforts to obtain maximal levels of productivity are also able to benefit by matching the 'context' of work to be performed with the favoured temporal orientation of each individual member. Thus, the degree of 'person-job' fit that exists in an organisation is argued to be of great importance (Conte *et al.,* 1999). Of additional interest to this area of time research, Toms & Pinto (1999) found that successful project managers adapted their own time orientations to effectively match the temporally related demands encountered across varying scenarios of tasks and conditions.

"Functional cultures, no less than primary cultures, tend to be more or less polychronic or monochronic and oriented to past, present, or future. R&D [Research & Development] people typically have a long-term perspective, which is reinforced by the tendency to measure their productivity by the frequency of 'big ideas.' Accounting, on the other hand, must have a short-term, incremental point of view and a present-tense orientation or face chaos. People with polychronic-oriented functions, as in marketing or advertising, are better able to blend into cross-functional teams because of their ability to handle concurrency and simultaneity. Monochronic, present-oriented individuals, such as accounting and information systems, find this challenge much more daunting" (O'Hara-Devereaux & Johansen, 1994: 4).

Schneider and De Meyer (1991) emphasised that when temporal orientation is focused towards the past as opposed to the future, strategic decision-making will seem less urgent, duly affecting strategic interpretation, and how urgently responses are made. Hence, Schein (1990 & 1992) clearly contribute to the perspective of this thesis by advocating that temporal horizons, which define an organisation's focus, are culturally determined.

For example, one may investigate whether individuals focused towards the past are less time-urgent than those focused toward the near or distant future. Literature across all disciplines uncovers the fact that an intrinsic orientation toward the 'flow' of time exists in all individuals- be it past, present or future-dominated, yet subject to varying degrees (Das, 1987; Koehler-Jones, 1995). For instance, an individual with a future-directed sense of time flow orientation tends to cognitively differ in terms of whether the near or distant future dominates (Das, 1987; Mosakowski & Earley, 2000). Das (1987) explored the role of future orientation in strategic planning, and the relationship between an individual's future time perspective and preferences for short and long range planning. Individuals also differ in terms of temporal information processing, discussed in the next section.

3.2 Time and Information Processing

"Individuals also differ in their temporal orientations to information processing and activity. This is Hall's distinction between monochronic and polychronic time" (Bluedorn & Denhardt, 1988: 308). Accordingly, aspects of culture and society serve to influence an individual's temporal reference and formulations (Hall, 1989; Zerubavel, 1982). "Information processing is related to both the consumer's cognitive ability and the complexity of the information to be processed... consumers with higher cognitive ability apparently acquire more product information and are more capable of integrating information on several product attributes than consumers with lesser ability" (Schiffman & Kanuk, 2000: 176).

Interestingly, it was found by Kaufman *et al.,* (1991a) that individuals with higher levels of formal education have a tendency to operate more polychronically. In light of this finding it may be plausible to suggest that temporal orientation correlates with one's

cognitive capacity, encompassing a person's ability to consider many alternatives at once, as well as undertake more extensive measures of search behaviour.

With applications to consumer behaviour, it may also follow that as polychrons are also renowned for switching their behaviour across many tasks (Arndt *et al.,* 2006), they may also be more prone to brand-switching behaviours than monochronic individuals. Accordingly, monochronic individuals may be more brand-loyal.

Of interest, temporal reference activities such as time reckoning and dating are cognitive activities traditionally studied by psychologists, philosophers, and more recently sociologists (Zerubavel, 1982). On the surface, 'the illusion of time' is created whenever there is need for measurement (Einstein, 1921; Reanney, 1995). Essentially the experience of time is of the mind and temporal formulations employed by individuals indicate that a wide range of ways exists for which the past, present and future can be anchored (Zerubavel, 1979 & 1982); Einstein's theory of relativity.

Though the role of 'Mind' in 'Time' serves to create a personal experience for each and every individual the 'Biological Clock' may also needs to be harmonised. To elaborate, Hall (1989) states that recent times have inspired a vast amount of study into how diverse organisms temporally assimilate events with not only the external world, but also with the world within. For example, the need to feed, breed, face life, death, as well as 'work, rest, and play' engage 'exosomatic timing'- to phase a behaviour/ event with a behaviour/ event external to one's physical being (Hall, 1989).

'To phase or not to phase?' that is the question, particularly as this activity hankers on a mind-boggling arrangement of an inner timing system that maintains harmonious synchronicity across all living beings and the planet. Interestingly, these lines of investigation constitute a subject matter of much scientific endeavour (Hall, 1989), on a par with Vernadsky's biosphere (Argüelles, 2002)- see section 3.1.9.

Hall (1989) explains that though exosomatic timing is a constitute factor of healthy day-to-day living it still remains external to immediate consciousness and rule (so is 'Mind'/ 'Consciousness' the 'odd one out'?). The implications are grave particularly as being 'out-of-phase' tends to unregulated cell formation, as is the case with the cancerous

conditions. To empirically test humanity's place with respect to the bigger picture and see how individual 'clocks' are actually set (nature or nurture?), researchers have resided many a week living deep in caves to determine whether physical, biological regularity is intrinsically connected to changes of the day and night (marked by sunrise and sunset), or if they are self-regulating (Hall, 1989).

Hall (1989) explains that in absence of external intervention these biological clocks will generally remain in sync with the typical rhythms and cycles of the outside world. Fundamentally, events occurring within an individual are congruent with the external environment. Consequently, though there are two kinds of time-related mechanisms-biological and physical, they work as one (Hall, 1989). In order to speculate, how compatible are internal, biological clocks with the actual 'clock' that we organise our lives according to? In particular, is the ever-increasing pace of the worlds of work we are attached to, actually in harmony with our internal clocks of biological activity? The following two excerpts help to present the bigger picture.

"Anyone who has traveled east to west or west to east for more than three or four hours on a jet airplane and who has suffered jet lag has had first hand experience in how our body rhythms are set according to the twenty-four-hour cycle of the planet. There is some speculation that travelers in space may run into serious difficulty not only because of lack of gravity, but also because of disorientation of the hundreds of biorhythms regulating body function. Professor Frank A. Brown of NorthWestern University[20] postulates that physiological chaos will set in when humans travel too far beyond the boundaries of our planet" (Hall, 1989: 19).

"On the behavioral side, the Japanese have been experimenting with biorhythms and keeping track of the periodicity of highs and lows in human energy, intellectual activity, and sociability. They report a reduced accident rate when their bus drivers drive more carefully during a 'critical' phase. Whether the reduced number of accidents has come about as a result of simply telling the drivers to be careful at certain times, or because the rhythms have been accurately identified, has not been tested. However, biorhythms are

[20] Brown, Frank, A. (1959). "Living Clocks." *Science, 130*, (4), 1535-1544; as mentioned by Hall (1989).

closely related to 'personal time,' since they are supposedly unique to the individual" (Hall, 1989: 19).

To relay the above excerpts to research concerning the individual a core topic investigated by psychologists relates to the subjective experience of time's passage according to place, context, emotion and psyche (Hall, 1989). Though the device of biological timing is fairly governed and rhythmic, the more subjective, more personal experience of time is much more variant. Altogether the environment and physiology contribute to further knowledge as to interplay of the objective and subjective sides of time. As an example of how systems of conscious thought (mind; intelligence; perception) and biology combine, "The slowing down of brain waves and the heart and respiratory rate during meditation have produced instances where people reported that 'time stood still'" (Hall, 1989: 20). This, I dare say, is how time and consciousness (Mohanram, 2006) truly merge- via thought, and which allows anyone with a fully functioning frontal lobe to literally create a whole new world of experience (Dispenza, 2006).

3.2.1 Theories of Temporal Information Processing

Theories of temporal information are relevant to the thesis at hand since "In the main, the construct of polychronicity is concerned with information-overload and not sensory-overload. In essence, we are concerned with stimuli to which the organism does not have the luxury of habituation, stimuli which *must* be processed if the individual is to maintain continued adaptation to the environmental milieu without suffering the consequences" (Haase *et al.,* 1979: 272).

Hitherto, the majority of theories concerning how time-related judgements are made include the assumption that a perceived length of an interval (period) depends on the 'information' that takes place during that time interval. As a result of this assumption temporal judgement theories rely on "theories about how stimulus information is processed, stored, and retrieved within an organism" (Thomas & Weaver, 1975: 363). An example, as given by Thomas & Weaver (1975), concerns when a stimulus consisting of two 10-msec [millisecond] clicks, separated by an interval of time, t, requires a subject to estimate 't', based on the assumption that the relevant stimulus information is the number of subjective pulses that take place during 't'.

The majority of data gathered from studies of time estimation sourced from human subjects have been considered in the context of two major theoretical conceptualisations: memory- and attention-based models (Lejeune, 1998). In keeping with Ornstein's (1970) 'storage-size' model, "subjective duration is a by-product of nontemporal information processing and derives from the quantity and complexity of information stored in the memory" (Lejeune, 1998: 129).

A flaw in this 'storage-size' model, however, exists in there being no autonomous theory for determining storage size when the stimulus information is comparatively complex, i.e., linguistics (Thomas & Weaver, 1975). Furthermore, Ornstein opted for the retrospective method of data collection, whereby a task or items (e.g. words to memorise) are revealed to subjects for a set duration, without prior warning that an estimate of time will be required (Lejeune, 1998; Zakay, 1993).

The distinction between prospective and retrospective temporal judgements in methodological terms was initially introduced by Hicks, Miller & Kinsbourne (1976), and marks the divide between attention and memory based models of time (Lejeune, 1998). In the making of prospective judgements, subjects are clearly told that they will be required to estimate the duration of a particular time interval, whereas for retrospective judgements, a time estimation is required unexpectedly from subjects after the passing of a given time period (Fink & Neubauer, 2001; Hicks *et. al.,* 1976; Lejeune, 1998).

Under prospective conditions, the approach most popularly ascribed, Hicks *et al.* (1976) demonstrated that the relationship between temporal processing and perceived (subjective) duration reverses when the subjects' attention is focused upon 'time-related' considerations. Thus, perceived time is inversely correlated with the number of nontemporal items processed for the task at hand (Hicks *et al.,* 1976; Lejeune, 1998; Zakay, 1993), suggesting that the processing of these items prevented the subject from reckoning time (Lejeune, 1998).

3.2.2 Reaction Time

As regards the process of reaction time, findings pertaining to the applications of continuous flow and discrete stage models of information processing are of interest (Sanders, 1990; Meyer, Yantis, Osman & Smith, 1985). In particular, a great deal of contention exists in this area of research as regards the appropriateness of applications (Sanders, 1990). Furthermore, although assumptions relating to discrete stages are rooted in the efforts of preliminary experimental psychology (Meyer, Osman, Irwin & Yantis, 1988; Meyer *et al.,* 1985; Sanders, 1990), advocates of continuous flow are in a stronger position in current times (Sanders, 1990). In spite of this, a number of issues remain to be resolved with the aid of further deliberation and study (Miller, 1988; Sanders, 1990). In particular, continuous flow models suggest the existence of low thresholds between internal codes, whereas discrete (extreme serial) processing models imply a presence of high thresholds or strong boundaries (Sanders, 1990).

In the debate concerning appropriate applications of continuous flow and discrete flow information processing, the Additive Factor Model (AFM) has been applied to analyses of choice reaction time (CRT) (Sanders, 1990). Historically, assumptions governing the AFM have been linked to discrete stage models, and have thus led proponents of continuous flow to question its applicability to the processing of information (Sanders, 1990). Moreover, from analyses made of emerging patterns in terms of interactive and additive associations between experimental variables, the AFM promises tried and tested methodology of both high simplicity and power for identifying differing stages of information processing (Sanders, 1990; Sternberg, 1969).

To provide some background, one central assumption applied to models of information processing, which is also fairly accepted across all camps, is that human cognitive performance is subject to intervening stages or levels of processing. Thus, via the use of available internal codes, each stage is argued to engage in its own group of functions (Sanders, 1990). For example, the cascade model featured in McClelland (1979) assumes differing stages of information processing. This stage notion also applies to Eriksen & Schultz's (1979) continuous flow conception, as well as McClelland & Rumelhart's (1985) models of parallel distributed processing.

In terms of this thesis, relations with research on time-to-activity patterns, namely the monochronicity-polychronicity continuum, become apparent. Dependent upon the occurrence of bottom-up analyses of a signal in question, reasons for why relate to the premise that continuous transmission is often associated with parallel processing (Sanders, 1990). Conversely, discrete transmission is associated with a sequential series of stages, whereby only one stage can be in operation at any one time (Sanders, 1990; Sternberg, 1969). Hence, in terms of the actual mechanics of information processing seemingly polychronic (parallel) and monochronic (sequential) activity patterns are found to operate, and at times converge (Miller, 1988; Sanders, 1990).

Information processing is the subject of Posner's (1978) research on the parallel encoding of the physical identity, and name (semantic) properties of letters. The matching of a pair of two letters in terms of physical identity was shaped by physical variables such as, colour, intensity, direction, and magnitude. In contrast, name (semantic) letter matches were affected to a much lesser degree by these variables, if not at all (Posner, 1978; Sanders, 1990).

A sequential (serial) paradigm whereby physical processes are concluded ahead of the communication (transmission) of evidential data to a more central naming process, anticipates that processing demands, which have an effect on the duration of a preceding process, develops into a later process (Posner, 1978; Sanders, 1990). Considering the absence of such a result, the findings soundly imply that the processes concerned with letter identity matching are not sequentially structured, and instead emerge within an actual processing stage as implied by the AFM (Posner, 1978; Sanders, 1990). For an in-depth diagrammatical representation of the key areas, please refer to Appendix 2B 'Additive factors stage structure of information processing in a traditional choice reaction' (Sanders, 1990).

As a result of theoretical conceptualisations pertaining to signal-detection it has been usual practise to differentiate between the accumulation of information and a 'criterion' to determine if an adequate amount of evidence has been gathered for a response to be emitted (Sanders, 1990). This premise has featured across many aspects of performance theory (Sanders, 1990; Wickens, 1984), including letter recognition (Rumelhart & McClelland, 1982; Sanders, 1990), selective attention, vigilance, stress (Broadbent,

1971), and also the trade-off between speed and accuracy (SAT) in reaction systems (McClelland, 1979; Sanders, 1990).

Both continuous flow and discrete stage approaches have their pros and cons; however, of particular concern, discrete stage models allocate little consideration to the effects of multiple stimuli (Sanders, 1990). Moreover, a familiar line of contention raised against discrete stage models in relation to choice reaction times, concerns the established phenomenon of SAT (Pew, 1969; Sanders, 1990) further discussed in the following section.

3.2.3 Response: Speed of Information Processing and Accuracy

"Response latency is the amount of time a respondent deliberates before answering a question. Since response time seems to be directly related to the respondent's uncertainty in the answer, it assists in assessing the individual's strength of preference when choosing among alternatives. Thus it provides an unobtrusive measure of, for example, brand preference or ambiguity experienced by a respondent in answering a particular question"(Churchill, 1999: 321).

Research by Sanders (1990) demonstrates how the speed-accuracy tradeoff (SAT) is principally concerned with response choice and motor stages. Continuous flow models have no fundamental difficulty in appreciating that SAT is bound to response- or decision-related processes. Even so, in choice reactions, SAT embraces a many number of differing aspects and outcomes, and as a consequence, not all inaccuracies are linked to changes in SAT. For example, perceptual errors are generally marked by relatively longer as opposed to shorter CRT's (Choice Reaction Times), and thus, attributed to failed acts of discrimination rather than 'risky' decision-making (Sanders, 1990). As a result, these types of errors are linked more to hesitation and indecision, than a premature response. Moreover, with the exception of extreme situations (i.e., threshold conditions), perceptual evidence may well be perfect at all times (Sanders, 1990).

Alternatively, errors may well be a result of incomplete response choices or response rivalry, rather than a lack of perceptual proof. For instance, a deficient response choice may be due to a risky cut-off point in the quest for obtaining proof regarding the right response. This is only in conflict with the constant stage output model when the cut-off

results in a partial and imperfect code that serves as input to the motor phases. A different prospect is that there is no premature cut-off point, but instead, a response bias resulting from 'prior unequal odds' (Sanders, 1990). Thus, in conjunction with inconsequential evidence, a response bias may be adequate enough to trigger a complete, though possibly, incorrect code (Sanders, 1990).

Hence, the trade-off between speed and accuracy is elemental to furthering one's understanding of information processing; particularly evident from findings on continuous flow versus discrete stage models. Undoubtedly, a great deal of insight is provided into the potential range of performance-related outcomes. Yet, there is always an exception to the rule.

In particular, arguments in favour of a positive relationship between accuracy, (as measured by scores of correct answers achieved on intelligence tests), and speed of information processing, have also gained empirical support. "In the last two decades a considerable amount of research has investigated the relationship between intelligence - as assessed by standard psychometric tests - and the speed of information processing in elementary cognitive tasks (ECTs), which require only minimal demands on the participant" (Fink & Neubauer 2001: 1009).

Research in this area indicates a moderate but consistently negative association between psychometric intelligence and the performance speed of elementary cognitive tasks (Fink & Neubauer 2001; Frearson & Eysenck, 1986; Hunt, 1980; Neubauer, 1997). That is, in terms of ECTs, findings show associations between high speed of information processing and high psychometric intelligence (Fink & Neubauer 2001; Frearson & Eysenck, 1986; Hunt, 1980; Neubauer, 1997). In view of such findings on speed and psychometric intelligence, correlations may also exist with research concerning cognitive approaches to time- more specifically, polychronicity and speed (see section 2.4.1.1.1).

Speed is a high-value temporal dimension of an organisation's culture, which measures the number of task-related demands individuals and groups are required to complete in a given time interval (Francis-Smythe & Robertson, 1999b; Onken, 1998, Schriber & Gutek, 1987). The need for increased speed of communication and negotiation has become such a crucial competitive advantage that technology such as the Internet has

escalated in its popularity (Manardo, 2000). Attention paid to quantifying or measuring time seems to develop an increased amount of value attributed to speed (Heirich, 1964; Schneider & De Meyer, 1999).

As illustrated by Hall (1989: 37), "It is clear that our emphasis on saving time, which goes with quantifying time and treating it as a noun, would also lead to a high valuation of speed, which is demonstrated in much of our behavior". However, its trade-off is potentially *accuracy;* a variable of paramount importance, and yet, which is mediated by how well individuals manage stress and the effects of time urgency in hyper-competitive, e-commerce environments.

'Speed vs. accuracy' is identified from the literature as an individual temporal dimension, which measures the extent to which accuracy is compromised to attain speed (Francis-Smythe & Robertson, 1999b). Studies on timing, decision-making and response time indicate people naturally behave in a rhythmic manner. As response time tasks are mainly repetitive and temporally regular, it is proposed that subjects may exploit temporal regularities to achieve preferred combinations of speed and accuracy (Grosjean, Rosenbaum, & Elsinger, 2001).

High-speed events coincide with the dominant concept of 'clock' time, bound by the speed of light and embodied in Internet time. High-speed time experiences relate to quantitative time measurements and other measures of performance (Reinmoeller, 2001). "The measurement of time and time keeping as practises, enable standardisation and comparison that prepare occasions of high-speed experiences, such as simultaneous new product development projects that exploit different time zones. Information technology has increased the speed by linking action to time and automatically taking records of all time-action events, such as sending e-mails" (Reinmoeller, 2001: 3). In accord with such objective measures of time, which link action to time, how is the personal experience of time subject to change? This topic is addressed in the following section.

3.2.4 Subjective Time Estimation (STE)

Over the past few decades, research into the perception and estimation of time has greatly prospered, and particularly in response to a greater tendency by researchers to employ a more cognitive than behavioural approach to the examination of human experience,

including that of time (Allan, 1979; Fraisse, 1984; Lejeune, 1998; Rammsayer & Brandler, 2004; Thomas & Weaver, 1975; Zakay, 1993). To cognitively appraise duration particular types of procedures are used. To be exact, an estimation of duration occurs when memory is employed to either link up two events in the past or to link a moment in the past with a moment in the present (Fraisse, 1984; Thomas & Weaver, 1975; Zakay, 1993). In contrast, perception of duration relates to the psychological present- the 'here and now' (Fraisse, 1984).

To acquire insights into the perception of time a number of fairly well established theories in other disciplines (i.e., psychophysics and behavioural processes) (Lejeune, 1998; Ornstein, 1970; Thomas & Weaver, 1975; Zakay, 1989 & 1993) serve to guide empirical research into the perception of time in fields such as consumer behaviour and marketing in general (Allan, 1979; Hornik, 1984). In terms of the function of nontemporal factors upon time perception, "It is well documented that intervals having identical stimulus durations are not always judged as equal in perceived duration. Rather, the judgement is influenced by such nontemporal characteristics of the marker as its modality, nature (filled vs. empty), energy and complexity" (Allan, 1979: 346).

Deemed relevant to the field of consumer behaviour, certain tasks may serve to engage a respondent's personality and individual traits, which cognitively mediate, if not account for some of the variability observed in time-related judgments (Allan, 1979; Hornik, 1984; Rammsayer & Brandler, 2004; Zakay, 1993). An example could involve factors relating to time urgency, i.e., impatience/ irritability and achievement strivings. Other lines of theoretical reasoning propose a relationship between perceived duration and frequency of activity engagement (Allan, 1979; Hornik, 1984), directed attentiveness/ allocated attention (Allan, 1979; Lejeune, 1998; Thomas & Weaver, 1975; Zakay, 1993) and the ease of retrieval and activity load (Zakay, 1993).

In testing relations across objective (standard clock) time and subjective (perceptual) time, a psychophysical law is argued to exist, whereby a power relationship of a linear nature is defined (Allan, 1979; Hornik, 1984; Fraisse, 1984). "It has been shown that the obtained empirical function between estimated (judged duration) and standard time (physical duration) represents the transformation of stimulus time to perceived time, and that the subject's response is a simple linear transformation of perceived time and that the

exponent is approximately 1; also known as the psychophysical law, whereby the relationship between input and sensation is governed by a power law" (Hornik, 1984: 615).

Ultimately cognition is argued to play a significant role in influencing estimates of time's durations, for example, presenting a word, such as "nonsense" is perceived as longer than that of an empty/ non-filled passage of time (Allan, 1979; Thomas & Weaver, 1975). This also supports the stance that perceived estimates of empty duration are not equivalent to those that are filled; in fact empty (blank fields) are deemed to pass by slower (that is, 'time flies when you're having fun'; engaged in an activity). To illustrate, Conte *et al.,* (2001: 1739) found "General hurry and impatience-irritability were significantly related to time estimation (r = -.26, p < .01, and r = -.16, p < .05, respectively). Thus, those individuals who were generally hurried and impatient were likely to indicate the passage of 1 min more quickly than were their less hurried and more patient counterparts."

Similarly, individuals are known for implementing spatially related schema to reckon a passage of time, i.e., expectations of longer waiting times based on how long a 'queue' is (Cottle, 1976; Hornik, 1984) – although even this notion of a 'queue' (line-up) is partial to cultural deviation, particularly as not all cultures may engage in such practises; a matter of strategic importance.

In proposing an established model of time perception and attention, research efforts point to two main processing units within the brain- one for time-related stimuli and the other for non-time related stimuli (Hornik, 1984; Thomas & Weaver, 1975). Specifically, incoming material are either evaluated by a spatially defined (visual) information processor (nontemporal stimuli) or a timer (temporal stimuli). This is the attentional model initially proposed by Thomas and Weaver (1975), which deals with finite attentional resources (i.e., capacity theories), with attention shared across the two processors functioning synchronically (Fink & Neubauer, 2001; Lejeune, 1998; Thomas & Weaver, 1975).

This model predicts that perceived duration would be directly related to the processing (attention) of time (Lejeune, 1998; Thomas & Weaver, 1975). "Time estimation will

depend on pulses accumulated as a function of time while attentional resources are allocated to the timer. If attention is diverted from the timer, it is further assumed that some pulses are lost" (Lejeune, 1998: 129).

Researchers have developed definitions of attention based on a scientific point of reference, whereby "the allocation of attentional resources between concurrent tasks or the involvement of attention in the preparation of motor processes have been analysed more recently. Overall, attention may be conceived as a cognitive process bridging the gap between the flow of incoming stimuli and the response of an organism" (Lejeune, 1998: 127).

"Timing with a timer (attentional models) is thus pitted against timing without a timer (storage-size models). Whereas memory-based models consider that subjective duration is a mere by-product of general information processing, attentional models stress the need for a specific timing device triggered by attention given to temporally significant information" (Lejeune, 1998:131). In one of the initial studies concerned with attention sharing, subjects were presented with concomitant series of auditory clicks and light flashes taking place independent of time. Subjects were directed to pay attention to and count the light flashes, which induced large cortical evoked potentials in the occipital visual area, and only small ones in the temporal area (Lejeune, 1998; Spong, Haider & Lindsley, 1965). Demonstrated is the fact that it was the relative psychological importance of stimuli responsible for the cortical patterns of activation, as opposed to their receptor-bound factors or physical properties (Lejeune, 1998).

In modern times, brain-imaging research has found support for the contention that a transfer of attention from a focused to a divided stated involving the form, movement or colouring of a optical object led to a decrease of local cerebral blood flow in associated regions (Corbetta, Miezin, Dobmeyer, Shulman & Petersen, 1991; Lejeune, 1998). Consequently, the allocation of attention is argued to have strict cerebral associations (Lejeune, 1998). In particular, brain wave research "requires a rather elaborate hookup of the subject to equipment. The purpose is to assess the stimuli that subjects find arousing or interesting. To do this, subjects are fitted with electrodes that monitor the electrical impulses emitted by the brain as the subject is exposed to various stimuli. The evidence suggests that the two hemispheres of the brain respond differently to specific

stimuli, with the right hemisphere responding more to emotional stimuli and the left to rational stimuli" (Churchill, 1999: 323).

Zakay's (1989) resource model presents a conceptual argument similar to that given by Thomas & Weaver's (1975) attentional model. Specifically, "More resources are allocated to tasks of a higher internal priority. In the case of time estimation, this estimation is an attention consuming task competing with nontemporal information processing" (Zakay, 1989: 371). And 'where' attention is predominantly allocated is arguably variant upon whether a predominantly monochronic and/ or polychronic point of view is preferred.

As a finite capacity model it is further proposed that incoming stimuli are analysed by two processors, a cognitive timer, *P*(t), to accumulate subjective time units (STUs) in either one's immediate bank of memory- short term (STM) or working, and a nontemporal information processor, *P*(i), to store up data indicative of significant change that take place over a certain timeframe, the quantity of data dealt with, as well as the depth of processing in short-term memory (STM). As a result, some information can then be transferred to long-term memory (LTM) (Lejeune, 1998; Thomas & Weaver, 1975).

P(t) and *P*(i) both demand attentional resources to function, and Zakay's model further accounts for the fact that the size of the nontemporal information, as well as the number of accrued STUs, is directly linked to the amount of attention assigned to the appropriate processors. Accordingly, attention is shared between *P*(t) and *P*(i), which vie for STM resources. Attention allocated to both processors is dependent on a number of factors, including instructions to subject, or subject's expectations (Lejeune, 1998). In prospective situations, *P*(t) gains in superiority over *P*(i), and duration estimates are assumed to be linearly related to the number of accumulated STUs. In comparison, during retrospective conditions, time estimation can only be determined 'post hoc' from information encoded in LTM by the nontemporal information processor, *P*(i). As established by Thomas and Weaver (1975), time estimation is thus drawn from the size of stored nontemporal information (Lejeune, 1998).

Fink & Neubauer (2001) accentuate two methodological aspects of concern when evaluating the literature in this area of experimental research. Firstly, the distinction between prospective and retrospective research paradigms, already discussed, is an important issue. As it is generally understood that the processing of nontemporal information influences prospective and retrospective estimations of time in different ways, most experimental studies concerned with subjective time estimates employ the prospective approach (Zakay, 1993; Fink & Neubauer, 2001).

A second important issue when appraising research work on experimental time estimation is the method of judging duration. Consistent with Hornstein and Rotter (1969) three fundamental measurement methods can be identified as: (1) the method of verbal estimation whereby the subject verbally states the duration of a physically given time interval; (2) the method of production whereby the subject is required to operatively replicate (i.e., a key response) a time period of a given duration stated by the experimenter; and (3) the method of reproduction whereby the subject is required to reproduce operatively a time period initially presented physically by the experimenter.

Nonetheless, as a rule time judgements to some extent depend on the method of measurement employed (Fink & Neubauer, 2001; Hornstein & Rotter, 1969). For instance, studies have found that underestimations of a given time interval arise more so when the subject is required to determine the time via the means of either production or reproduction, and overestimations are more likely to result when utilising the method of verbal estimation (Hornstein & Rotter, 1969; Fink & Neubauer, 2001). Yet, according to Allan, (1979: 340), "No single method can claim consistent superiority."

To conclude this section, the method of subjective time estimation (STE) offers an innovative and promising approach to assessing the cognitive demands incurred by a person in the performance of challenging tasks (Fink & Neubauer, 2001; Lejeune, 1998). Discussion regarding this area of research will resume in the following chapter in order to assist in developing hypotheses.

3.3 Chapter Summary: Literature Review II

Time (temporal orientation) in accord with both objective measures of performance and health, as well as personally subjective experiences of time's passage has been little

researched. Consequently, in view of 'Time's' role in elucidating upon the differential effects of culture, performance and health within the field of marketing it is applied by the present thesis as a highly influential construct.

Hitherto, for explaining cross-cultural differences in behaviour, "The researcher would be wise to ask whether time could be used as an independent variable in his own model, as a resource, as an indicator of other relationships, or in relation to explanatory attributes" (Heirich, 1964: 397). Characteristic of temporal research in the field of marketing and management in particular, is the minimal level of theorising that has been accomplished. Hence, methodologies, typologies, vocabulary and concepts of time demand greater attention and coherency (Goodman *et al.,* 2001). "At worst, time is incorporated into theories and empirical models of firm dynamics with virtually no attention to assumptions about time" (Mosakowski & Earley, 2000: 796) or the differential ways people *feel* about 'Time'.

To address 'Time's' more subjective passage, research examining the interplay involving nontemporal information processing (i.e., the performance of cognitively testing tasks) has been pursued via the determination of the psychological bases of both estimated and perceived duration (Fraisse, 1984; Fink & Neubauer, 2001). Still, as a consequence of the vast range of methodology available within the field of subjective time estimation, issues such as comparability may be hindered (Fink & Neubauer, 2001).

As inspired by the range of related variables that may elucidate upon culture's management of time, in terms of the preference for differing temporal approaches, polychronicity can be considered as a triad of constructs, consisting of 'emotion' (i.e., a socio-cultural orientation; cultural construct), 'mind' (i.e., preferred temporal orientation– the mind is the laboratory of action), and 'action' (behavioural preferences-multi-tasking, task-switching, one at a time). By applying this particular model of understanding it can also be seen how the model is also relevant to unlocking the secret to the Type A Behavior Pattern (TABP).

Primarily, in terms of polychronicity (consisting of emotion-mind-action), when translating a scale such as the IPV (Inventory of Polychronic Values) (definitive of personality and culture), a 'preferred temporal orientation' is specifically dealt with.

This is most accurately understood as a 'cognitive', 'mind' involving process, argued by the present thesis to also interact with 'emotion' and 'action' (Bandura, 1977a,b, 1982). And as clarified, the sway of not only mind but also emotion may or may not combine to bring about multi-tasking, task-switching behaviours (Friedman & Rosenman, 1974; König *et al.,* 2005; Ruiz & Reynolds, 2007; Taylor *et al.,* 1984).

Conceptually speaking then, the TABP is distinct from preferred temporal orientation in this respect, as the Type A *behaviour* pattern is an overt behaviour pattern that manifests when suitably provoked, and is arguably a complex construct consisting mainly of action (i.e., proactive and reactive) though driven not only by emotion (i.e., feelings of consensus/ agreement/ acceptance) (Friedman & Rosenman, 1974), but also mind (newly created thought processes versus hard-wired past experiences).

Interestingly, however, the 'Emotion-Mind-Action Complex' (EMAC) has been inspired by research concerning self-efficacy and specifically by Bandura's (1977a,b, 1982) social cognitive learning theory, and neatly applies to both the construct of polychronicity and the Type A behaviour pattern. And its application is argued as widespread; particularly to assist in the generation of consistency and consensus of thought, i.e., more refined conceptual understandings and models.

Hitherto, in an endeavour to convey an acutely informed impression of constructs such as polychronicity and Type A the following chapter addresses the chain of conceptual thought behind this thesis.

CHAPTER 4: CONCEPTUALISATION

"It is only in the world of objects that we have time and space and selves."
T.S. (Thomas Stearns) Eliot (1888–1965)

4.1 Introduction

Having introduced the theory behind time and its vast conceptual and functional arrays, the focus of this chapter is to present a working framework to empirically investigate 'culture's management of activities-to-time'. Considering 'Time' is a useful measuring and ordering device (Einstein, 1921; Heirich, 1964), one is led to propose that objective measures of individual speed and accuracy responses significantly vary across temporal cultures that advocate different time-related values, emotions, mentalities and behaviours (Jones, 1988; Hall, 1989; Hall & Hall, 1990; Levine, 1988; Levine & Bartlett, 1984; Levine *et al.,* 1980).

Thus, two main outcomes investigated relating to matters of efficiency and effectiveness, are speed and accuracy of response behaviours. By using speed of psychometric intelligence and performance accuracy as barometers of performance success, the array of cultural systems that manifest as the most efficient and effective systems of human functioning can be determined. Also acknowledged is time's ascendancy on performance-related stress and orientations towards work.

An important premise of study for this thesis posits time as a cultural system (Ancona *et al.,* 2001b; Hall, 1989; Hall & Hall, 1990; Palmer & Schoorman, 1999). Though traditionally these constructs have been conceptualised as independent, with little attention paid to their interplay, they are argued to be inseparable in particular situations (Graham, 1981, 1982; Hall, 1989).

Hitherto, time and culture are conceptualised as constructs that are merged as opposed to independent, operating in unity to subliminally affect behaviour. Specifically, "...time is a core system of all cultures, and because culture plays such a prominent role in the understanding of time as a cultural system, it is virtually impossible to separate time from culture at some levels" (Hall, 1989: 3).

In developing hypotheses, a framework for analysis is presented divulging the main independent and dependent variables featured by this thesis, modeling the intricate interplay of time, context, personality and behaviour deemed most relevant to culture's management of time in global schools of thought. This section is immediately followed by hypotheses relating to objective variations in speed and accuracy that amount from cultural deviations, as well as how the British and Greeks fare in terms of the mono/polychronicity continuum of preferred temporal orientation. Yet, prior to the development of hypotheses, the following section outlines the depth of analysis that is to be applied to investigations of polychronicity. Specifically, polychronicity is to be examined in terms of its relevance to 'mind', as a *preferred temporal orientation.*

4.2 Depth of Analysis

In view of the fact that emotions, thoughts and behaviours differ across temporal cultures with respect to preferred time use patterns, such differentials also exist within cultures when considering the different ways emotions and thoughts may translate into behaviours. Specifically, monochronic thoughts patterns do not necessarily result in monochronic time use patterns/ behaviours; and likewise for polychronic thoughts and behaviours (König, *et al.,* 2005; Ruiz & Reynolds, 2007; Taylor *et al.,* 1984).

To elaborate, research from the related field of Type A behaviour, has raised this issue concerning the causal processes behind the human realms of mind (thoughts) and action/ activity (behaviour). Friedman & Rosenman (1974) coined the Type A as an 'action-emotion complex', and proposed that the performance of multiple projects may follow on from multiphasic[21] thought tendencies.

However, this finding was not confirmed by Taylor *et al.,* (1984); no relationship was found between multiphasic thoughts and multi-tasking. As a consequence, Taylor *et al.,* (1984: 414) suggested that "Future research should investigate how the strategy of working on multiple projects affects performance of Type A individuals, e.g., by yielding

[21] "The term multiphasic refers to a tendency both to have many irons in the fire and to do more than one thing at a time (e.g., reading while watching TV, eating, or going to the bathroom)" (Wright, 1988: 3).

feelings of greater control or reducing impatience and whether or not the effectiveness of this strategy may vary for job tasks with shorter work cycles."

In terms of a time-related sense of control, 'perceived control of time' is incorporated into the present thesis for its interactions with preferred temporal orientation upon a bidimensional construct of Type A. In applying a bidimensional measure of Type A both its observed 'toxic' (orientations towards stress) and 'non-toxic' (orientations towards work) factors can be accounted for (Sutil *et al.,* 1998).

An important point to clarify then, is that though certain studies conducted on preferred temporal orientation have related such matters of the *mind* (Haase *et al.,* 1979), that is, *preferred* temporal orientation via scales measures i.e., the IPV (Inventory of Polychronic Values) and the MPAI3 (Modified Polychronic Attitude Index 3), to *behavioural* differentials, i.e., multitasking and task-switching (e.g. Arndt *et al.,* 2006; König *et al.,* 2005; Zhang *et al.,* 2005), the link across 'mind' polychronicity and 'behavioural' polychronicity is potentially untenable.

This may also explain why König *et al.,* (2005) failed to find polychronicity/ preferred temporal orientation (as measured by the IPV) as predictive of multi-tasking performance. In fact, the resulting predictors of multitasking behaviour in this particular study of human performance were actually 'working memory', 'fluid intelligence' and 'attention' (König *et al.,* 2005). Polychronicity as defined by psychometric measures of preferred temporal orientation by Bluedorn *et al.,* (1999: 207) "taps both the values ('preferences') and beliefs ('believe...') attributes included in many definitions of culture".

Even so, in view of the fact decisions relating to whether one approach is *preferred* over another are predominantly *cognitive* ones (Dispenza, 2006; Haase *et al.,* 1979; Monti, 2006; Walsch, 1997), little is known as to how polychronicity measures up as a cognition-based coping device that enables the assimilation of many thoughts, and/or emotions (particularly as decisions are also made according to how a person *feels*).

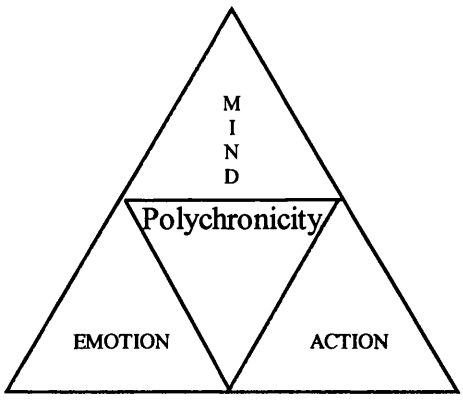
To clarify the divergence between thought and behaviour, the French, for example, are described as intellectually monochronic, though behaviourally they are deeply

polychronic in terms of social networking (Hall, 1989; Hall & Hall, 1990). Slocombe (1999) also helps to clarify the complexity of the polychronicity construct with his tripartite approach of beliefs, attitudes and behaviours.

In accord with Bandura's (1997a,b, 1982) social cognitive learning theory, and in view of the research to date on polychronicity (Ancona *et al.,* 2001a,b; Hall, 1989; Hall & Hall, 1990; Palmer & Schoorman, 1999; Slocombe 1999) this thesis aims to introduce a new approach in defining polychronicity to suit all research questions. This is achieved by ascertaining if a person's 'emotions' (the social relational side of polychronicity steeped in cultural meaning), 'mind' (preferred temporal orientation) and/or 'action' (multi-tasking and task-switching behaviours) are engaged in/ under investigation.

The model proposed represents a generic way to examine polychronicity, and has been similarly applied to section 3.1.2 concerning Type A in the literature review (part II), though also useful for all mechanisms of 'coping' in general. Thus, here enters the 'Emotion-Mind-Action Complex' (EMAC) proposed by the present thesis as not only relevant to self-efficacy and Type A, inline with Bandura's (1977a,b, 1982) social cognitive learning theory of emotional arousal, thought patterns and actions, but also to the construct of polychronicity. See Figure 4.2A below.

Figure 4.2A: The Emotion-Mind-Action-Complex (EMAC) Defining Polychronicity



The above framework is elemental in approach, applicable to complex individual-level constructs such as self-efficacy, Type A and polychronicity. With respect to polychronicity and in accordance with Ancona *et al.,* (2001b), Slocombe (1999) and Palmer & Schoorman (1999) who have done much to reveal the multiplicity of polychronicity, three key areas are involved: emotion, mind, and action. Firstly,

'emotion' as defined by the Oxford English dictionary (2001) is described as "an instinctive feeling as distinguished from reasoning or knowledge". Accordingly, it is argued to relate to the social/ relational sides of polychronicity defined by social networks (Ancona *et al.,* 2001b; Hall, 1989), and with what Palmer & Schoorman (1999) refer to as 'context'– a culturally defined affective state of being, governing norms of non-verbal and verbal communication.

For example, low context is seemingly on a par with low expressions of feeling/ emotion, whereas high context is more akin to 'high' expressions of feeling/ emotion; there is little need for the spoken word (Hall, 1989), with communication primarily based on emotive, more intuitive forms of exchange. 'Emotion' also ties in with descriptions by Ancona *et al.,* (2001b) of how individuals *relate* to time, which incorporates the socio-cultural aspects of the construct. Polychronics are endlessly building upon their networks of information and are fully absorbed in social interaction and the success of which is *felt* as well as deliberated upon; hitherto, with a deep involvement with people, cognitive processing concerning matters of time and its passage are also expected to be less likely (Conte *et al.,* 1999; Hall, 1989; Hall & Hall, 1990).

'Emotion polychronicity' also ties in with Slocombe's (1999) polychronicity categorisations relating to 'belief' (i.e., polychronicity is the best way to work) and 'attitude' (i.e., the scope of internal congruence, i.e., whether monochronic/ polychronic activities are positively or negatively experienced). Arguably though, attitude can also be a product of the mind.

For the thesis at hand 'emotion polychronicity' identifies cultures high in emotional expression and support systems, i.e., Hall's P-time culture belt inclusive of Greece. To illustrate, "P-time stresses involvement of people" (Hall, 1989: 46), compared with those lower in 'emotion polychronicity', i.e., Hall's M-time belt of cultures that linearly process relationships as they process work, and also where work is often prioritised over people. In view of the cross-cultural nature of the thesis at hand this dimension is very relevant.

Though the central role of emotion has been overlooked in examinations of polychronicity, in turning to related fields (i.e., Type A behaviour) for inspiration, the

role of emotion does however feature as part of Friedman & Rosenman's (1974) 'action-emotion complex' to signify its relevance in understanding human behaviours. Similarly, Zhu & Thagard (2002) address the role of emotion in relation to action, and argue it has been long-neglected and overlooked. Specifically, as inspired by the field of cognitive neuroscience, "some patients with neurological damage in specific sites of their brains who lose their ability to process emotion normally also lose their ability to make rational decisions in everyday life. But their abstract reasoning and logic skills remain intact. This evidence suggests that emotions probably assist reasoning, especially when it involves complex personal and social matters" (Zhu & Thagard, 2002: 20).

Hitherto, Zhu & Thagard's (2002) contributions from a cognition-dominated perspective, argue (as does this thesis) that 'emotion' is a neglected dimension in theories of action, particularly in terms of how emotions may impact upon decision-making, as well generate and control action. By drawing upon many fields of research the emotion-mind-action complex is a useful tool for not only refining the understanding and conceptualisations surrounding polychronicity, but also the overt Type A behaviour pattern.

Secondly, in terms of 'mind polychronicity', to convey polychronicity as a *preferred temporal orientation*, Palmer & Schoorman's (1999) 'time use preferences' category is highly analogous. In view of the cognitive-based processing involved to determine one's preferred temporal orientation, it is deemed appropriate to align the nature of the present study to a study of cognition; thought. Accordingly, the context to be investigated concerns 'global schools of thought' (i.e., universities).

Furthermore, the tasks to be incorporated in this thesis are of a competing, polychronic design. To explain, the respondent is required to deliver objective indicators of performance, speed and accuracy, whilst also attending to the subjective experience of time's passage over tasks of increasing cognitive complexity. The respondent's attentional resources are duly competed over and allocated according to the respondent's disposition- either towards objective matters of speed and accuracy or the subjective passage of time. Consequently, the tasks serve to engage responses not only 'pitted against the clock' (i.e., timed tests), but also a simultaneous (polychronic) response pertaining to a subjectively experienced passage of time. As respondents are able to

allocate attentional resources as preferred, the dimension of 'mind polychronicity' (preferred polychronicity) is of importance.

In terms of 'action polychronicity', Ancona *et al.,* (2001b) neatly encapsulates this aspect with the categorisation 'mapping activities to time', i.e., task-switching or multi-tasking (Arndt *et al.,* 2006; König *et al.,* 2005; Zhang *et al.,* 2005), as with Slocombe's (1999) dimension of 'behavioural polychronicity'.

Though polychronic behaviours per say, i.e., task-switching or multi-tasking, are not examined by this thesis, for an examination of how the total 'Emotion-Mind-Action Complex' may operate and impact outcomes, it is of value to see how 'mind polychronicity' and 'emotion polychronicity' affect 'action polychronicity' (multi-tasking, task-switching behaviours). As a consequence, one behaviour pattern conceptually related to 'action polychronicity' is the Type A Behaviour Pattern. As a reminder, Type A is characterised by multiphasic behaviours (Friedman & Rosenman, 1974).

Hitherto, to test the roles of 'emotion polychronicity' (the socio-cultural side of polychronicity as coined by Hall's P-time) and 'mind polychronicity' (the cognitive side of polychronicity indicative of preferred temporal orientation), upon 'behaviour' (action), 'action polychronicity' is represented by the Type A Behaviour Pattern though differentiated to account for both its toxic and non-toxic elements. Thus, subject to personality, culture, environmental context, and task, 'mind polychronicity' and 'emotion polychronicity' are to be examined for their effects upon 'action polychronicity' as defined by the TABP.

The three dimensions of emotion, mind and action polychronicity are interactive and interrelated, yet arguably differentiated according to personality, culture, environmental context and task. Specifically, whether it is one's emotion or one's mind (if not both) that influence actions, it is arguably dependent upon whether preferences for rational thinking override emotional contributions in determining action (or vice versa), which eventually combine to constitute complex behaviours patterns, such as Type A, as well as multi-dimensional constructs of personality and culture, such as polychronicity. For the present thesis positioned within the context of 'global schools of thought' the facets of

'emotion' and 'mind' polychronicity, as well as 'action' polychronicity feature as focal themes for further investigation. Firstly, in terms of 'emotion polychronicity' the perspective of culture is incorporated; namely Hall's P-time, M-time classifications of polychronicity as a socio-cultural form of communication and approach to managing relationships.

Secondly in terms of 'mind polychronicity', preferred temporal orientation is a cognitive process, and is to be examined for cultural variation in a context where 'mind' is most at play and within global schools of thought.

Thirdly, 'action polychronicity' is best described by multi-tasking and task-switching behaviours, and in terms of overt behaviour patterns, 'action polychronicity' is the dimension of polychronicity, which is also described by the Type A behaviour pattern. Essentially the framework intends to demarcate the conceptual domains concerning polychronicity and Type A, as well as convey where the overlap across the two constructs actually exists. To see how the 'Emotion-Mind-Action Complex' can add further clarification to how truly multidimensional polychronicity really is, particularly in how it may differentially manifest as in emotion (i.e., feeling), mind (i.e., thought) or activity (i.e., Type A behaviour), please refer to the hypotheses section relating to polychronicity and role overload (section 4.3.6).

Another point to mention is the fact that mono/polychronic orientations have largely only been categorised according to the endpoints of the mono/polychronicity continuum, i.e., either monochronic or polychronic (e.g. Ruiz & Reynolds, 2007; Slocombe, 1999). For those very few studies that have accounted for the mid-range category of the continuum, serving to enrich upon the interpretative value of the continuum, this category has been referred to as 'neutral' (Lindquist & Kaufman-Scarborough, 2004; Zhang *et al.,* 2005). Yet, (as already stated), this is only entirely accurate for those respondents that have predominantly responded to items with indifference (at the midpoint; 'neither agree nor disagree'), though this point has not been addressed until now.

Consequently, for those individuals and cultures that have a need to incorporate both monochronic and polychronic approaches, no empirical research to date has empirically tested for related manifestations of a dual monochronic and polychronic approach,

despite its relevance to high-tech societies (Hall, 1989) and the future. Specifically, it is reasoned that in contrast to people from cultures characterised as monochronic, people from cultures more polychronic in orientation are not so governed by timetables and appointments (Conte *et al.,* 1999; Hall, 1989). For example, research conducted across differing hospital departments reveals a negative relationship concerning values of polychronicity with that of deadline, schedule and punctuality values (Bluedorn *et al.,* 1999; Conte *et al.,* 1999; Hall, 1989).

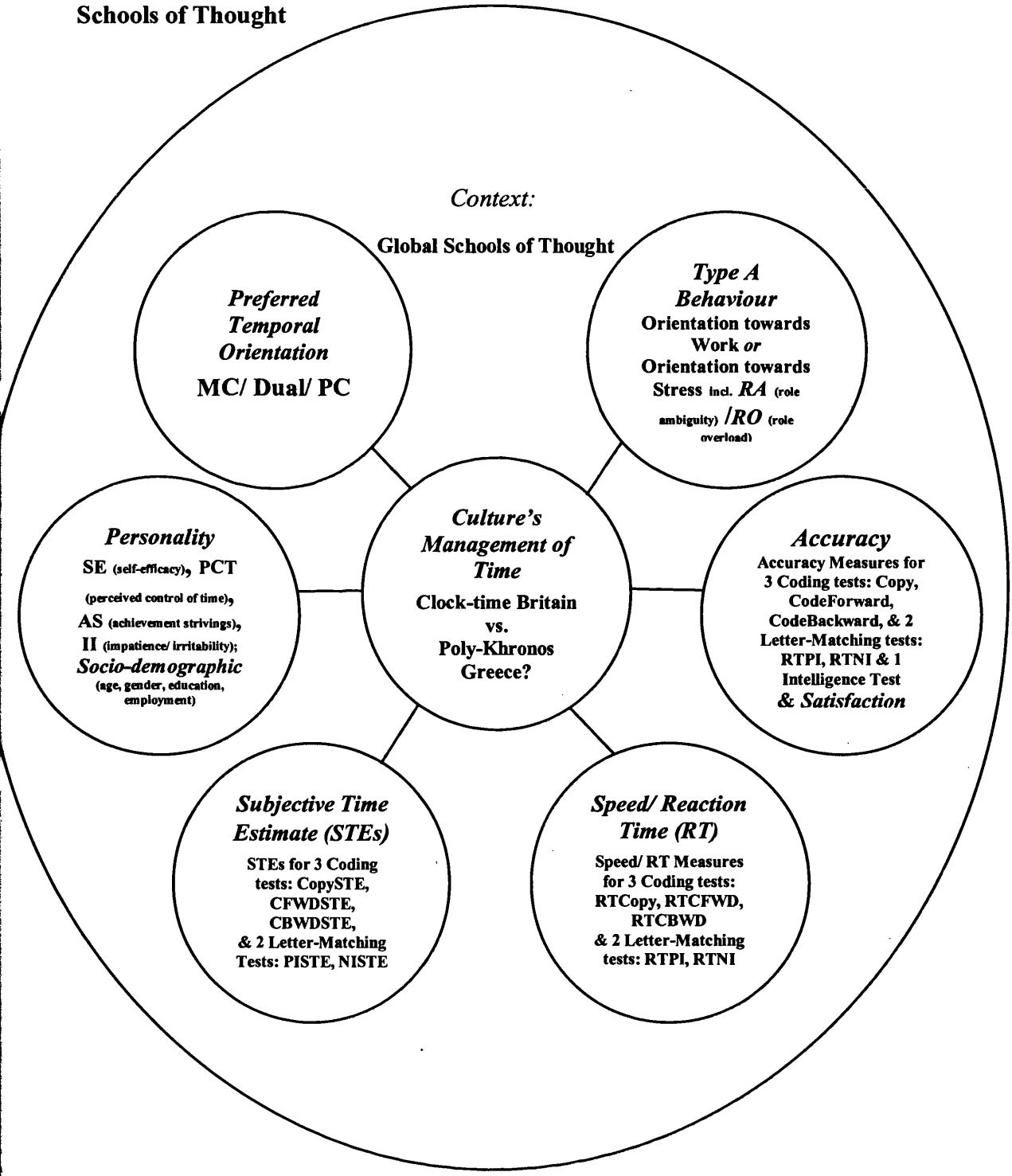
Yet, in applying this stance to an individual level of analysis, that is, polychronicity is negatively associated with the time urgency dimensions of scheduling and deadline control, minimal empirical support is offered (Conte *et al.,* 1999). Could this be due to the fact that polychronicity has become entangled with Type A? Specifically, have the more cognitive aspects of preferred temporal orientation; that is 'mind polychronicity' become confused with behaviours apparently multi-tasking in appearance, i.e., action polychronicity. Alternatively, in view of more personal relationships with time, and the advent of high-tech/ high-speed/ high-accuracy, this thesis argues that some entities may actually prefer to incorporate *both* monochronic and polychronic approaches.

Hitherto, focus shifts to conceptualisation and the main variables under examination. A simplistic framework interconnecting the main constructs of interest has already been given (see Figure 1.2A) to provide an introductory overview. For a more intricate impression of the specific relationships investigated, the framework to follow (Figure 4.3A) expands upon Figure 1.2A to define the main factors at play. The right-hand side of the framework aims to assist in one's understanding of the differential measures of efficiency and effectiveness variables (i.e., speed/ reaction time, accuracy and Type A behaviour) examined. The left hand side conveys an amalgam of individual-level characteristics incorporated to explain potential sources of variability, along with culture, which is centrally positioned in the model. Henceforth, the following sections address matters of theoretical and empirical import to address some of the hypotheses arising from the framework. The framework is inspired by using 'time as a lens' to gain insight into culture (Ancona *et al.,* 2001b; Goodman *et al.,* 2001), namely time as a cultural system (Hall, 1989), with particular attention paid to the resulting cultural effects upon outcome measures of speed and accuracy, as well as orientations towards either stress or work.

4.3 Framework of Analysis

Figure 4.3A below presents a framework of the main variables incorporated for study to aid an examination of culture's management of time across global schools of thought (universities).

Figure 4.3A: A Framework to Examine Culture's Management of Time in Global Schools of Thought



In view of the tentative nature of testing newly correlated variables, the framework is presented in a way, which pinpoints 'Culture' as the core point of comparison. As can be appreciated by the web of interrelating constructs, a vast number of relationships are implied by the above framework, yet as many of the above variables have not actually been tested as yet according to cultural deviation (i.e., perceived control of time, dual monochronic & polychronic, reaction times, subjective time estimations, expectations of achievement, orientations towards work and/ or stress), the framework provides an effective way to address the research questions raised by thesis as well as a good starting point to expand future research efforts upon.

Furthermore, by observing the interplay of the proposed variables in this manner, a better handle of the many different variables that have been incorporated by the present research endeavour can be appreciated. In an effort to further knowledge of culture's management of time in accordance with key variables, the framework is to be revisited to address each of the research objectives and related hypotheses raised by this thesis. Specifically, as each hypothesis is addressed the relevant sections of the above framework will be highlighted in red and presented in the appendices (see Volume II) to depict the specific variables in play.

An important point to note however is that "In quantitative research parsimony or brevity is encouraged" (Berg & Latin, 2003: 214). Accordingly, frugality is recommended as not all of the conceivable moderating and mediating effects (i.e., the context of personal versus professional life) can be synchronically modelled and accounted for, to then identify specific sources of variability. What is accommodated by the thesis however, is an examination of the role of personality, technology and culture (namely, high-tech/ M-time and P-time versus low-tech/ M-time cultures), upon observable behaviours, within a contextually grounded (Winter & Prohaska, 1983) setting; 'global schools of thought' (universities).

Essentially, the framework aims to neatly present the intricacy of relationships investigated, as well as serve to deepen the understanding of its finer intricacies, such as how the 'Emotion-Mind-Action Complex' is a dominant theme shaping the constructs of 'coping' that concern the present thesis; specifically, polychronicity and self-efficacy as well as Type A orientations towards work or stress. Thus in applying the framework to

address the main research questions raised by this thesis the subsequent sections of this chapter attend to the hypotheses that have been epistemologically driven in an attempt to address current gaps in literature concerning 'culture's management of activities to time in global schools of thought'.

Hitherto, to begin with the generation of hypotheses, a recap of each of the research objectives is also presented before each section of specifically related hypotheses, as given below. See also Appendix 4.3A for a repeat presentation of the framework presented above (Figure 4.3A) and Figures 4.3B (Ho1) to 4.3R (Ho13a) featured as part of Appendix 4.3A for the relevant frameworks that relate to the respective hypotheses.

Research Objective (I): *How can the constructs of polychronicity and Type A behavioural orientations be both conceptually and theoretically refined to clarify present-day confusions pertaining to their underlying multi-dimensionality?* See hypotheses Ho1, Ho1a, Ho2, Ho3 and Ho3a to follow.

4.3.1 Culture and Objective Variations in Speed and Accuracy

This thesis thus far has identified the presence of varying conceptualisations of time, dichotomous (i.e., linear vs. cyclical; objective vs. subjective; homogeneous vs. heterogeneous) (McGrath & Rotchford, 1986), as well as the triune perspective of time's past, present and future, mediated by consciousness (Walsch, 1997; Prabhupadā, 1986, 2001). In essence, each culture manages time in its own unique way (Hall, 1989; Hall & Hall, 1990). Also explained is how the 'Emotion-Mind-Action Complex' can aid one's understanding of where the multi-dimensional constructs of polychronicity and the Type A behaviour pattern converge; that is, in terms of multi-tasking, task-switching 'action', and where they potentially remain distinct, i.e., across the realms of emotion and mind.

The construct of 'polychronicity' gives meaning to the daily interactions of social life (Ancona *et al.,* 2001b; Palmer & Schoorman, 1999; Zerubavel, 1982); shows the range of ways activities are mapped to time (Ancona *et al.,* 2001b; Palmer & Schoorman, 1999), to include the diverse approaches to temporal management and orientation that manifest across differing cultures (Hall, 1989; Hall & Hall, 1990). Polychronicity also tells of varying ways individual entities may relate to and experience time (Ancona *et al.,* 2001b; Palmer & Schoorman, 1999). Yet, in terms of actual performance, Type A behaviour is

particularly on a par with 'action polychronicity'; though distinct from 'mind polychronicity' and 'emotion polychronicity'.

Also, in terms of the multidimensionality of polychronicity, 'emotion/ cultural specific' approaches to managing activities over time (Ancona *et al.,* 2001a,b; Hall, 1989; Koehler-Jones, 1995) are argued by the present thesis as distinct from 'mind-based' preferences for polychronicity, i.e., a preferred temporal orientation. Hitherto, 'emotion polychronicity' and 'mind polychronicity' are different dimensions and can be examined for differential effects by using subjective time estimation methodology, as well as objective measures of speed and accuracy for example.

Examinations of different cultural attitudes towards time reveal how time is subject to variability- as a resource, a form of societal standardisation, a near-religious construct or even a concept of little or no value at all (Hall, 1989; Lewis, 1995). "Because conceptualizations of time are essentially cultural constructions, societies adopt many structures that revolve around those constructions. The Industrialized West's construction of time as clock time enables the commodification of labor, because time is viewed as a resource that can be measured, standardized, used, bought, and sold. This conceptualization of time, sometimes labeled *economicity of time*, which emerged in the eighteenth and nineteenth centuries, is recognized as a significant contributor to the development of the Industrial Revolution" (Ancona *et al.,* 2001b: 515). And in agreement with Mumford (1934) and the quote leading part I of the literature review, where did the industrial revolution begin? It began in Britain.

Accordingly, speed and timing constitute key traits of the industrial revolution, responsible for new integration, communication and transportation technologies (Thompson, 1967; Zerubavel, 1982), and thus proposed as defining variables characteristic of British society. What is more, in view of the necessity to meet the expectations of a 'reliable, punctual service', as well as strictly adhere to timetables, the British are also positioned from a historical sense, to attain greater measures of accuracy. In contemporary times, the advent of technology has been fully incorporated in the west, and Britain is no exception (Bradsher, 2007; <http://english.peopledaily.com/cn>; Piga & Poyago-Theotoky, 2005; The Economist US, 2001).

Accordingly, a deeply rooted mentality governed by 'Clock time' and expectations of high-tech accuracy (i.e., satellite navigation systems; online delivery services; reliable home-entertainment systems), contribute to mould the consciousness of its people, by becoming instilled in patterns of thought, emotion and behaviour– and for most of us, the reasons for why are unknown (Dispenza, 2006; Hall, 1989). This is Hall's (1989) 'primary level culture' again. The extent to which 'obsessions with work' and self-pursuit are embedded into our consciousness is now apparent by convenience-living, timesaving, progressions in technology, and bringing the 'workspace' into one's home (Kaufman-Scarborough, 2006).

What would be telling would be whether as a result the British are more oriented towards stress (e.g. due to incongruence between personal/cyclical and artificial/linear time) or work (e.g. due to a harmonious approach to managing activities to time; clock and/or event)? (For more on this topic, see Ho7 and Ho8). Alternatively, Hall (1989) positions Greece as mid P-time belt, so less emphasis on matters of the clock are anticipated. Hitherto, a related hypothesis to address concerns the location on the mono/polychronicity continuum where the British and Greeks groups sampled actually lie (a topic shortly addressed- see Ho1a).

Another way to clarify the construct of polychronicity set within an interplay of personality, culture and performance is to account for 'context'. Based on Hall's (1959, 1989) cultural anthropological works, historical context (Thompson, 1967; Zerubavel, 1982) and the literature review (Bagwell, 1968; Wright, 1968; Zerubavel, 1981; Bradsher, 2007; <http://english.peopledaily.com/cn>; Piga & Poyago-Theotoky, 2005; The Economist US, 2001), it is argued that the Greeks (in contrast to the British) will be less obsessed with clock-related traits, such as speed and accuracy. In terms of how the British and Greek cultures fare in terms preferred temporal orientations as measured by the IPV, the Greeks are hypothesised to be more polychronic in orientation than the British (Hall, 1989).

Yet, as this relationship is subject to change depending on the nature of tasks involved (Ruiz & Reynolds, 2007) and the context of investigation (Conte & Gintoft, 2005; Conte *et al.,* 1999; Hall, 1959, 1989; Palmer & Schoorman, 1999; Schein, 1992), it will be interesting to see how the context of a global school of thought (i.e., a university) serves

to mediate the cultural aspect of mono/polychronicity when managing tasks over time in an environment dominated by the schedule of clock-time.

In addition, though it might be natural to hypothesise that the British are decidedly more monochronic than the Greeks due to its longer history of industrialisation, it is currently a society steeped in ever-advancing states of high-tech living (Bradsher, 2007; Hall, 1989; <http://english.peopledaily.com/cn>; Piga & Poyago-Theotoky, 2005; The Economist US, 2001) and are argued to incorporate both monochronic (MC) and polychronic (PC) approaches to managing activities to time (Hall, 1989). Thus, although it is to be hypothesised that Greeks are more polychronic than the British, it is of empirical interest to see how preferred temporal orientation may be mediated by the context of 'global schools of thought'- a universalistic context especially chosen for such investigations.

Furthermore, differential dimensions of polychronicity (emotion, mind and action) are anticipated to result in differential outcomes of behaviour (i.e., speed and accuracy). Thus, the first hypothesis to follow provides a useful starting point of the purposes of comparative and theoretical efforts. Primarily, in terms of 'emotion polychronicity' (M-time British versus P-time Greeks) different outcomes of accuracy and speed are argued, (which can then be compared against tests incorporating 'mind polychronicity' and 'action polychronicity'). Specifically,

Ho1: Different socio-cultural orientations manifest different behavioural response rates (accuracy and speed). In timed situations, the clock-oriented, high-tech cultures attain higher levels of accuracy and speed than event-oriented, low-tech cultures.

Ho1a: High-tech cultures are both monochronic and polychronic in terms of preferred (mind-based) temporal orientation.

As a reminder for a diagrammatical viewpoint of the relations investigated, each of the hypotheses are accompanied with a diagrammatical framework to present a clear picture of the relations investigated (see Appendix 4.3A, Figures 4.3B (Ho1) to 4.3R (Ho13a).

Having introduced the cultural (emotion polychronicity) and activity mapping sides of polychronicity (mind polychronicity), the next section examines the role of socio-

demographics (specifically education and gender, though age is also argued as a relevant factor for empirical testing) in unravelling the manifold aspects of polychronicity.

4.3.2 Polychronicity and the Role of Socio-demographics

Several individual-level characteristics have been proposed as antecedents crucial to furthering knowledge on preferred patterns of time use (Cotte & Ratneswhar, 1999; Hall, 1989; Koehler-Jones, 1995). Nevertheless, no evaluations have been made concerning the cultural meaning of polychronicity as defined by Hall's (1989) M-time/ P-time continuum (emotion polychronicity), as compared against measures of *polychronicity* that focus on *preferred orientations* (mind polychronicity) towards mapping activities over time (Ancona *et al.,* 2001b; Bluedorn *et al.,* 1999; Palmer & Schoorman, 1999).

To reiterate and as identified from the literature review, the individual level characteristics (Figure 4.3A) along with culture (positioned in the middle of the framework) that are argued to contribute to furthering research into clarifying the concept of polychronicity, as well as the efficiency and effectiveness of different temporal cultures, are presented on the left hand side of the framework.

The individual level variables encompass socio-demographic variables and traits of personality deemed most likely to correlate with temporal orientation as determined by the literature review. One variable identified by the literature review arguably related to polychronicity is education, discussed in the following section.

4.3.2.1 Education-based Expectations of Achievement

In terms of individual-level demographics, such as level of education, research argues that the processing of information is dependent upon an individual's cognitive capabilities in addition to the actual intricacy of information presented. It is therefore reasoned that individuals of higher cognitive capabilities accrue greater facts and figures concerning a product, and are deemed more able to assimilate such information on many attributes of a product than individuals of slighter capability (Schiffman & Kanuk, 2000).

In particular, this ability to assimilate a lot of information on many attributes of a product is indicative of a cognitive strategy (Haase *et al.,* 1979), and may potentially be manifest due to preferred orientations towards polychronicity. Specifically, the assimilation of

several attributes to be considered at one time tends to describe thought patterns that are more polychronic (multi-layered) than those of monochronic, single-layered patterns.

This suggests a need for greater research into the correlates of the 'monochronic-polychronic' continuum with that of cognitive capability, particularly as Kaufman *et al.,* (1991a) have identified a link specifically between that of 'mind polychronicity' and education- a potential indicator of cognitive capability.

In terms of the positive correlations between education and 'mind polychronicity' (preferred temporal orientation), "This finding is consistent with expectations of the greater information-processing skills of people with more education, but it may also arise from the better rapport our middle-class interviewers had with better-educated respondents" (Robinson, 1977: 141).

Acknowledging the presence of possible interviewer-bias, further research is still needed to lend support to the potential relationships that may exist between education and polychronic thought and behaviour patterns, particularly in view of findings by Frei *et al.,* (1999), which support a positive relationship between monochronic time use and academic performance.

Moreover, as introduced in part 1 of the literature review, Kaufman *et al.,* (1991a) found that individuals with higher levels of formal education had more of a tendency to operate polychronically. In research addressing online consumer time use preferences, Ruiz & Reynolds (2007) found tasks characterised as complex induced more of a positive attitude for polychrons compared to monochrons.

In view of the positive association hypothesised between polychronicity and education it may appear that academic study demands a more polychronic approach to managing the multiple activities and deadlines over time. Accordingly, the nature of tasks and demands require some attention, particularly in view of the varying number of courses a student has to attend to at degree level, as well the balance that is needed across areas of learning, survival and one's place in society.

Concomitantly, global schools of thought (i.e., universities) are driven by the linear processing system of clock-time mentalities that constitute the prevailing work ethic in the context of an achievement-oriented educational system. Hence, universities follow a global standard marked by monochronically-driven time management and scheduling behaviours to organise large numbers of people to appointed times and places. Arguably universities incorporate monochronic codes of emotion and behaviour, yet insist on polychronic thought processes to coherently and accurately assimilate many strands of knowledge and thought into a complete understanding (and particularly at PhD level).

A possible consequence is incongruence. Incongruence within an individual may result in view of the fact that global schools of thought actually require a handle on both monochronic and polychronic time use patterns. For example, in cultures more P-time in orientation the imposition of the academic schedule may lead members to believe that a more monochronic orientation is the most optimal way to perform tasks over time, even though realistically for the individual concerned, a more polychronic, if not combined approach may actually be optimal.

In light of such findings, though temporal orientation is argued to correlate with one's cognitive capacity, how does polychronicity and culture affect *expectations* of academic achievement? Though no research to date has addressed *polychronicity* and *expectations of achievement*, or even the *dual MC&PC approach*, it is hypothesised that,

Ho2: Different cultural and/ or specific temporal orientations (i.e., monochronic, polychronic or both) manifest differential expectations of achievement.

Other sociodemographic indicators that have been related to polychronicity include age and gender, yet due to matters of time and space, only the conceptual arguments relating to gender are expanded upon by the thesis at hand and are presented in the following section.

4.3.2.2 Gender

"M-time dominates the official worlds of business, government, the professions, entertainment, and sports. However, in the home-particularly the more traditional home in which women are the core around which everything revolves-one finds that P-time

takes over. How else can one raise several children at once, run a household, hold a job, be a mother, nurse, tutor, chauffeur, and general fixer-upper? Nevertheless, most of us automatically equate P-time with informal activities and with the multiple tasks and responsibilities and ties of women to networks of people. At the preconscious level, M-time is male time and P-time is female time, and the ramifications of this difference are considerable" (Hall, 1989: 52).

Hofstede (1984, 1991 & 1998) is known for his cultural dimension that demarcates the masculine and feminine (<http://www.geert-hofstede.com/hofstede_dimensions.php>), and Lindquist & Kaufman-Scarborough (2004) use the construct of polychronicity (the Polychronic Tendency Analysis to be precise) as a way to understand consumption behaviours that are specifically employed by women due to their dominance in the retailing world, and role as a shopper.

In terms of dealing with problems, and with reference to work by Gray (2002), author of "Men are from Mars, Women are from Venus" men are shown to possess traits more akin to monochronic cultures than polychronic ones; particularly as they depend upon themselves and their own 'mind' for problem-solving and dealing with stress.

In contrast, Gray (2002) explains that women in their response to stress are more prone to behaviours and emotional involvements that are found more so in polychronic cultures than those more monochronic in orientation. Rather than turn inward and retreat to one's cave, women are characteristically more emotionally oriented, as evidenced by the fact that many women are known to frankly discuss virtually all their problems with close friends and family.

Ergo, as captured by Gray (2002: 39):

"To feel better Martians go to their caves
to solve problems alone"

"To feel better Venusians get together
and openly talk about their problems"

As a consequence, it may be said that most men may prefer to turn inward and silently contemplate upon solutions alone, quintessentially monochronic, whereas women are more inclined to turn to others to talk about problems; arguably a trait more polychronic in nature. In terms of the 'Emotion-Mind-Action Complex', it may be possible to suggest that men rely more on their own mind and turn to activity to avoid facing their emotions, whereas most women are more inclined to address their emotions.

Also, monochronic time originates outside of the individual, clock-oriented and artificial, though necessary for the growth of industrialisation and capitalism (Ancona *et al.,* 2001b). It determines our daily lives as it exerts external order, characteristically defined as public and male (Helman, 2001; Hall, 1983). Polychronic time allows the events at hand to direct the time that is taken for completion, and is characteristically female (Hellman, 2001; Hall, 1989). Hitherto, in light of these inherent differences argued to exist between men and women, males are seemingly less polychronic in their time use patterns and behaviours than females (Hall, 1989). Yet to clarify interpretations of research how does the context of a global school of thought mediate to affect eventual outcomes? In view of the findings identified in the literature review and the arguments presented, it is hypothesised that:

Ho3: Males are more monochronic than females, whereas females are more polychronic.

Due to the cross-cultural position of this thesis, it is of added value to see how these proposed relations vary across the British and Greek cultures. For example, in terms of potential relationships that exist across Type A behaviours and gender, Price (1982) addresses how stereotypical sex role training in Type A behaviours are managed through mediums such as television via prime time programming and commercial adverts, though little is know as to the cultural variations. She states how maintaining a spotless home, preparing meals at speed, and making good coffee, are portrayed as ultimate trophies of feminine victory. Alternatively, for men, television serves to condition them to believe that victory is gained from success in the workplace, peer identification, respect for hierarchy, and sporting know how.

Of importance and according to Price (1982), if women's distinctively innate inputs, as marked by cognitive and behavioural factors, alongside different socialisation pressures, result in an altered Type A behaviour pattern, conventional indicators of Type A behaviour may prove insufficient for appraisal. This is of particular relevance, considering that Type A research initially centred upon employed Caucasian American males of middle-class, middle-aged status (Jenkins, 1978; Jenkins *et al.,* 1974; Price, 1982; Sager, 1991).

Seeing as times have changed since research into the Type A behaviour first began, BBC News reports in 2002 of a 'Multicultural Britain', whereby a many number of minority groups i.e., Indians, Pakistanis and African-Carribeans constitute the British workforce and see themselves just as 'British' as the next Caucasian man or woman (<http://news.bbc.co.uk/1/hi/talking_point/debates/south_asian/1951553.stm>).

Thus, to address whether Type A findings may be generalised to women and minorities, with reference to cognitive social learning theory identical individual-level traits (i.e., achievement strivings) may well initiate diverse behaviours that are conditional upon how such traits of a personality are emotionally (Matud *et al.,* 2004), as well as cognitively dealt with. These relations are also subject to change in terms of differing environmental forces (Price, 1982), support systems (Mo, 1991), and the context of investigation.

To elaborate, Price (1982) explains that certain facets of the Type A behaviour pattern may be principally demonstrated by one gender in particular. For instance, aggressive behaviours are seemingly supported for American men, yet frequently discouraged for American females. Hence, to the degree certain measures of the Type A (i.e., the Structured Interview/ SI and the Jenkins Activity Survey/ JAS), rely on indicators of aggressiveness to recognise the existence of the pattern; such measures may not be adequate enough to identify coronary-prone women who may internalise their feelings of aggression. Alternatively, certain personality traits associated with Type A, such as impatience and irritability, may be observed in both men and women. Additionally, distinct gender roles may also be blurring in today's day and age (Stumpf & Stanley, 1996).

These deviations from the traditional norm may also similarly apply for groupings distinguished according to culture. For example, high-tech, high-spending/ consumption societies are argued to be turning to multi-tasking behaviours (Turner & Reinsch, 2007), as well as suffering the effects of high-speed, high-accuracy expectations (Kaufman-Scarborough, 2006), and time conflict (Arndt *et al.,* 2006; Blount & Janicik, 2001; Singh, 2000). Nevertheless, to test the traditional norm in terms of gender, time-honoured assumptions relating to gender roles are opted for. Thus, considering the fact that men have been found more likely that women to score high on the overall Type A scale, and have tended to display greater levels of ambition, alongside more global applications of competitiveness and aggression, both verbally and physically (Maccoby & Jacklin, 1974; Price, 1982), it is hypothesised that,

Ho3a: Men are more achievement strivings and impatient/ irritable than women, as are cultures of a highly developed western orientation steeped in advanced states of technology.

In terms of the overlap between polychronic behaviours and the correlates of time urgency (achievement strivings and impatience/ irritability) the thinking and behaviours of time urgent individuals' reveal that they have confidence and belief in the fact that time can both be saved and recovered (Conte *et al.,* 1999). For this to occur, time urgent, Type A prone individuals become involved in polychronic or polyphasic activity (Conte *et al.,* 1999; Wright, 1988), such as performing and thinking about more than one thing at the same time, such as watching television whilst eating, or reading whilst travelling to work. Consequently, the extent to which individuals tend to hurry when performing activities, that is, to become time urgent, is also likely to be positively related to polychronicity (Conte *et al.,* 1999), if not particular facets, i.e., mind polychronicity (*preferring* to multi-task/ task-switch) and/or 'action polychronicity' (*performing* multi-tasking/ task-switching behaviours akin to the Type A Behaviour Pattern).

An important point to recall however is that preferred, cognition-driven temporal orientations do not always translate into multi-tasking or task-switching behaviours (König, *et al.,* 2005; Taylor *et al.,* 1984). Hitherto, polychronic behaviour is distinct with respect to the bigger picture of polychronicity, and is referred to as 'action polychronicity' by the present thesis. This more refined approach to the construct of

polychronicity accounting for the 'Emotion-Mind-Action Complex' of coping mechanisms (Bandura, 1977a,b, 1982) reveals a more accurate picture of the overlap between Type A Behaviour Pattern and polychronicity; specifically, 'action polychronicity'. In contrast, '*mind* polychronicity' (preferred temporal orientation) and '*emotion* polychronicity' (social/ cultural orientation), are conceptually distinct from Type A *behaviour* (action polychronicity).

The standard conception of time in Western society encourages individuals to perform only one thing at a time, and suggests this monochronically-biased approach is superior. Nevertheless, this only represents one approach on the temporal continuum that applies to how activities are managed according to time, and thus results in only one system that measures how time is experienced in both individual and cultural life (Conte *et al.,* 1999; Mets, 2002).

Following on from the above-given arguments, polychronicity and time urgency are very likely to be related constructs (Conte & Gintoft, 2005; Conte *et al.,* 1999; Taylor *et al.,* 1984; Waller *et al.,* 1999). In particular, "Polychronicity, which describes the preferred temporal pattern of behavior (i.e., how work is done), is likely to be related to both AS and II. First, achievement-oriented individuals may attempt to multitask in order to accomplish more goals in the same amount of time. Over time, working on more than one thing at a time is likely to become the preferred pattern of behavior for such achievement-oriented individuals" (Conte *et al.,* 1999: 271).

In terms of impatience/ irritability, incongruence may be a contributing cause of such a disposition, particularly if a polychronic individual is performing tasks of a monochronic nature in a monochronic environment, or if a monochronic individual is performing tasks more polychronic in orientation, in a polychronic environment (Conte & Gintoft, 2005; Conte *et al.,* 1999; Schein, 1992).

To ascertain construct validity evidence for polychronicity its relations with personality traits such as impatience/ irritability, and achievement strivings is a viable approach (Conte *et al.,* 1995 & 1999). In particular, the focus of research by Conte and colleagues (1999) was to examine the construct of polychronicity in terms of ascertaining validity, upon which this thesis advances. In a related vein, with the exceptions of Conte *et al.,*

(1999) and Tinsley (1998) empirical research has yet to quantify and examine the hypothetical and observational differences in polychronicity across national cultures, initially proposed by Hall (1959, 1989).

With a view to refining distinctions across traits of personality, i.e., achievement strivings and impatience/ irritability from overt Type A behaviour patterns (Lachar, 1993), coined by the present thesis as 'action polychronicity', additional factors to consider include population differences, the effect of competition and employment, as well as differences in cognitive factors, such as reliance on social approval, fear, and self-efficacy (Price, 1982). Hitherto, self-efficacy is discussed in the following section. Thus, moving on from the interplay of socio-demographics, polychronicity and performance, the next section expands upon the role of personality (specifically, self-efficacy and perceived control of time) to explain variability in performance. This brings in the second main research objective. To recap,

Research Objective (II): *The second major research objective driving this thesis is to test for relationships across self-efficacy and 'mind polychronicity' (preferred temporal orientation). Is this relationship culturally invariant within the context of global schools of thought?* See hypotheses Ho4, Ho5 to follow.

4.3.3 Personality

As shown by framework to examine 'Culture's Management of Time across Global Schools of Thought' (see Figure 4.3A and also Appendix 4.3A) personality variables are incorporated by the present thesis in an endeavour to look at how personal styles of coping relate to outcomes of performance (Conte & Gintoft, 2005; Francis-Smythe & Robertson, 1999b; Koehler-Jones, 1995). The first variable to address is self-efficacy followed by perceived control of time.

4.3.3.1 Self-Efficacy

Bandura's (1977a,b, 1982, 1986) 'unifying theory of behavioural change' advocates that even in times of difficulty the amount of effort an individual employs and persists with, is greatly dependent upon perceived self-efficacy. To clarify, Bandura (1986) conveyed findings that established enhanced perceived self-efficacy as a predictor of children's increased determination in search of solutions, improved levels of intellectual attainment,

and greater intrinsic attention in activities traditionally out of favour. In a study by Barling & Beattie (1983) employing 200 insurance sales representatives a positive relationship was ascertained between self-efficacy and individual sales performance to find that self-efficacy values predicted insurance quantitative measures of sales performance (i.e., the number of calls made, the total number of policies sold, and the amount of sales revenue generated over a period of one-year).

More recent studies in the field have related self-efficacy to individual characteristics also akin to the Type A behaviour pattern (Lee & Gillen, 1989), i.e., competitiveness, achievement, and effort (Krishnan *et al.,* 2002; Vinchur *et al.,* 1998), as well as conscientiousness and cognitive ability, which result in fairly high-strength relations (Krishnan *et al.,* 2002).

Hitherto, a further significant issue in the study of self-efficacy relates to the causal correlations that exist across self-efficacy and performance. Based on empirical research findings, self-efficacy is both a cause and effect of performance that is also reciprocally related to past performance (Bandura, 1977a,b, 1982, 1986; Taylor *et al.,* 1984). Thus, in addition to self-efficacy being a cause of productivity and citations– a measure of performance, it is also argued to be an effect that results from performance, as measured by productivity and citations (Taylor *et al.,* 1984).[22]

A number of studies have examined and supported a positive relationship between individual performance and self-efficacy (Barling & Beattie's, 1983; Krishnan *et al.,* 2002; Lee & Gillen, 1989; Taylor *et al.,* 1984; Vinchur *et al.,* 1998). One likely reason for the positive association between self-efficacy and sales performance quality may be due to the accessibility of intrinsic and extrinsic feedback that allows the salesperson to exercise personal control. Specifically, intrinsic feedback can be sourced from evaluating one's performance with respect to objective barometers of performance, i.e., sales targets, whereas extrinsic feedback can be obtained from supervisors, other salespeople and customers (Lee & Gillen, 1989).

[22] Self-efficacy scale items employed by Taylor *et al.,* (1984) were called for, however, these scale items were no longer in the author's possession. Consequently, an alternative scale to measure self-efficacy was required.

As a person-variable trait, self-efficacy is further argued to manifest its effects upon stress, as shown via longitudinal field experiments conducted by Jerusalem & Schwarzer (1992). According to the cognitive-relational theory on stress, emotions, cognitive appraisals and coping behaviours are perceived as mediating processes that affect the experience a person incurs when involved in a stressful event, as well as the coping options that are seemingly available (Bandura, 1977a,b; Folkman & Lazurus, 1980; Jerusalem & Schwarzer, 1992; Kirmeyer & Diamond, 1985; Price, 1982).

Specifically, positioned as part of the cognitive theory of psychological stress and coping, "Stress is conceptualized as a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and as endangering well-being. The theory identifies two processes, cognitive appraisal and coping, as critical mediators of stressful person-environment relationships and their immediate and long-term outcomes" (Folkman *et al.,* 1986b: 572).

Moreover, cognitive appraisals occur in synchrony via discernment of one's personal resources and environmental demands, and which may also alter over time as a consequence of coping proficiency, changed needs, or developments in individual ability (Chen, Gully & Eden, 2004; Jerusalem & Schwarzer, 1992; Schwarzer, 1999).

Hence, as part of a meta-theoretical approach combining social cognitive theory with transactional stress theory, the intricate processes that lead to the occurrence of emotion are made up of causal antecedents, mediating processes, and effects (Jerusalem & Schwarzer, 1992; Schwarzer & Scholz, 2000), and are experienced as challenge, threat, or harm/loss (Jerusalem & Schwarzer, 1992).

To elaborate, Jerusalem & Schwarzer (1992) explain that antecedents refer to individual-level variables and characteristics such as beliefs, values and responsibilities, as well as environmental variables, such as context, situational controls or demands. Mediating processes refer to cognitive appraisals that are made regarding one's coping alternatives and situational demands, as well as efforts exerted in relation to one's problem and emotions (Srivastava & Sager, 1999).

Research findings show stressful events to be dynamic, unfolding processes that involve complex appraisal sets and self-referent thought, as opposed to static monotony (Bandura, 1977a,b; Jerusalem & Schwarzer, 1992; Schwarzer, 1999; Schwarzer & Scholz, 2000; Srivastava & Sager, 1999). In terms of the relations with challenge, threat and loss, all three types of cognitive appraisals may occur synchronically, and to varying degrees, thus, producing different emotions. In particular, challenge causes interest and curiosity, exploration and creative stimulation; threat triggers anxiety; and loss of control leads to a sense of vulnerability or depression (Jerusalem & Schwarzer, 1992; Schwarzer, 1999; Schwarzer & Scholz, 2000).

In line with preliminary cognitive theory on depression and anxiety, rather than trying to overcome the situation, an individual admits defeat, beset by a sense of helplessness and vulnerability. Such a state is argued as a long-term outcome of accumulative history of personal uncontrollability (Jerusalem & Schwarzer, 1992). In terms of immediate consequences, the experience of different stressors and outcomes of coping may result in physiological changes or affects; in terms of long-term consequences, changes in psychological welfare, social functioning and somatic health may result (Folkman *et al.,* 1986b; Jerusalem & Schwarzer, 1992; Schwarzer & Scholz, 2000).

As an offshoot to Bandura's social cognitive theory 'domain/ state-based' self-efficacy, independent of situational context, the construct general self-efficacy (GSE) shows much promise (Chen *et al.,* 2004; Scherbaum, Cohen-Charash & Kern, 2006; Schwarzer, 1999). To explain, "GSE is distinguishable from the concept of self-efficacy...whereas self-efficacy is a relatively malleable, task-specific belief, GSE is a relatively stable, trait-like, generalized competence belief" (Chen *et al.,* 2004: 376). Encapsulated is the belief in one's coping capability, as well as a perceived sense of performance-related aptitude across a broad diversity of circumstances (Chen *et al.,* 2004; Scherbaum *et al.,*. 2006; Schwarzer, 1999)

Primary research efforts leading such field experiments into general self-efficacy assess cognitive appraisal processes as independent variables, and outcomes of stress as dependent variables, varied according to personality characteristics and experimental treatment (Jerusalem & Schwarzer, 1992). Findings reveal that stress appraisals relate to both a personal resource factor (general self-efficacy), and to an environmental demands

factor (taxing academic tasks). On the subject of these dynamic and complicated appraisal processes, the role of general self-efficacy as a resource/ vulnerability factor is well established cross-culturally (Jerusalem & Schwarzer, 1992; Schwarzer & Scholz, 2000) and is a psychometrically sound and reliable construct (Chen *et al.,* 2004; Jerusalem & Schwarzer, 1992; Scherbaum *et al.,* 2006; Schwarzer & Scholz, 2000).

As a general rule, individuals high in self-efficacy hardly appear vulnerable to stressful situational conditions as such individuals scarcely show any reactions to experimental manipulation. Clearly, high general self-efficacy is comparable to or encourages positive personal beliefs empowering persons with good capabilities to defy the effects of stress (Chen *et al.,* 2004; Jerusalem & Schwarzer, 1992; Schwarzer & Scholz, 2000).

Contrary to such defiance towards stress, persons low in perceived self-efficacy are particularly susceptible to taxing demands and experiences of failure. As more pessimistic ways of appraising situational demands endure, less favourable evaluations inevitably result (Chen *et al.,* 2004; Jerusalem & Schwarzer, 1992). Hitherto, generalised self-efficacy is argued as a personal resource factor that serves to offset the effects of challenging environmental demands in the stress appraisal process (Chen *et al.,* 2004; Schwarzer, 1992a,b; Schwarzer & Scholz, 2000). To illustrate, up to date research on the effects of generalized self-efficacy has been performed by Sui, Lu & Spector (2007) across employees in Greater China, to find general self-efficacy is positively related to both physical and mental well-being.

In accordance with these lines of reasoning relating self-efficacy to outcomes oriented towards either stress or work, it can be argued that individuals high in self-efficacy attain higher levels of performance than those low in self-efficacy; also those low in self-efficacy suffer the consequences of stress more so than those high in self-efficacy. Hence, it is hypothesised,

Ho4: Higher levels of psychometric intelligence and lower levels of role ambiguity engender greater levels of self-efficacy.

Surprisingly, in relating self-efficacy research to the polychronicity-monochronicity continuum, no comparative, empirical research efforts have been published as yet.

According to situational context, both monochronics and polychronics may feel high in self-efficacy. Even so, in the context of challenging tests that require subjective time estimates of duration, one may hypothesise that as monochronics are more clock-bound than event-bound, resources that may have been allocated to the non-temporal processor in the brain will instead be allocated to the temporal processor, and as a consequence, the monochronic will have fewer resources to deploy to one's task at hand. As such resources may incorporate one's personal resource factor it is hypothesised that the deployment of attentional resources to matters of 'time' may also detract from believing one is capable of optimal task performance. Hence,

Ho5: Polychronics show greater signs of self-efficacy compared to Monochronics.

Thus, those high in self-efficacy are argued to be more adept at managing many demands at once, a trait assumed to be more manifest in those that are of polychronic cultures than those from cultures more monochronic in orientation. Moreover, monochronics may also be conditioned to believe that performing tasks one at a time is the best way to manage activities-to-time, even in times of great workload and pressurised demands.

Also, in view of the temporal nature of polychronicity no research to date has addressed its relations with perceived control of time across culture. Specifically, this relates to the third main research objective driving this thesis, and is presented below to introduce the following section.

Research Objective (III): What are the effects of perceived control of time upon preferred temporal orientation (mind polychronicity) and satisfaction across cultures? *See hypothesis Ho6, Ho6a to follow.*

4.3.3.2 Perceived Control of Time

As identified in the previous chapter, an individual's ability to manage time does not automatically assume increased satisfaction and productivity (Macan *et al.,* 1990; Macan, 1994; Nonis *et al.,* 1998). This is despite "the untested popular belief that poor allocation of time not only increases employee stress, but also impairs performance" (Macan, 1994: 381). Macan *et al.,* (1990) explored an individual's *perceived control of time* as it related to responses of stress- namely job-induced, and somatic tensions.

Macan examined time management behaviours of employees to find "time management behaviors – goal setting and prioritizing and having a preference for organization – appear to have beneficial effects if they give persons the perception that they have control over their time" (1994: 389). Consequently, 'perceived control of time' has been proposed as an intervening factor in the relationship between training concerned with time management and behavioural consequences including stress (Macan, 1994; Nonis *et al.,* 1998; Spector, 1986; Thompson, 1981), as well as job-related accomplishments (Greenberger *et al.,* 1989; Spector, 1986; Macan, 1994).

It was found that 'perceived control of time' was a variable of great interest, as those students who did not perceive they had control over their time experienced greater school and somatic tensions those students who did perceive they had control over their time. Moreover, students that perceived they had more control over time reported notably better performance appraisals, higher levels of life and work fulfilment, as well as lower levels of role overload and ambiguity.

As yet, however, perceived control of time has not been tested across cultures (or even within a culture for that matter) for its relations with monochronic and/or polychronic time use preferences. In view of these definitive gaps in the literature the following hypothesis, though tentative, is of obvious importance considering the associations readily apparent between the perceived control of time and time use preferences. Also of value, is the way in which these relations are mediated by culture; hence, in view of the clock-time orientation of monochronics,

Ho6: Cultures high in perceived control of time incorporate more monochronic tendencies in the approach to task-to-time management.

In view of the role of personality traits upon outcomes of emotion, action and behaviour, perceived control of time has been positioned as a predictor of satisfaction (Macan *et al.,* 1990). Other predictors of satisfaction proposed by research include achievement strivings (e.g., Bluen *et al.,* 1990), and although self-efficacy is arguably a contributor of satisfaction this arrangement of relations has yet to be tested for.

Perceived control of time has also yet to be tested for cultural variability alongside measures of achievement strivings and self-efficacy. Accordingly, this particular array of relations is empirically examined for the first time by the present thesis; further discussed in the following sub-section.

4.3.3.2.1 Perceived Control of Time, Self-Efficacy, Achievement Strivings and Satisfaction

This section of the conceptualisation process addresses the interplay of culture, personality, specifically achievement strivings, and perceived control of time upon outcomes of satisfaction. Measurement of overall satisfaction with life in general is deemed useful for ascertaining an indictor of an individual's resourcefulness and ability to cope with life's obstacles of stress and negative health implications (Diener, 1984; Pavot *et al.,* 1998). "It appears that individuals who are satisfied with their lives are in general well adjusted and free from psychopathology" (Diener *et al.,* 1985: 73)

As touched upon in the literature review (part II), recent years have experienced a growing interest in research on subjective well-being (Diener, 1984; Diener *et al.,* 1985; Pavot, Diener, Colvin & Sandvik, 1991), which has identified three distinguishable components: life satisfaction, positive affect, and negative affect (Andrews & Withey, 1976; Diener *et al.,* 1985; Pavot *et al.,* 1998). Of these three components, positive affect and negative affect refer to the affective emotional aspects of the construct, whereas life satisfaction refers to cognitive-judgemental aspects (Diener *et al.,* 1985). Though this latter area of research has received slighter attention (Diener *et al.,* 1985), it represents a core theme of this thesis, namely, the role of 'Mind' (cognitive activity).

In an endeavour to define subjective well-being, researchers have been interested in tapping the factors that contribute to positive evaluations of one's subjective well-defined. Coined as *life satisfaction*, such a measure is indicative of an all-encompassing appraisal of one's quality of life in keeping with one's preferences (Diener, 1984; Diener *et al.,* 1985; Pavot *et al.,* 1998; Shin & Johnson, 1978). In view of matters of personal choice and decision-making, in view of the fact that thoughts of attained satisfaction may also be subject to one's emotional disposition, the roles of personality and culture are expected to fairly significant, though potentially differential roles.

Hence, a process of subjective judgements is proposed in establishing an individual's experience of life satisfaction that derives from an evaluation of one's position and standing with respect to an appropriate benchmark (Diener *et al.,* 1985; Pavot *et al.,* 1991). Moreover, the determination of how satisfied an individual is with their current situation is not externally imposed by some objective standard; it is actually dependent upon an individual's creation of a suitable 'standard' appointed for oneself (Diener *et al.,* 1985; Pavot *et al.,* 1991).

Consequently, a characteristic trait of inquiry behind research concerned with subjective well-being is to centre upon the individual's personal judgements and subjective experience, rather than an inventory of priorities and constraints shaped by the researcher (Diener *et al.,* 1985; Diener, 1984; Pavot *et al.,* 1991). In terms of subjective experience, culture arguably plays a differential role, as does technology. It is hypothesised by the present thesis that in view of the important role of personality in elucidating upon the outcomes of satisfaction, self-efficacy is culturally invariant across the context of global schools of thought (Sadri, 1996). Nevertheless, a differential role is anticipated in terms of achievement strivings (Sutil *et al.,* 1998) and perceived control of time across culture. In particular, the need to control time is argued as being greater for high-tech societies, whereas achievement strivings is more positively assimilated by event-oriented cultures (Sutil *et al.,* 1998). Accordingly,

Ho6a: Technology, culture and personality affect satisfaction. For high-tech, clock-oriented cultures, self-efficacy and perceived control of time are significant predictors. For low-tech, event-oriented cultures, self-efficacy and achievement strivings are significant predictors.

In spite of the fact that specific domains such as energy, health, marital bliss and wealth may be advantageous and sought-after, it is plausible to expect that different individuals will assign different values and weights of importance to each of them (Diener *et al.,* 1985; Pavot *et al.,* 1991). For example, some individuals may be extremely satisfied and happy with their marital life, yet very unhappy with regards to personal health issues (Diener *et al.,* 1985; Pavot *et al.,* 1991). This of course, is not going to be the same for all individuals, and as a result, the researcher needs to "ask the person for their overall

evaluation of their life, rather than summing across their satisfaction with specific domains, to obtain a measure of overall satisfaction" (Diener *et al.,* 1985: 71).

There are also other important outcomes of emotion, mind and action that are deemed relevant to the present thesis. Consequently, to lead on from this section, variables deemed to be significant contributors of either an orientation towards work or stress are duly presented, which serve to introduce the fourth research objective driving this thesis effort.

Research Objective (IV): What are the predictors of a positive Type A behavioural orientation towards work? Conversely, what are the main predictors of stress-related outcomes such as role ambiguity? *See hypotheses Ho7 and Ho8 to follow.*

4.3.4 Predicting Type A Behavioural Orientations Towards Work or Stress

As introduced in the literature review (part II), preferred patterns of time use (i.e., monochronic and/ or polychronic) are seemingly on a par with the Type A behaviour pattern (Frei *et al.,* 1999; Palmer & Schoorman, 1999). For example, on a par with a more monochronic orientation, Type A's have been found to concentrate their mind on the primary concern relating to their surroundings and the task at hand, and less so on more secondary concerns compared with Type B's (Frei *et al.,* 1999; Glass, 1977; Matthews & Brunson, 1979; Matthews *et al.,* 1980; Taylor *et al.,* 1984). Alternatively, Type A behaviour has been linked to polyphasic activities (action polychronicity); namely, the performance of more and more in less and less time (Frei *et al.,* 1999; Friedman & Rosenman, 1959, 1969; Palmer & Schoorman, 1999; Taylor *et al.,* 1984; Wright, 1988).

Moreover, as mentioned, Type A's have been found to actively inhibit outside distractions to enable improved levels of performance (Matthews & Brunson, 1979). Implications of such 'cognitive complexity' (Haase *et al.,* 1979) suggest that such active *lack* of attention engage additional resources, and may even lead Type A's to *suppress* physical health symptoms, as a result of their low salience (Carver *et al.*, 1976; Glass, 1977; Matthews & Brunson, 1979; Weidner & Matthews, 1978).

Evidently, research on Type A's bears a number of similarities to that of monochronic cultures, particularly in terms of how attention is focused and allocated. Moreover, for Type A's, one trait consistently observed as evident in these individuals is a high concern for matters related to time and timing; namely, time urgency.

Similarly, individuals of monochronic cultures are argued as more clock than event-oriented, and therefore hypothesised to allocate greater amounts of attentional resources to time related issues than those of polychronic cultures, i.e., start and finish times; duration; and scheduling. Alternatively, in response to role overload, Type A's may perform more polychronically than Type B's to achieve more and more in less and less time. Of interest, is how preferred temporal orientation/ 'mind polychronicity' (monochronic, dual monochronic and polychronic, polychronic) translates into 'action polychronicity', i.e., patterns of Type behaviour oriented towards work (though also stress).

In view of the divergent results concerning Type A, it is reiterated that this behaviour pattern is characteristic of differential effects (and some may be more desirable than others). Fortunately, the double-edged sword of the Type A behaviour pattern has been conceptually and empirically tackled by Sutil *et al.,* (1998), and is to be tested for its emergence across samples British and Greek in nationality. In particular, due to relatively lesser degrees of high-tech stressors placed upon the Greeks, it is argued that matters of work are less stressful enabling a greater orientation towards work (as opposed to stress) in contrast to the British. Yet, as already introduced 'one needn't be Type A to be time urgent' (Krishna, 2000), yet 'time urgency is a characteristic trait of all Type As', and the nature of these relations are undefined.

In addressing the relationship between Type A and achievement strivings, Jepson & Forrest (2006) in their study of workplace stress concerning teachers in Britain, found a positive relationship between the Type A behaviour pattern, achievement strivings and perceived teaching stress, though Type A behaviour was conceptualised alongside achievement strivings as a predictor of perceived stress rather than a behavioural outcome.

In terms of actually predicting the coronary prone Type A behaviour pattern, achievement strivings and impatience/ irritability as traits of personality have been shown to correlate with Type A's subcomponent, time urgency, but not coronary heart disease. To reiterate, "...a relation between the II scale and reports of relatively minor physical problems cannot automatically be generalized to CHD and other cardiovascular disorders" (Spence *et al.,* 1987: 527). However, considering that Sutil's (1998) measure is specifically designed to tap the differential Type A behavioural orientations towards either coronary-prone stress or work, as provoked by extreme environmental stimuli, a distinction is thus proposed.

Primarily, the traits of personality, achievement strivings and impatience/ irritability are positioned as distinct from Sutil's measure of Type A orientations towards work or stress. The main reason for why concerns an obvious need to clearly demarcate variables that tap *traits of personality* versus those variables that tap *behavioural orientations.* And as personality is likely to affect an eventual overt behaviour pattern, though not entirely serve to create it (as a need to include the role of the 'mind' and 'emotion', i.e., methods of coping and appraisal, is also advocated), it is argued to contribute to an eventual behavioural orientation possessed by an individual- be that towards either work or stress (Sutil *et al.,* 1998).

Accordingly, also of empirical interest are the potential differences relating to socio-demographic factors, i.e., gender and age. Also, how does nationality (a measure of culture) intervene upon these relationships? In view of the formative research efforts conducted to date pertaining to achievement strivings and impatience/ irritability (Spence *et al.,* 1987, 1989) to test these relationships across culture it is hypothesised that,

Ho7: Cultures high in emotion polychronicity (P-time) are more positively oriented towards work than cultures low in emotion polychronicity (M-time). Greater levels of achievement strivings and lower levels of impatience/ irritability are also argued to manifest.

In view of the need for high-tech societies to incorporate both M-time and P-time strategies (Hall, 1989), nations such as Britain, traditionally steeped in a linear, clock-time mentality may have experienced the need to manage multiple tasks simultaneously

as a response to role overload and/ or role ambiguity. In contrast, nations classified as more P-time (Hall, 1989), are argued to cope with multiple demands with greater ease, and hence, experience lesser degrees of role overload/ ambiguity. Moreover, based on research by Bluen *et al.,* (1990) and Spence *et al.,* (1987, 1989) concerning performance and health, by accounting for the additional role of personality upon the outcome of role ambiguity, lower levels of achievement strivings, self-efficacy and life satisfaction are also argued to manifest. Subsequently, it is hypothesised,

Ho8: Role ambiguity is more characteristic of high-tech cultures than nations more socially/ P-time oriented. Lower levels of achievement strivings, self-efficacy and life satisfaction are also argued to manifest.

Findings from the literature propose high-tech societies to manifest both M-time and P-time strategies (Hall, 1989), though the reasons for why are not made entirely explicit. To address the reasons for why, this thesis proposes that such a dual approach towards the management of activity over time in high-tech nations traditionally clock-time and monochronic in mentality (i.e., Britain, the birthplace of the Industrial Revolution and steam railway) adopt a more polychronic orientation (M-time and P-time), to help manage multiple tasks over time, as a way to keep up with the ever-escalating pace of its expectations, technologies and activities. Ironically, though technologies have been designed to alleviate the worker and provide more leisure time, this is clearly not the case (Brady, 1999; Greengard, 2001; Kaufman-Scarborough, 2006; Rau-foster, 2000). Thus, it is the high-tech society that is argued to be most susceptible to role overload/ ambiguity.

Consequently, it is further argued that the influence of time (objective and subjective) (Fink & Neubauer, 2001), culture (Hall, 1989), personality (Ancona *et al.,* 2001b; Hall, 1989; Koehler-Jones, 1995; Conte & Gintoft, 2005; Cotte & Ratneshwar, 1999; Francis-Smythe & Robertson, 1999b) and historical consciousness (Thompson, 1967; Zerubavel, 1982) play a vital role in the prediction of the usual outcomes of stress, such as role ambiguity (Brief *et al.,* 1983; Evans *et al.,* 1987; Frei *et al.,* 1999; Matud *et al.,* 2004).

Having addressed the possible sources of variability found across orientations towards work or stress-related outcomes such as role ambiguity, the following section examines

the roles achievement strivings and impatience/irritability play upon objective performance-related outcomes of speed and accuracy across the British and Greek samples. Also the interplay across 'emotion polychronicity' (as defined by culture), 'mind polychronicity' (as defined by categorisations of preferred temporal orientations: monochronic, dual, and polychronic) and personality traits, achievement strivings and impatience/ irritability are examined to address current gaps in the literature. Thus, to remind the reader of the fifth research objective and thus, serve to introduce the following section,

Research Objective (V): What are the relationships across speed, impatience/ irritability, and achievement strivings, and how is this differentiated according to culture? *See hypothesis Ho9.*

4.3.5 Personality and Behavioural Outcomes

Conte *et al.,* (1995) have explored how measures of AS, II, and activity level, relate to time urgency. In particular, AS was significantly related to time awareness, scheduling, nervous energy, list making, and deadline control, whilst II was significantly related to nervous energy, speech patterns, and eating habits. Additionally, the nervous energy BARS and, to a slighter degree, the list-making BARS were significantly related to the Activity scale.

Activity level was measured via the 'Emotionality, Activity, Sociability, and Impulsivity' (EASI) Temperament Survey (a 10-item self-report measure of activity created by Buss & Plomin (1975), with a coefficient reliability of .69. Activity level encompasses both tempo and vigour. For example, a person characterised by a speedy tempo can be seen to move quickly, talk fast, and is swift on stairs (Buss & Plomin, 1975; Conte *et al.,* 1995).

One assumption in the field is that vigour and tempo are simply substitute ways of using energy (Buss & Plomin, 1975; Conte *et al.,* 1995). Accordingly, high vigour is assumed to fit with rapid tempo. Not surprisingly, it is argued that activity level is conceptually related to the time urgency dimensions (Landy *et al.,* 1991), including nervous energy (Conte *et al.,* 1995).

In examining the construct of polychronicity (how work is managed and completed), the temporal pattern of behaviour, which focuses on performing many tasks at once is preferred (Conte *et al.,* 1999). In comparison, the construct of time urgency (how speedily work is managed and completed), concentrates more so on an individual's desired speed for accomplishing tasks (Slocombe & Bluedorn, 1999).

Considering that impatience is an indicator of an individual's inability to wait and be patient, it is further assumed to impinge upon speed-related behaviours (Jenkins *et al.,* 1971a,b, 1979; Lachar, 1993). Specifically, a negative relationship is argued to exist between II (impatience and irritability) and speed. That is greater levels of impatience/ irritability correlate with faster measures of speed, i.e., reaction time. Also of interest is how this relationship varies according to culture. The relationship concerning achievement striving and speed is also expected (though untested empirically). Even so, considering that impatience has been conceptualised in accordance with speed for the Jenkins Activity Survey (JAS) (Jenkins *et al.,* 1971a,b, 1979; Lachar, 1993) it is hypothesised,

Ho9: Speed correlates more so with the II (impatience/ irritability) than with AS (achievement strivings), and in a negative direction.

As a way if achieving more in less time, some researchers have hinted at the use of multiphasic behaviours to alleviate the experience of stress from role overload. This leads into the sixth research objective, and is further discussed in the next section. To recap,

Research Objective (VI): What is the relationship across preferred temporal orientation and role overload; specifically, are cultures categorised as P-time i.e., the Greeks, particularly adept at handling role overload in view of socio-cultural tendencies towards 'many-at-a-time'? *See hypothesis Ho10 to follow below.*

4.3.6 Polychronicity and Role Overload

Arguably the role of mind (cognition) bears an important influence upon eventual orientations, yet so too do emotions and re-'actions' (Dispenza, 2006). In combination, mind, emotion and activity (action) contribute to why certain individuals ordinarily

monochronic, may start to act with increasing signs of polychronicity, as manifest via behaviours, i.e., task-switching and multi-tasking, as well new approaches to 'mind management', i.e., multiphasic thoughts patterns. Accordingly, such changes may arguably manifest as a reaction to role overload, employed as a coping mechanism to counteract the effects of information overload (Conte *et al,* 1999; Haase *et al.,* 1979; Kaufman *et al.,* 1991a).

A negative relationship between polychronicity and role overload is argued; that is, greater polychronicity equates with less role overload. To recap, Kaufman *et al.,* (1991a) found those persons able to undergo, and be at ease with simultaneous task performance were also not as prone to the effects of 'role overload'.

Yet, with respect to the 'Emotion-Mind-Action Complex' 'action polychronicity' that results as a *response* to role overload (Haase *et al.,* 1979; Kaufman *et al.,* 1991a) for certain types of individuals i.e., Type As, may actually take an effect as a potential stressor (incongruence); especially if the use of polychronic time-to-activity patterns are not in fact an individual's *preferred* pattern of time use (mind polychronicity), but more of a reactionary response to alleviate role overload (emotion-action polychronicity, akin to Friedman & Rosenman's 1974 emotion-action complex). As mentioned, polychronicity is multiplicative.

Importantly, polychronicity is not only defined by the way activities are mapped over time (Ancona *et al.,* 2001b; Palmer & Schoorman, 1999) (action polychronicity), but also by the extent to which people prefer to be engaged in a many number of activities all at once (Bluedorn *et al.,* 1999) (mind polychronicity). Also of relevance are the values, attitudes and beliefs held by individuals and cultures- particularly whether preferences for how activities are performed over time are in fact believed to be the best way (Slocombe 1999) (emotion polychronicity).

In terms of employment, an evaluation of the congruence between the requirements of a task and an individual's preferred level of polychronicity (i.e., person-job fit) may reveal relationships between a poor fit and health outcomes (Conte *et al.,* 1999; Slocombe & Bluedorn, 1999).

In terms of incongruence concerning cultures of differing temporal orientations, North Americans situated in Latin America and the Middle East can incur great frustration. For instant, when living in a polychronic country, as in the Mediterranean and Arab nations that are characterised by its style of trade, markets and supplies, one is immersed in a sea of customers, all competing to capture the attention of a lone assistant who is attempting to serve everybody simultaneously (Hall, 1989; Schein, 1992).

Schein (1992) shares his experience of waiting in a post office queue in the South of France to witness how some individuals would simply push their way to the head of the queue, and surprisingly, actually get served by the cashier. All became apparent when his companions explained that not only has the cashier a more polychronic outlook, steering reactions to those that hollered the loudest, but that a higher status being deems it justifiable to barge into the queue and receive service before others as a genuine show of her/his standing. Furthermore, by staying in the queue agitated with vehement protest, a low sense of status is actually conveyed.

Consequently, emotions may help to clarify the context of a situation, and are expected to feature in times of incongruence; a potential source of stress and discomfort (Bandura, 1977a,b, 1982; Friedman & Rosenman 1974). Being at odds with the dominant temporal culture of a particular organisation and/ or nation could lead to states of dissonance, as well as potentially serve as subtle signs of low status and self-esteem (Hall, 1989; Schein, 1992). As can be expected other sources of tension exist between people who have internalised both monochronic and polychronic systems; a characteristic of advanced states of high-tech living (Hall, 1989).

It is highly important to address the relationship between polychronicity and role overload, from the perspective that the latter may result in the adoption of polychronic time use patterns, as a 'reaction' to alleviate one's workload of tasks as opposed to it being a 'preferred' pattern of time use[23], which is culturally, socially, and individually fashioned.

[23] It is deemed desirable to ensure a certain direction of thought across respondents. Specifically "preferred patterns of time use" (mind polychronicity) is the main construct of interest to the present thesis. To capture this dimension, specific instructions in the questionnaire have been included to evoke this particular context of thought; 'preferred temporal orientations'.

The point is that the differing responses involved are conceptually distinct. A *preferred* polychronic orientation, for example is 'proactive' and 'cognitive' mechanism for coping, whereas a *re-'action'* to role overload, is arguably 'reactive' and steeped in multi-tasking, task-switching 'activity'. Some actions are therefore 'habits' inbuilt and hardwired into the matter of the brain and do not involve the frontal lobe (Dispenza, 2006). Hitherto, such 'action' is not created by the 'Mind's Eye' per say, but rather by the 'matter' that makes up the brain (Dispenza, 2006).

Thus, in attempt to clarify research concerning the correlates of polychronicity and role overload, it is essential that one correctly categorise respondents as either *preferring* polychronicity or *turning to* polychronicity in view of the 'Emotion-Mind-Action Complex'. Particularly, a preferred temporal orientation is an expression of 'mind polychronicity', whereas a response to role overload is a manifestation of an 'action-emotion' complex, symbolic of the Type A Behaviour Pattern (Friedman & Rosenman, 1974); specifically, 'action polychronicity'.

Thus, here lies the overlap between polychronicity (specifically 'action polychronicity') and Type A, and this is where the overlap may potentially end. And though these factors constituting the 'Emotion-Mind-Action Complex' (EMAC) are related, they are still conceptually distinct, and help to demarcate where similarities and differences in fact reside. Consequently, it is advised that this EMAC framework allows not only for a better understanding of 'multiplicative polychronicity', but also of the Type A Behaviour Pattern.

In view of the link between polychronicity and the Type A behavior pattern (Conte *et al.,* 1999; Price, 1982), one may be led to speculate a negative relationship to exist between role overload and polychronicity (Haase *et al,.* 1979; Kaufman *et al.,* 1991a). Specifically, to alleviate the experience of role overload, greater levels of multiphasic activity are engaged in; also symbolic also of Type A. Consequently, lesser degrees of role overload associate with greater levels of 'action polychronicity'.

This relationship is argued to be much stronger for cultures classified as more P-time in orientation, (i.e., Greeks), (see Ho8) and possibly in terms of emotion, mind and action; though this is dependent upon context, i.e., a global school of thought, and the nature of

the task. Accordingly, the ability to combine and switch between many activities (action polychronicity), mentally orchestrate them (mind polychronicity) and *feel* comfortable with such orchestrations (emotion polychronicity) are assumed to be greater for those socio-culturally polychronic, due to a natural "involvement in several things at once" (Hall, 1989: 45). Arguably, it places the P-time culture in a better position to circumvent the negative effects of stress that result from role overload. Accordingly,

Ho10: A negative relationship is hypothesised to exist between preferred polychronic time use and role overload, and especially for cultures more socially oriented (i.e., the Greeks), than those more individualistic (i.e., the British).

With respect to prior empirical findings it may be hypothesised that in our incessant drive to manage more and more things at any one time, a syndrome of the modern world, a more polychronic approach to time would be preferred. In a similar vein, it would also be interesting to see if cultures that are more characterised by P-time patterns (i.e., the Greeks) are more adept at orchestrating and coping with many demands at once compared against the British; a characteristically high-tech culture that is positioned to operate both monochronic and polychronic time systems. It is of value to see exactly what combination of factors concerning personality, culture, and time bring about a society better equipped at coping with role overload.

In view of the fact that measures of speed and accuracy are easily measured via response differentials in behaviours that manifest from performance-related tests, they constitute a useful way to ascertain objective indicators of cultural deviation. Accordingly the following section introduces the interplay across 'mind-polychronicity' as defined by preferred temporal orientation, with objective outcomes of cognitive, mind-involving speed and accuracy tasks, which are also examined for cultural differences. Here enters the seventh research objective raised by the present thesis:

Research Objective (VII): What is the specific interplay across mind polychronicity (i.e., preferred temporal orientation), speed and accuracy? *See hypotheses Ho11 and Ho12 to follow below.*

4.3.7 Preferred Temporal Orientation and Speed

As introduced in the previous chapter, speed has been proposed as a culturally temporal variable that correlates with polychronicity. The reasoning for this association stems from observed polychronic behavioural outcomes within an organisational culture that emphasizes the need to be precise in decision-making, as well as consider a number of alternatives at once (Hall, 1959; Mets, 2002; Onken, 1998). Moreover, the implementation of numerous strategies with speed is a potential source of competitive advantage (Eisenhardt, 1989; Onken, 1998; Taylor *et al.,* 1984).

However, for polychronicity to be effective, individuals need to perceive polychronic behaviour as being the *preferred* and *best* way to organise activities according to, and over time (Slocombe & Bluedorn, 1999; Slocombe, 1999), and thus avoid states of dissonance. Nevertheless, if an individual's self-perception of polychronic time use activity is deemed as unfocused and disorganised this could cause greater depths of unease and lower levels of confidence when appraising oneself or developing upon a proficient pattern of time use for completing tasks and managing activities.

From the perspective of culture (emotion polychronicity) research across countries on polychronicity suggests a positive relationship between polychronicity and speed. For example, to study deviations in cultural tempos and 'pace of life' across six nations Levine (1988) applied three measures to reckon 'pace of life' relating to how accurate bank clocks were, as well as how fast people walked, and the speed of work involved at a post office whilst waiting for the cashier to fill out a typical order for stamps and complete the transaction, with cash in hand. Levine (1988: 51) presents a number of findings including "significant main effects for country on all three measures...the Japanese were highest on all measures: They had the most accurate clocks, the fastest walking speed, and the fastest postal clerks." In another study by Levine *et al.,* (1980), it was found that Brazilians are less perturbed by matters of tardiness than say the average American.

In particular, polychronic cultures are characterised as event-oriented, resulting in clock-based interventions potentially being less effective and salient. Moreover, polychronic cultures are argued to be more impervious to matters of how long an event takes, than monochronic cultures, which are characterised as more clock (therefore time) oriented.

Hence, alternative to D'Aveni & Gunther's (1994) organisational research (and arguably concerned more so with mind and action dimensions of polychronicity), speed is not a variable that seems to hold much value in a socio-cultural context, steeped in emotion, but more in accord with the dimension of 'polychronicity' concerned with 'mind' (coping appraisals) and 'activity' (coping strategies and mechanisms). The cultural angle of this relation, namely socio-cultural polychronicity as defined by Hall as 'P-time' however, is already addressed – see Ho1.

Yet as introduced in the literature review (part I, section 2.4.1.1.1) polychronicity and speed are related constructs. In terms of 'mind polychronicity', symbolic of a preferred temporal orientation, Conte *et al.,* (1999) directly related preferred polychronicity to productivity and time urgency measures, respectively. Taylor *et al.,* (1984) found a positive relationship across polychronicity and academic publications. Speed may also serve to shape success, as well as be a sign of definitive decision-making and acumen (D'Aveni & Gunther, 1994; Onken 1999). Consequently, it is hypothesised that,

Ho11: Preferred polychronic time use (IPV) and speed will be negatively correlated, i.e., high polychronic time use relates with faster reaction time speeds.

To develop upon the proposed relationships conveyed to exist between preferred polychronic time use/ temporal orientation and speed, such time use patterns have also been observed to equip individuals with productive gains in the performance of elementary cognitive tasks (ECTs) and intelligence tests, proposed measures of response accuracy; discussed further in the following chapter.

4.3.8 Preferred Temporal Orientation and Accuracy

Though no research to date has examined the relationship between polychronicity and accuracy of response in task performance cross-culturally, in generating hypotheses one may reason that due to positive correlations found across polychronicity and education (Kaufman *et al.,* 1991a; Taylor *et al.,* 1984), such individuals may also be better equipped to generate accurate responses. The reasoning involved concerns the degree of proficiency polychronics have shown in educational and life-learning strategies. Accordingly, one may plausibly hypothesise that such subjects may be more accurate in

response to measures such as timed performance tests that have been specifically designed to measure intelligence; an indicative measure of performance accuracy.

To expand, polychronic time (preferred temporal orientation) has been linked with tasks of increasing cognitive capacity, as in the realms of academia (Kaufman *et al.,* 1991a; Taylor *et al.,* 1984), attitudes to websites and online task complexity (Ruiz & Reynolds, 2007), control strategies (Zhang *et al.,* 2005), and female shopping behaviour (Lindquist & Kaufman-Scarborough, 2004). Additionally, "Selected cases...show how organizations use polychronicity to explore and exploit creative capabilities of employees to foster innovation" (Reinmoeller, 2001: 1).

Contrary to the majority however, research by Frei *et al.,* (1999) purports monochronic approaches towards managing activities over time have more of a significant impact upon faculty production in terms of publications and works in progress than polychronic ones.

In terms of the present thesis, accuracy is an outcome variable that is measurable via the use of performance tests, and the number of correct scores attained, for example, on timed elementary cognitive tasks or an intelligence test, as in Raven's Advanced Progressive Matrices (APM) (Raven, 1967) synonymous to the cognitive tasks ordinarily engaged in, within the context of a global school of thought, i.e., timed examinations. Accordingly, accuracy scores obtained from such performance tests can then be subjected to statistical assessments to investigate the possibility of cultural variability (see section 4.3.1, Ho1).

Moreover, differences in response speed across differing preferred temporal orientations and cultures are also proposed as a measure of reaction in terms of response time (speed of information processing), deemed to be a suitable indicator of performance outcome, i.e., accuracy, which can be objectively scrutinised to ascertain potential variations of behaviour that may exist across differing cultures and temporal orientations (see Ho1 and Ho13 to follow).

As mentioned, and in view of the positive correlations that have been shown to exist between polychronicity and education (Kaufman *et al.,* 1991a; Taylor *et al.,* 1984)

indicative of an individual's cognitive capacity and capabilities, polychronicity is also assumed to be related to levels of educational performance as measured by an intelligence test. Scores of accuracy also serve as an objective measure of accuracy. Consequently, it is expected that individuals more polychronic in orientation may potentially produce higher levels of accuracy than individuals more monochronic in preferred temporal orientation; a factor subject to environmental context and task content and complexity.

It could also be argued that in view of the theory arguing plausible relationships between monochronicity and speed of response- a factor potentially correlated due to an overriding concern with time as measured by the clock- may also possibly impact upon the relationship concerning a speed and accuracy trade-off. It could be reasoned that due such prioritisation given to issues of time, timing and prioritisation by monochrons (Ruiz & Reynolds, 2007), accuracy will be forsaken for speed. The result is greater rates of inaccuracy/ error.

Ruiz & Reynolds (2007) study of consumer characteristics and motivations regarding attitudes towards website complexity has shown significant interaction effects between preferred temporal orientation and task. Specifically, polychrons are significantly more positive in their outlook when faced with tasks relatively complex; monochrons however, are significantly more positive when faced with tasks that are simpler in design. In addition those more monochronic in orientation are more disposed to matters of *prioritising* tasks characteristically complex compared to those more polychronic.

Similarly, research by Haase *et al.,* (1979) is more inline with the study undertaken by present thesis than any other due to its application of polychronicity as an antecedent of intelligence (a measure of accuracy). Above all, Haase *et al.,* (1979: 279) have shown that "environmental boundary conditions placed on incoming stimuli by the polychronic person are much more permeable, hence a good deal more stimuli reach the polychronic person and must be reckoned with perceptually. The relatively impermeable boundaries of the monochronic person would, therefore, reduce the degree of stimulation reaching the person which would require some sort of cognitive action."

In this light one finds the polychronic individual more able to cope with greater amounts of stimuli than those more monochronic in preferred temporal orientation, indicative of greater 'cognitive capacity'. One point to clarify is that because Haase *et al.,* (1979) found monochronics to operate more screening and processes of selective perception to cope with levels of incoming information, such self-imposed processes have led the authors to label monochronics as 'cognitively complex', which needs to be differentiated from 'cognitive complexity' as applied by the thesis at hand, which specifically refers to the 'task' increasing in cognitive complexity/ demand, and not the cognitive processes engaged in by individuals to screen out incoming stimuli. Therefore, it is hypothesised that,

Ho12: Preferred Polychronic Time Use (IPV) and accuracy of response are positively related.

Hereon, hypotheses relating to the subjective experience of time's passage are presented to bring a close to the chapter, as well as address the final research objective:

Research Objective (VIII): If the subjective experience of time changes across tasks of increasing cognitive challenge, is it also subject to cultural variability? *See hypotheses Ho13 and Ho13a to follow below.*

4.3.9 Subjective Experience of Time

The penultimate area of research that needs to be addressed has received little attention not only in marketing but also in the fields of cross-cultural, organisational, management, as well as social and behavioural study, despite its many number of implications. The area concerns the subjective experience of time's passage and its relationships with task and objective durations of time. Specifically, no research to date can elucidate upon the potentially differential impacts of how the *passage* of time is *subjectively* experienced according to preferred temporal orientation (mind polychronicity), culture, and increasing task complexity.

Possible reasons for why this interplay of culture, preferred temporal orientation, task complexity, objective and subjective time has been overlooked concern the fact that subjective time estimation (STE) methodologies occupy research fields of intelligence

and speed of information processing, which has examined the role of STE and reaction time (RT) upon predictions of intelligence.

Additionally, the initial bank of studies performed to examine individual and collective patterns of time use were conducted within bounded assumptions, which are in accord with the 'fixed resource approach'; an approach which confines temporal resources to 24 hours a day, as well as conceptualise activities as only being performed sequentially, that is, one at a time (Kaufman *et al.,* 1991a; Robinson, 1977). As a consequence, the groundwork of former time studies have solely concentrated on the task performance of a primary activity, thereby eliminating any valid assessment of parallel or secondary status activities (Kaufman *et al.,* 1991a).

Thanks to industrialised living, time has typically been perceived as fairly mechanical, with its clock time, one at a time linear processing mentality, fixed according to homogeneous hours of the day (Ancona *et al.,* 2001b; Hall, 1989). Even with revelations by Einstein (1921), a sensitivity to time's relativity dependent upon the location and movement of the observer, as well as its dilation according to consciousness, is still not consciously acted upon or even fully comprehended (Albert, 2006; Mohanram, 2006).

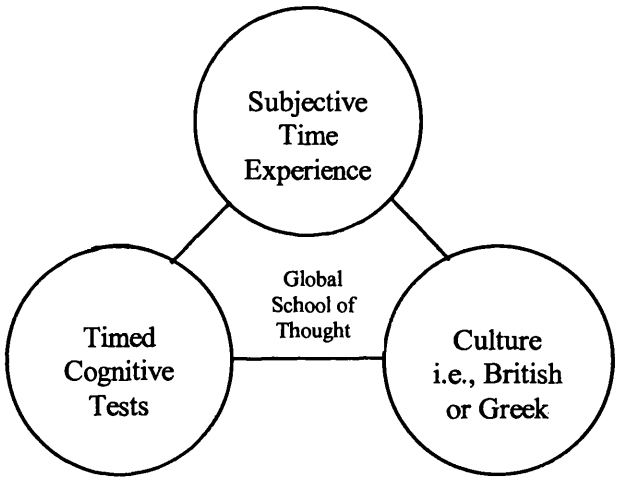
As introduced in the literature review (part II) teachings of the Vedas explain how "in addition to time dilation that's motion-induced, there is consciousness-based time dilation" (Mohanram, 2006: 36). Concomitantly, certain times of the day are argued to be more beneficial to humanity's consciousness (i.e., rising at 4am) due to influences imposed upon the living entity by the modes of material nature, which are goodness, passion, and ignorance (Mohanram, 2006; Prabhupadā, 1993, 2001). So as the old saying goes, 'the early bird catches the worm' and "the concept of consciousness-based time dilation can form the basis for a new paradigm on how we measure time" (Mohanram, 2006: 46).

Hitherto, this thesis proposes an examination of the subjective experience of time's passage according to tasks of increasing complexity, which are further assessed for significant cultural variations. This is a hot topic especially in view of accounting for the position of the 'subject' and the subjective viewpoint in measuring 'Time'. Oddly, this topic has received very little attention and has not been addressed with respect to

research on preferred polychronicity. Accordingly, this thesis aims to address how the *subjective* experience of time is affected over cognitive tasks of *increasing complexity*, according to *culture*.

There are five main areas involved and are 'preferred temporal approach/ mapping of activities' (mind polychronicity; clock and/or event; monochronic, dual MC&PC, polychronic), 'mental activity' (increasing cognitive complexity), the 'subjective experience' of an unknown passage of time, its 'objective clock time' passage, and 'culture'. These are presented in the diagram below.

Figure 4.3.9A: The Interplay of Subjective Time, Timed Tests of Cognitive Complexity and Culture



In the research area of subjective time estimation (STE), subjects have been required to indicate the length of a given time period in absence of an external timing device (i.e., clock or a watch). During this time period subjects perform a variety of challenging cognitive tasks, such as arithmetic, reading, writing, and card sorting (Fink & Neubauer, 2001).

Moreover, subjects have exhibited a propensity to underestimate active (filled) durations of time, and overestimate passive (empty) durations (Cottle, 1976; Fraisse, 1984; Hornik, 1984). As a result, such findings indicate the significance of bearing in mind an approach to time use studies that considers the role of time perception (Hornik, 1984). Hence, in accordance with prior research it is hypothesised that as the nature of the tasks to be observed are filled (active), as opposed to empty (passive), respondents will exhibit

a greater tendency to underestimate duration. In other words, perceived (subjective) time is expected to be less than actual (objective) time.

Hence, to address gaps in the literature, relationships concerning STE across polychronic and/ or monochronic cultures have yet to be even touched upon, and are consequently, not only of great interest to the current research enquiry, but also to the fields of marketing, consumer behaviour, as well cultural time management and STE in general. The main reason for why is that the role of time perception bears a huge implication upon a person's experience of an event/ activity. Specifically, in examining the influence of concurrent information processing on STE across a large array of studies, it has been consistently found that estimated duration decreases as a result of increasing concurrent nontemporal demands (Fink & Neubauer, 2001; Fortin, Rousseau, Bourque & Kirouac, 1993; Hicks *et al.,* 1976; Zakay, Nitzan & Glickson, 1983).

Though differences across culture have not been empirically investigated in terms of the subjective passage of time over tasks of increasing complexity, differential subjective experiences of time are hypothesised across culture in view of Hall's (1989; Hall & Hall, 1990) cultural anthropological observations concerning the more subjective side of time. Consequently it is hypothesised that,

Ho13: As the complexity of cognitive challenges increase, the subjective experience of the passage of time decreases. Clock-time, high-tech cultures subjectively experience greater time to pass by than low-tech, event-oriented cultures.

In generating further hypotheses, subjects that are more monochronic in time management are conceptualised as more clock-oriented than subjects of polychronic cultures, and are thus assumed to be more time conscious. In terms of Thomas & Weaver's (1975) model, considering that monochronic subjects are more concerned with timing and deadlines, this lends support to the proposition that such individuals will allocate more attentional resources to the temporal considerations of the task at hand (start time, mid-point period, and finish time), than to the actual task itself. Nevertheless, as already introduced, the effect of simultaneous information processing with STE decreases estimated duration as an outcome of growing concurrent nontemporal

demands, and is a relationship to be tested for (Fortin, Rousseau, Bourque & Kirouac, 1993; Fink & Neubauer, 2001; Hicks *et al.,* 1976; Zakay *et al.,* 1983).

As this heightened orientation towards the clock is evidenced by behaviours, i.e., clock-watching and punctual time keeping, this *may* afford greater proficiency in the art of reckoning the passage of time, though this is dependent on other factors that may be at play: those seemingly undesirable (i.e., stress of role overload), or those more beneficial (i.e., satisfaction). Specifically, in terms of preferred temporal orientation and subjective time estimation (STE) it is hypothesised that,

Ho13a: Monochronics will be more adept than polychronics in providing accurate subjective estimates of an objective passage of time whilst performing a simple, non-taxing activity.

In terms of aspiring for high levels of accuracy in task performance, it may seem apt to suggest that one actually take time 'out' of the mental equation. The idea is to create a timeless situation, steeped in the ever-present moment of 'Now' to enable a greater degree of focus and concentration upon the task, as more of one's attentional resources are actually allocated to the task at hand (Lejeune, 1998; Thomas & Weaver, 1975; Zakay, 1989, 1993). And as polychronic individuals are likely to be more adept at performing simultaneous tasks than monochronic subjects, it is hypothesised that polychronic subjects will attain greater measures of accuracy with regards to the tasks to be performed, in the face of both concurrent temporal and non-temporal information processing demands. Moreover, as monochronic subjects have been proposed to be less tolerant of interruptions and unforeseen circumstances the pressure of more than one activity for the brain to focus attention upon may result in greater levels of impatience and irritability, if not 'toxic', coronary-prone Type A behavioural orientations.

Thus examinations of objective and subjective levels of performance are enabled via the use of quantitative tests that specifically determine outcomes of speed, accuracy, and the subjective experience of time. In particular, the PP tests (ECTs) and Raven's APM are tests that have been selected to measure performance speed and accuracy as part of an individual-level construct, suggested as specific variables to measure task-related

productivity and performance. Also contributed are new methods of assessment for testing for cultural variability across global schools of thought.

4.4 Chapter Summary: Conceptualisation

This conceptualisation chapter drew from the material covered in the literature review to discuss response behaviour effects in relation to sample characteristics (group-level and individual-level). The chapter initially served to address plausible interactions across culture, speed and accuracy, as well as relations across polychronicity and socio-demographic factors, i.e., gender and education, though age is arguably relevant as well (Arndt *et al.,* 2006; Cotte & Ratneshwar, 2003; Lindquist & Kaufman-Scarborough, 2004).

Under the lens of cultural time, relevant constructs of personality pertaining to achievement strivings, impatience/ irritability, self-efficacy, and perceived control of time have also been conceptually addressed, as well observable Type A outcomes, both 'toxic' (oriented towards stress) and 'non-toxic' (oriented towards work). Specifically, achievement strivings and impatience/ irritability have been proposed for examination to test for any significant cultural differences across measurable outcomes of speed and accuracy.

Moreover, relations across preferred temporal orientation and role overload have been raised for cultural investigation. Similarly, preferred temporal orientation and outcomes of speed and accuracy are also proposed for cultural comparisons, as well as the variable experience of time's subjective passage over elementary cognitive tasks of increasing challenge and complexity.

To appropriately administer a mode of data collection and test the afore-mentioned hypothetical conjectures, a design of research is called for; the next step for this thesis and addressed in the following chapter.

CHAPTER 5: RESEARCH DESIGN

"The secret of health for both mind and body is not to mourn for the past, worry for the future, or anticipate troubles, but to live in the present moment wisely and earnestly."
Buddha (563 BC–483 BC)

5.1 Introduction

To recommend a methodological approach that addresses the hypotheses presented in the preceding chapter, this chapter describes the chosen design of research, as inspired by the social and behavioural sciences. To present a brief overview of the research methodology, a cross-sectional, survey-based method of data collection was deemed most appropriate.

Data collection was managed with the use of paper-pencil techniques across 'Global Schools of Thought' from Britain and Greece to address the cross-cultural contingent of this thesis. Specifically, data pertaining to objective measures of performance-related speed and accuracy were gathered via three coding tests, two letter matching tests, and one intelligence test characterised by increasing task complexity designed to engage increased cognitive attention. Traits of personality, socio-demography, and Type A orientations towards either work or stress were obtained via a standardised (self-report) questionnaire. For both English and Greek versions of the tests and questionnaire please see Appendix 5.1A.

To expand, the questionnaire was administered post performance testing. It is comprised of 10 multi-item measurement scales: (i) achievement strivings, (ii) impatience/ irritability, (iii) role ambiguity, (iv) self-efficacy, (v) Type A orientation towards work, (vi) Type A orientation towards stress, (vii) perceived control of time, (viii) preferred temporal orientation, (ix) role overload, and (x) satisfaction with life. Also included as part of the final section of the questionnaire were items of socio-demographic enquiry, i.e., nationality, gender, age, expected educational attainment, and employment.

The above collation of constructs was administered at the very end of the testing session to ensure that a certain degree of activity-induced arousal had been provoked- common to timed test conditions; a characteristic measure of global schools of thought (i.e., examinations). In other words, to relay empirical findings as relevant to the context of a global school of thought (i.e., a university) it was necessary to replicate the context of

such an environment by creating a timed test situation akin to say, an examination. Specifically, responses to the questionnaire items were required to elucidate upon various coping appraisals and strategies (specifically the Type A Behaviour Pattern), which cannot be tested for unless respondents are suitably challenged by provoking task and environmental conditions.

Responses to both the questionnaire and performance tests were then entered and analysed via SPSS (Statistical Packages for the Social Sciences) and AMOS (Analysis of Moment Structures). To ensure all items of the data pack (consisting of performance-related tests and a questionnaire) were responded to, the use of monetary and free-dining incentives were offered, and promoted via online and campus-based advertising.

The purpose of this chapter is to address the research questions raised in the previous chapter and formulate an appropriate approach towards hypotheses testing by appraising the available designs of research, the sampling design (sampling frame, sampling technique, and recruitment), and scale selection, as part of the analytical design. To bring a close to the chapter, details relating to the pilot study and the main study are reviewed.

5.2 Hypotheses Testing Research Design

In developing a cross-cultural research design the starting point of all endeavours involves attending to one's research questions (Choudhry, 1986; Reynolds, 1999; Reynolds, Simintiras & Diamantopoulos, 2003; Schwarz, 1963). Not only do the research questions need to be considered; for example, are one's findings subject to generalisation (Adler, 1983; Reynolds, 1999; Reynolds *et al.,* 2003; Sekaran, 1983)?

The research questions driving the present design relate to a working framework presented in the previous chapter (Figure 4.3A: 'A Framework to Examine Culture's Management of Time in Global Schools of Thought'). Specifically, within the context of a 'global school of thought' the framework empirically examines the impact of theoretically proposed antecedents mediated by 'Culture's Management of Time' upon orientations towards work, stress, or life satisfaction, as well as objective measures of speed and accuracy. Specifically, the design of causal research is concerned with determining *cause-and-effect* (antecedent-and-outcome) relationships (Churchill, 1999).

Considering that the present research is concerned with cultural idiosyncrasies, greater heights of complexity are engaged in than by those efforts solely centred upon single-nation investigations (Adler, 1983; Choudhry, 1986; Craig & Douglas, 2000; Davis, Douglas & Silk, 1981; Green & Langeard, 1975; Singh, 1995). Craig & Douglas (2000) explain how cross-cultural investigations and international marketing insist upon a carefully conceptualised entity that is selected for study, be it country-to-country, several countries or regional areas of countries. Sekaran (1983) advises upon the need to account for ethnic influences to ensure valid inferences, particularly as these may differentially affect the 'believed-in' visions of success by nations as diverse as Japan and America.

In addressing one's research objectives researchers may also consider whether classifications, i.e., 'culti-unit' orientation (e.g., the youth market, which is representative of a subgroup marked by analogous inclinations and acts that are observed worldwide) are more preferred to those determined at more national levels of enquiry (Craig & Douglas, 2000). It is advocated "it would be more productive to compare economic variations in societies that are close to one another in several respects. Important conditions common to both can be treated as parameters, and fewer conditions would have to be treated as variables" (Winter & Prohaska, 1983: 419).

Hence, the external environment or as Winter & Prohaska (1983: 422) state, the "contextual grounding" of one's study needs to be in accord with relevant societal characteristics- deeply instrumental in determining the success of one's investigations. In actual fact, "context-embedded relationships can *only* be tested using data collected from multiple nations. Confirmation of 'context-embedded' relationships automatically implies cross-national or universal applicability because they employ societal characteristics as predictors of the dependent phenomenon" (Cheng, 1994: 163 & 164).

In a related vein, 'contextual equivalence' relates to the rapport between the subject and the interviewer/ experimenter, whereby the response set of 'social acquiescence'/ 'directional bias', also known as 'courtesy bias' (characteristic of Asian/ Pacific Basin countries) may differentially prevail across sampled nations (Choudhry, 1986; Hui & Triandis, 1985b; Reynolds, 1999). 'Extreme response style' is also of importance,

relating to matters of respondent familiarity with the concepts studied (See Hui & Triandis, 1985b). 'Temporal equivalence' also needs to be accounted for, by ensuring that sampling across nations is performed within acceptable, closely aligned time frames (Douglas & Craig, 1984; Nasif, Al-Daeaj, Ebrahimi, Thibodeaux, 1991; Reynolds, 1999; Sekaran, 1983).

So how can a cross-national researcher successfully convey the same research enquiry across different countries (Adler, 1983; Craig & Douglas, 2000; Harding & O'Looney, 1986)? In a nutshell, "since the principal question in cross-national research is the comparison of how markets fare against each other, establishing the psychometric qualities of the research instrument, its behavioral/attitudinal constructs, and the equivalence of its samples should be issues of paramount concern for multinational marketers" (Parameswaran & Yaprak, 1987:35).

Subsequently, 'comparability' and 'equivalence', i.e., structural and parameter-based matters, are the key issues at stake here, discussed further in the following section (Cheng, 1994; Craig & Douglas, 2000; Schwarz, 1963).

Accordingly, the market of 'education', specifically universities, serve as a comparable, global construct relating to 'Mind' driven, schools of thought, and is therefore deemed an appropriately equivalent context for the present thesis to pursue in its investigation of 'Culture's Management of Time' and activity. The next section presents further arguments relating to matters of comparability and equivalence.

5.2.1 Comparability and Equivalence

An overriding problem faced by the cross-national researcher concerns whether one's design of research has achieved 'construct equivalence' (Choudhry, 1986; Green & White, 1976; Parameswaran & Yaprak, 1987; Reynolds, 1999; Singh, 1995). To attain construct equivalence across nations, the idea, activity, or product/ service needs to be manifest across all nations sampled (Choudhry, 1986; Green & White, 1976; Reynolds, 1999; Singh, 1995). To achieve construct equivalence, conceptual, functional and categorical dimensions of comparability are sought after (Reynolds, 1999).

Firstly, in terms of 'conceptual equivalence', a given conceptualisation of an employed construct is assessed for its similarity in articulation and meaning across sampled nations (Choudhry, 1986; Davis *et al.,* 1981; Parameswaran & Yaprak, 1987; Reynolds, 1999; Singh, 1995). "In many parts of the Middle East, tomorrow does not necessarily mean the next day" (Choudhry, 1986: 20) serving to exemplify one of the 'pitfalls' that could be encountered in the international arena of marketing research. As an example, conceptualisations of love may not be uniform across cultures (Sekaran, 1983), as with the concept of marriage, i.e., arranged versus love.

Secondly, 'functional equivalence' aims to assert that a given construct is utilised in an analogous fashion across sampled nations (Choudhry, 1986; Reynolds, 1999; Sekaran, 1983; Singh, 1995). "The overzealous accumulation of jewelry in India is far less intended to be for the display of social status than for security and accumulation of wealth" (Choudhry, 1986: 19). In other words, the adornment of jewels and precious metals in India may serve a different function that account more for the 'properties' these jewels and metals are believed to carry, compared to those nations where, gold for example, is simply accumulated for purposes of show and status.

Thirdly, 'category equivalence' (Choudhry, 1986; Reynolds, 1999) refers to a group of notions, actions, or objects that are collectively categorised (Reynolds, 1999; Reynolds & Simintiras, 2000). To illustrate, across the vast majority of 'The Med' a 'beer' is on a par with a fruit juice (Douglas & Craig, 1982; Reynolds, 1999). As clarified by Singh, (1995: 603) "The notion of 'construct equivalence' is rooted in the etic perspective", which conveys a 'nomothetic' perspective (Sekaran, 1983) of "general laws or universal aspects" (Sekaran, 1983: 64). Alternatively, the 'emic' viewpoint is culture-specific (Ford, LaTour & Henthorne, 1995; Singh, 1995) and 'idiographic' (Sekaran, 1983), discussed further in the following section.

5.2.2 The Emic/ Etic Dilemma

Relevant to international research is Galton's problem (Sekaran, 1983), involving the need to distinguish the 'emic' 'school of thought' (culture-specific), from the globally applicable 'etic' school (Choudhry, 1986; Craig & Douglas, 2000; Ford *et al.,* 1995; Poortinga, 1989; Sekaran, 1983). 'Emic' thinking positions thinking, feelings and activity as culturally unique, subject to each nation's explicit and implicit context and

environment (Craig & Douglas, 2000; Ford *et al.,* 1995; Poortinga, 1989; Sekaran, 1983). "Galton's problem can be minimized when cultures that are geographically dispersed, and even politically independent, are selected for study. As we engage in more quantitative data collection and analyses, we may be forced to pay more attention to examining this problem in comparative management research across cultures" (Sekaran, 1983: 65).

Given that instruments are essentially 'culture-specific' (Craig & Douglas, 2000; Harding & O'Looney, 1986; Sekaran, 1983), observational works from areas such as cultural anthropology (e.g., Hall, 1959, 1989; Hall & Hall, 1990), assist in the development of hypotheses concerning cross-national differences and similarities. By tapping the similarities construct equivalence is achieved, via context-driven theory, which is globally understood (Cheng, 1994; Choudhry, 1986; Overby, Gardial & Woodruff, 2004; Poortinga, 1989; Winter & Prohaska, 1986). Consequently, 'context communality' is good for establishing a reliable measure of cross-national comparability across certain constructs and concepts i.e., activities to time management in global schools of thought (universities).

It is therefore 'etic' thinking that aims to identify and assess global concepts of attitudes and behaviour by building 'transcultural' or 'culture-free' instruments (Choudhry, 1986; Craig & Douglas, 2000; Poortinga, 1989). Though the use of such instruments aids comparative research efforts they are not free from methodological inconveniences (Craig & Douglas, 2000; Smith *et al.,* 1991; Steenkamp & Baumgartner, 1998). A possible consequence is a 'pseudo-etic' research design that seems to try and sidestep the need for 'contextual grounding' (Winter & Prohaska, 1983), as well as theory-driven justifications for sample selection across cultures (Craig & Douglas, 2000; Ford *et al.,* 1990).

An additional point to mention is that a vast amount of the epistemological and methodological contribution driving primary modes of data collection has originated in the west (i.e., the States), although their global application or even significance in other nations may not be valid (Craig & Douglas, 2000; Harding & O'Looney, 1986; Sekaran, 1983). This is what Sekaran (1983) refers to as 'conceptual equivalency bias.'

'Relevance' of the constructs employed across different nations is therefore of paramount concern (Craig & Douglas, 2000; Harding & O'Looney, 1986; Poortinga, 1989).

5.2.3 Instrument Equivalence

Bearing in mind the need to attain equivalence relating to the construct per say, 'instrument equivalence' necessitates that the applied instrument (measuring device) appraises the exact same reality across all national samples investigated (Adler, 1983; Choudhry, 1986; Nasif *et al.,* 1991; Reynolds, 1999; Singh, 1995). Sekaran (1983) lists a number of equivalence issues to take heed of when developing a design of research consisting of instruments to test hypotheses. These include translation (vocabulary), idiomatic equivalence, grammatical and syntactical equivalence, and experiential equivalence (See Sekaran, 1983, pg., 62).

Of specific interest are item and translation equivalence (Choudhry, 1986; Nasif *et al.,* 1991; Reynolds, 1999; Sekaran, 1983; Smith, Tisak, Bauman & Green, 1991). Item equivalence posits that each item featured on a survey imparts a comparable sense of understanding across sampled nations (Reynolds, 1999; Singh, 1995). Translation equivalence posits that the measuring instrument's language and vocabulary convey an analogous sense of meaning across all sampled nations (Craig & Douglas, 2000; Ford *et al.,* 1995; Green & White, 1976; Poortinga, 1989; Reynolds, 1999; Sekaran, 1983; Smith *et al.,* 1991).

Specific to the measuring instrument "Two techniques, back translation and decentering, are used to remedy cross-language and cross-cultural biases, respectively. Back translation, in which bilingual persons translate a scale from the original language to the target language and back again through several iterations, is often used to ensure fidelity of translation. Although back translations produce linguistically equivalent forms, they may yield a product that is not very meaningful to the target population.

To counteract this problem, decentering is sometimes used. In decentering, versions are produced that are smooth and consistent in both populations [which]...may bear little resemble linguistically or semantically to the original (source) version" (Smith *et al.,* 1991: 628).

To achieve this one needs to identify translators who are familiar with the (i) different languages in question, (ii) cultures, (iii) usage of the concepts, and (iv) meanings conveyed across the samples investigated (Sekaran, 1983). Accordingly, these back-translation and decentering techniques as recommended by Smith *et al.,* (1991) and Sekaran (1983) have been implemented by the present research effort.

5.2.4 Measurement Equivalence

In measuring constructs for international research, equivalence in measurement is deemed to be stable cross-culturally (Hui & Triandis, 1985a; Poortinga, 1989; Smith *et al.,* 1991; Steenkamp & Baumgartner, 1998). "The distinction that has been made between measurement scale and comparison scale allows for the following formal definition. *Data are equivalent when an observed cross-cultural difference on a measurement scale is matched by a corresponding difference on the comparison scale*" (Poortinga, 1989: 738).

Yet, as a consequence of unequal reliability, the 'hidden threat' of measurement inequivalence (error) is prone to manifest (Davis *et al.,* 1981; Mullen, 1995; Parameswaran & Yaprak, 1987; Singh, 1995; Smith *et al.,* 1991; Steenkamp & Baumgartner, 1998).

"If the groups differ, that difference may be due to mean group differences on the latent variable or to a lack of equivalent measurement across groups. The latter issue is more serious because it implies that the measure functions differently across cultures, (i.e., there is a construct shift)" (Smith *et al.,* 1991: 629). As elucidated upon by Singh (1995), some error in the process of measuring constructs is expected, spanning a coefficient index of reliability.

It seems that in the absence of well-defined theories and parameters, the measuring of identical constructs across non-identical cultural environments seldom result in comparable reliabilities (Parameswaran & Yaprak, 1987; Singh, 1995). Realistically, responses may widely differ due to factors relating to the construct, culture/ nationality and 'country-of-origin' (Parameswaran & Yaprak, 1987; Singh, 1995). Hence, for legitimate impressions, reliabilities among constructs must be 'adjusted' (see Singh, 1995).

Primary and secondary sources of data collection are a potential source of problems for the cross-cultural researcher (Craig & Douglas, 2000; Harding & O'Looney, 1986). For example, for those aiming to establish a study that is both equivalent and comparable across cultures, secondary data sources may suffer from lack of cross-cultural equivalence if data are categorised and accounted from an emic (culture-specific) viewpoint, i.e., research on vehicle registration plates across British and American samples (Craig & Douglas, 2000; Harding & O'Looney, 1986). In terms of data collection within the international arena certain problems are deserving of attention, and form the basis of the following section.

5.2.5 International Marketing Research and Data Collection

Craig & Douglas (2000) explain how the devised design of instruments, synchronisation and procedural implementation of research within the global arena greatly increases in relation to the complexity of one's method of data collection, as compared with domestic research. By giving rise to a multitude of concerns pertaining to the synthesis and management of international research, a consensus of thought and action is paramount. Resources of time and money are of obvious consequence.

Comparable measures regarding procedural matters are another series of hurdles to overcome (Craig & Douglas, 2000; Smith *et al.,* 1991; Steenkamp & Baumgartner, 1998). For instance, although one country may possess acceptable reliability for postal surveys this may not be reflected in another country of interest; instead, one-to-one interviewing or an 'innovators'/ 'opinion leaders' panel' may be more on a par (Craig & Douglas, 2000; Choudhry, 1986; Green & Langeard, 1975). The path to take when faced with this sort of dilemma with one's scales and methods is to opt for those that are comparable 'reliability-speaking', rather than those that are exactly the same (Choudhry, 1986; Craig & Douglas, 2000; Singh, 1995).

Prior to a discussion of the different methods of data collection available and decided upon, response equivalence deserves a mention, and in the words of Sekaran (1983: 63), "Response equivalence can be ensured by adopting uniform data collection procedures in all the cultures in which a problem is being investigated. Identical methods of introduction to the study and to the researcher, task instructions, closing remarks, and so

on, by the persons who administer the survey in different countries, would provide equivalence in motivation, goal orientation, and response attitudes. Hence, variance due to differences in data collection procedures would be minimized."

In accord with Sekaran's (1983) recommendations, it was ensured that a uniform administration of all the tests and the questionnaire across the Greek and British samples, as well as an equivalent mode of administration and timing approach by employing the same measuring instrument across all groups. To administer data collection across the Greek samples, personal language deficiencies as regards the Greek language were addressed via the aid of a translator (interpreter), which made available thanks to the School of Business and Economics, Swansea University, as well as Thessaloniki's University of Macedonia, and the TEI of Thessaloniki.

5.2.5.1 Qualitative and Quantitative Methods of Data Collection

Qualitative research defined via methods of observation and acculturation conducted by the pioneering anthropologist, Hall, serve as the initial stepping stone in the process of the present focus of empirical testing. To test hypotheses and ascertain the deeper connections and implications of objective and subjective time differentiated by culture, a theory-driven selection of scale measurement items and tests of performance that suitably enable a quantitative and scientific approach have been chosen.

5.2.5.2 Descriptive, Comparative and Theoretical Research

In conducting international research a comprehensively designed blueprint of how to steer one's study towards its objectives is most important (Craig & Douglas, 2000; Page, 2003). In view of the three central designs of research: descriptive, comparative and theoretical, for the purpose of testing the hypotheses proposed by this thesis, a comparative, theoretical design of research is the most relevant.

To elaborate, descriptive research designs are conducted primarily for single-nation studies that focus on reckoning related activities and market forces (Churchill, 1999; Craig & Douglas, 2000; Page, 2003; Reynolds *et al.,* 2003). Comparative research is the most frequent type of research conducted, and its principal application is to evaluate activities or marketplace operation beyond more than just one nation to elucidate upon

how sampled nations or 'culti-units' may differ or similarly relate (Craig & Douglas, 2000; Reynolds *et al.,* 2003).

"The comparative method is certainly not new. Its growing importance in all disciplines at this point is generally attributed to a general increase in internationalism in all of the social sciences, as well as technological advances in data handling which make the comparative method a more feasible line of approach" (Winter & Prohaska, 1983: 417).

The primary reason driving theoretical research "is to examine the extent to which theories, models and constructs developed in one country are valid and applicable in other countries and cultural contexts. These types of studies are related to comparative studies which rely on a conceptual model, except that in this case, the primary emphasis is on testing the validity or applicability of a model or construct, while in the former case, the validity of the model is assumed, and it is used to explain or understand differences in patterns of behavior between countries and countries" (Craig & Douglas, 2000: 29).

For the thesis at hand a comparative and theoretical design of research is deemed most relevant. The relationships stemming from antecedents (i.e., personality and socio-demographics) upon outcomes of behaviour (i.e., orientations towards work or stress, alongside objective measures of speed and accuracy) conveyed by the present thesis are conducted cross-sectionally via survey-oriented methodology. For further arguments pertaining to comparative and theoretical designs of research, please refer to section 5.3 and Table 5.3A.

5.2.5.3 Research Design: Cross-Sectional and Longitudinal

Via comparative research methods, hypothetical relations and interactions proposed for elucidations of global versus local realities are subject to testing and validation through the means of collected data (Albaum, Evangelista, Medina, 1998; LaTour, Champagne, Rhiel & Behling, 1990; Malhotra, 1993; Page, 2003). This is achieved via cross-sectional or longitudinal research designs (Malhotra, Agarwal & Peterson, 1996; Page, 2003; Sekaran, 1983).

To briefly explain, cross-sectional research designs present a momentary, snapshot impression of the variables and relations at play, whereas those longitudinal in design

repeat measurements of the constructs investigated with the same samples observed over time (Malhotra *et al.,* 1996; Page, 2003; Sekaran, 1983).

5.2.5.4 Methods of Data Collection: Survey and Observational

Two chief methodologies for collecting data for comparative research purposes involve the survey and techniques of observation. For the thesis at hand, the survey method is chosen as the preferred approach in order to gather responses relating to traits only available via the use of scale measurements. Also, as a standard approach to testing was required for purposes of 'response equivalence', the survey method of data collection enabled a method of questioning and testing of respondents through a generic, structured, easily replicable formal technique (Malhotra *et al.,* 1996; Page, 2003).

Overcoming the obstacles associated with focus groups due to partiality resulting from the use of an interviewer, the survey technique represents a fitting approach to collect data concerning respondent mind-sets, awareness and activities (Page, 2003; Tull & Hawkins, 1993). Benefits involve coding efficiency, timesaving, and cost-effectiveness (Page, 2003; Tull & Hawkins, 1993).

Surveys are user friendly, enabling tests of reliability, as well as statistical enquiry (Churchill, 1999; Page, 2003; Tull & Hawkins, 1993). Additional modes of survey administration include the telephone interviews, in-depth interviews, mail interviews, or web-based surveys (See Churchill, 1999).

5.2.5.5 Research Design Summary

In summary this chapter thus far has identified that the survey method, in addition to performance testing are selected for the present purpose of comparative, theoretical research. Steered by a hypotheses testing design of research, the main research questions are accordingly addressed, presented as a framework (see Chapter 4, Figure 4.3A). 'Comparability' and 'equivalence' are elucidated upon and a many number of types are identified. In conducting international research, qualitative and quantitative options abound and investigations may be either for classification, comparative and/or theoretical purposes.

Ultimately a snapshot of cultures differentiated by temporal orientation for example is sought-after. Hitherto, this thesis applies a comparative and theoretical research design, cross-sectional in nature spanning two nations (Britain and Greece). Investigated are theoretically proposed relations via a survey administered post timed performance testing across the globally defined context of university schools of thought. Leading on, the next section relates to matters of sampling within a survey environment.

5.3 The Sample Design

"In designing the sample, the researcher must specify among other things, (1) the sampling frame, (2) the sample selection process, and (3) the size of the sample. The sampling frame is the list of population elements from which the sample will be drawn" (Churchill, 1999: 65).

In terms of deciding upon an appropriate sampling frame in line with research objectives, past research on fields such as preferred polychronic time use have suggested a number of parameters for sample selection, i.e., indicators of gender and culture to elucidate upon the finer intricacies that govern cognitively-driven preferred temporal orientations and the Type A behaviour pattern (Palmer & Schoorman, 1999).

Also, as the central part of this thesis is to profile culture's management of time, 'student samples' (Ford *et al.,* 1990; Reynolds *et al.,* 2003) and 'culture' (in accord with past cross-national studies) constitute relevant parameters for sample delineation (Adler, 1983; Ford *et al.,* 1990; Nasif *et al.,* 1991; Sekaran, 1983), and offer an appropriate model in terms of a 'global school of thought'. Furthermore, by matching samples at comparable levels of educational attainment, (i.e., university students) another parameter emerges to contextually ground the present research effort (Reynolds *et al.,* 2003; Winter & Prohaska, 1983).

Sampling can be managed via non-probability or probability techniques (Churchill, 1999; Page, 2003). Probability sampling selects samples in accord with probabilistic theorems, i.e., the likelihood of selection is equivalent across all persons of the population (Page, 2003; Tull & Hawkins, 1993). And a fair bit of choice is available with options, i.e., 'simple random sampling', 'cluster sampling', 'stratified sampling', 'area sampling', and 'multi-stage random sampling' (Craig & Douglas, 2000; Churchill, 1999; Page, 2003).

In contrast, non-probabilistic sampling is theory driven and advocates certain persons possess an increased chance of selection to include judgement, convenience, quota, snowball and purposive sampling (Craig & Douglas, 2000; Churchill, 1999; Page, 2003).

It is argued that non-probability sampling increases sampling error and relies on the judgement of the researcher, thus limited in its provision of an accurate and representative picture of the larger populace (Page, 2003). Alternatively, enabling a design of research that is driven by one's research objectives (also steeped in judgement) and theory, the advantages of non-probability sampling techniques concern speed of respondent identification, accessibility, and cost-effectiveness (Malhotra *et al.,* 1996; Page, 2003).

Undertaking research in an international environment requires the researcher to consider a number of theoretical guidelines to facilitate appropriate sampling decisions (Douglas, *et al.,* 1994; Reynolds *et al.,* 2003). Specifically, choices need to be made regarding the type of sampling method to employ as well as the sampling characteristics deemed advantageous for one's chosen kind of international market research (Nasif *et al.,* 1991; Reynolds *et al.,* 2003).

Though sampling in the international market needs to satisfy the same requirements as sampling in the domestic market, there are other issues to consider (Albaum *et al.,* 1998; Choudhry, 1986; Reynolds *et al.,* 2003; Schwarz. 1963). One major potential flaw in the conduct of international research is that "little attention... is paid to examining potential sources of bias arising from the nature of the samples or from differences in sample composition" (Douglas *et al.,* 1994: 299).

This is most important, particularly as "Without a defensible sampling strategy, the results of the study may be ambiguous or misleading" (Lonner & Berry, 1986: 85). Consequently, one's method of sampling bears a huge influence upon the validity of collected data (Ferber, 1977; Reynolds *et al.,* 2003), particularly in terms of internal and external validity (Reynolds *et al.,* 2003).

Thus, research design theory needs to be appropriately assimilated with sampling theory. The reason for why is to ensure market research studies spanning the international arena focus upon delivering theory-based validations for chosen sampling and surveying techniques (LaTour *et al.,* 1990; Reynolds *et al.,* 2003).

Also of concern, is how one's research objectives may effect sampling decisions, and through sampling impact upon comparability (Choudhry, 1986; Reynolds *et al.,* 2003). One theoretically challenging issue is the art of balancing *between-country comparability*, with that of *within-country representativeness* (Reynolds *et al.,* 2003; Singh, 1995).

To clarify, between-country, 'etic' comparability, achieved via comparisons of unstandardised coefficients, indicates the cross-national equivalence of the national samples involved (Lonner & Berry, 1986; Reynolds *et al.,* 2003; Singh, 1995). Within-country, 'emic' comparisons achieved via comparisons of standardised coefficients, reveal the extent to which each country's samples is an accurate picture of the population of interest in that country (Lonner & Berry, 1986; Reynolds *et al.,* 2003; Singh, 1995).

In deciding how to address the issue of balancing 'between-country comparability' with that of 'within-country representativeness', it is important to know that the type of research that is undertaken is crucial to an effective solution (Lonner & Berry, 1986; Reynolds *et al.,* 2003). In the development of a framework of operational guidelines to ascertain an optimal sampling approach, Table 5.3A to follow, care of Reynolds and colleagues (2003) presents the variety of sampling decisions researchers may face in the international domain.

In applying the guidelines for the conduct of international market research from Table 5.3A to the research objectives of this thesis it is evident that cross-national comparisons (i.e., similarities and differences) and theory-testing across culture form the core focus.

Consequently, the type of international research that is deemed most appropriate for the research aims of the thesis at hand is one that is predominantly aligned with a sampling objective that concentrates on *between-country* (that is, *cross-national) comparability*

rather than *within-country representativeness* (Craig & Douglas, 2000; Reynolds *et al.*, 2003).

Table 5.3A: Sampling Choices in International Marketing Research

Sampling Characteristics	Type of International Research			
	Descriptive	***Contextual***	***Comparative***	***Theoretical***
Research Objective	Analyse attitudes & behaviours within a specific culture	Analyse attributes of a cross-national group	Analyse similarities or differences between countries	Analyse the cross-national generalisation of theory or model
Sampling Objective	Within-country representativeness	Representativeness of specific population of interest	Between-Country (Cross-National) comparability	Between-Country (Cross-National) comparability
Desired Sample Attributes	Ability to estimate sampling error	Ability to estimate sampling error	Homogenous samples to control extraneous factors	Homogeneous, or deliberately sampled for heterogeneity
Preferred Sampling Method	Probability within each country	Probability sampling of specific population of interest	Non-probability acceptable	Non-probability acceptable

Source: Reynolds *et al.*, 2003

As already identified, the columns labelled "Comparative" and "Theoretical" in Table 5.3A indicate the oft-combined type of research engaged in internationally (Craig & Douglas, 2000) and that best suit the research questions raised by this thesis. These columns have been shaded in to also draw attention to the desired sampling characteristics and preferred sampling method relevant to the present study (Reynolds *et al.*, 2003). Primarily, comparative international research is focused upon "comparing attitudes and behavior in two or more countries or cultural contexts, with a view to identifying similarities and differences between them" (Kumar, 2000: 13).

Theoretical international research in academic circles endeavours to examine the extent to which theories, models and constructs developed in one country are valid and applicable in other countries and cultural contexts (Craig & Douglas, 2000; Reynolds *et al.*, 2003). Considering that the stability of the model would need to be ascertained

across cultures, and with reference to Table 5.3A, between-country comparability is of obvious consequence (Reynolds *et al.,* 2003). All in all, the research process opted for needs to be focused on a type of international research that is more comparatively theoretical in nature, as opposed to contextual or descriptive (Reynolds *et al.,* 2003).

To achieve reliable assessments of *between-country comparability*, sampling methods such as statistical control or matched samples are available for the conduct of research in the international market (Reynolds *et al.,* 2003; van de Vijver & Leung, 1997). To explain, statistical control requires the collection of measurements of the most important socio-demographic variables whereupon national groups are assumed to differ (Reynolds *et al.,* 2003). They can then be entered into data analyses as control variables- also referred to as covariates, to allow for any impacts that they initiate to be controlled for when making cross-cultural comparisons ((Reynolds *et al.,* 2003). This is ordinarily achieved via procedures such as multiple regression and analysis of covariance (Craig & Douglas, 2000; Kumar, 2000; Reynolds *et al.,* 2003).

Matched samples involves ensuring that the samples from different national/ cultural groups are as similar as possible with regards to their socio-demographic characteristics (for example, education, income and age) (Overby *et al.,* 2004; Reynolds *et al.,* 2003). This can be performed via the use of non-probability approaches such as judgemental or quota sampling (Reynolds *et al.,* 2003).

Research has combined both methods of statistical control and matching, such as Lee & Green's (1991) cross-national study of the Fishbein behavioral intentions model. Equivalent samples were obtained by primarily drawing homogeneous samples of US and Korean college students, to then statistically control and compare the two samples on factors such as age, household income, and living status (Lee & Green, 1991; Reynolds *et al.,* 2003). And as mentioned, a similar position is adopted by the present thesis by selecting university students across global schools of thought by positioning level of education as a contextually grounded parameter.

All the same, comparisons drawn from matched samples are not to be sweepingly applied to the whole country, as the observed similarities and differences only pertain to the particular groups concerned in a study (Reynolds *et al.,* 2003). The purpose of matched

samples is to generate "groups that are as similar on relevant background variables" (van de Vijver & Leung, 1997: 30), and the explicit grounds on which national samples are matched need be defensible in theory; based on rational thought.

That is, if matched samples are employed in research, the logic for ascertaining the matching variables needs to be made exact and clear, as do the relations between the matching variables and the research problem under examination (LaTour *et al.,* 1990; Gordon, Slade & Schmitt, 1986; Reynolds *et al.,* 2003).

There exist three different approaches in the control of extraneous variables- minimising, nullifying, or isolating (Reynolds *et al.,* 2003). The first two choices concern issues of sampling, whereas the last option relates to statistical control. In particular, the researcher is able to (I) remove the extraneous variable(s) by opting for homogenous groups, (II) randomly allocate subjects to groups to control for all extraneous variables, and/ or (III) integrate fundamental extraneous[24] variables into the research design and evaluate the outcome (Reynolds, 2003).

Reasons for why homogeneous samples have been criticised relate to the use of such samples to embody the characteristics of the country they have been sampled from (Reynolds *et al.,* 2003). Hence, as a result of being sampled from sub-groups of the national population, homogeneous groups are inappropriate samples if they are required to be representative of the total population (Douglas *et al.,* 1994; Reynolds *et al.,* 2003; Sin, Cheung & Lee 1999).

Nonetheless, as a number of different variables such as demographics and environmental circumstances can differ across countries, samples that are representative of the national population are not likely to be comparable in terms of important demographic characteristics such as education, age, and income (Craig & Douglas, 2000; Reynolds *et al.,* 2003).

[24] An extraneous variable is any variable that may bear an effect upon the results of one's research; yet it is of little significance to the interests of the research (Reynolds *et al.,* 2003).

Subsequently, when addressing issues of *between-country comparability*, deviations in age, income, or status of equivalent employment, render the attainment of valid interpretations of the research results as difficult (Malhotra *et al.,* 1996; Reynolds *et al.,* 2003). In attempting to gauge 'true' cultural differences, in reality it may prove too problematic to ensure that observed differences are not simply a result of sample differences (Reynolds *et al.,* 2003; van de Vijver & Leung, 1997).

Hence, to obtain valid research findings the selected samples should limit the effects of any observed differences that are not attributable to sample-related differences (Reynolds *et al.,* 2003; Sin *et al.,* 1999). For instance, in a study spanning nine countries Whitman, Townsend and Hendrickson (1999) employed students as matched samples to enhance upon issues of comparability concerning computer-use ethics.

As a consequence, the use of such homogeneous samples has been argued as desirable in terms of enhancing cross-national comparability of the samples (Lonner & Berry, 1986; Reynolds *et al.,* 2003). Therefore homogeneous samples such as students are particularly useful whenever the aim of one's research is to observe true differences on the variables involved by reducing sample differences caused by demographic differences between the respondents of the countries concerned (Reynolds *et al.,* 2003; van de Vijver & Leung, 1997).

On top of gaining an insight into the fundamental issues explicitly related to sampling in the field of international research, one needs to consider how sampling has an effect on the validity of observed research findings. This is particularly useful as it further enables a theoretical viewpoint upon which the sampling strategies for the differing types of international research given earlier in Table 5.3A are established (Reynolds *et al.,* 2003).

In conducting an empirical study the attainment of both internal and external validity is primarily dependent on issues of sampling (Calder, Phillips & Tybout, 1981, 1982, 1983; Reynolds *et al.,* 2003). Per se, a suitable sampling approach and its successful execution are deemed vital for ensuring observed research results are valid. Nevertheless, in a cross-cultural environment, the concomitant realization of both internal and external validity can be especially challenging (Reynolds *et al.,* 2003).

Sampling and Internal Validity

Internal validity refers to the degree to which an observed association is only a display of the association involving the variables under investigation (Heiman, 1998; Reynolds *et al.,* 2003). Thus, an observed outcome does not automatically assume that one's research findings are internally valid (Judd, Smith & Kidder, 1991; Reynolds *et al.,* 2003). To establish internal validity, one should ascertain "whether the manipulation of the independent variables or treatments, actually caused the effects on the dependent variable(s)" (Malhotra & Birks, 2000: 247). If an extraneous variable does bear an effect on the dependent variable(s), the internal validity of results is at risk (Reynolds *et al,* 2003).

When inherent diversity between the subjects in different samples is apparent, extraneous variables may affect the internal validity of findings (Reynolds *et al.,* 2003; Sudman & Blair, 1998). Though across several scenarios the random assignment of subjects to different groups is highly practised, this proves ineffectual when conducting international research, particularly for the reason that subjects cannot be assigned to a culture or a nationality at random (Reynolds *et al.,* 2003; van de Vijver, 1997). Thus, for research that proposes culture/ country as a unique variable across an international arena, attempts to improve upon the internal validity of findings frequently rely on the use matched sample groups that are proposed as comparatively homogenous across cultures/ countries (Reynolds *et al.,* 2003; van Herk, 2000).

Sampling and External Validity

External validity, also known as generalisability, indicates whether in fact the empirical outcomes of one's research study manifest in reality (Reynolds *et al.,* 2003; Sudman & Blair, 1998). Accordingly, to obtain externally valid findings the use of a probability sample is ordinarily assumed to be the most reliable sampling approach, whereby the sample is drawn from a 'well-defined' population, with which levels of confidence statistically calculate the probability of the sample being representative (Lohr, 1999; Reynolds *et al.,* 2003). Then again, 'well-defined' populations from which researchers need to draw samples are commonly unattainable in the international arena; hence, such a sampling approach is not always a very useful option (Kumar, 2000; Reynolds *et al.,* 2003).

The comparative significance of internally and externally valid findings is largely influenced by the objectives of the specific research activity embarked upon (Reynolds *et al.,* 2003). As a consequence, the relationships pertaining to external and internal validity, and sampling will obviously benefit from evaluations that are made in the context of one's research objectives (Reynolds *et al.,* 2003).

Research Objectives, Sampling and Validity

In proposing a research classification strategy appropriate to the realms of market and consumer behavioral research that directly accounts for the way in which research objectives influence one's design of research (Reynolds *et al.,* 2003), Calder *et al.,* (1981, 1982, 1983) offer guidelines pertinent to the issues of generalisability and applicability. In particular, Calder and colleagues identify two distinct types of research application or generalisability; namely, *effects application* and *theory application.*

To elucidate, "*effects application*, maps observed data directly into events beyond the research setting. That is, specific effects obtained are expected to mirror findings that would be observed if data were collected for other populations and settings in the real world" (Calder *et al.,* 1981: 1971). Therefore, in carrying out effects application research to obtain findings that can be directly generalised to the relevant situation, samples need be representative of the particular population of concern (Calder *et al.,* 1981; Reynolds *et al.,* 2003).

In such circumstances, generalisability (external validity) is of paramount significance to the objectives of research and once the target population is established, a representative sample is ordinarily sought after (Ferber, 1977; Lynch, 1982, 1983, 1999). This is recommended by via applications of correspondence procedures (Calder *et al.,* 1981) and statistical sampling techniques, such as a probability sample (Calder *et al.,* 1981; Lynch, 1982, 1999; Reynolds *et al.,* 2003).

Even so, with reference to Ferber (1977), Lynch (1999) does also acknowledge that in reality there are actually no probability samples in operation for either basic or applied consumer research; particularly as quota samples are the more likely method to be implemented, driven by one's applied theory and decision-making.

Accordingly, when the objective of one's research is essentially theoretical (theory application research) the consequence of external validity is of limited significance (Calder *et al.,* 1981, 1982, 1983; Cook & Campbell, 1979; Reynolds, 1999). To elaborate, "The priority among validity types varies with the kind of research being conducted. For persons interested in theory testing it is almost as important to show that the variables involved in the research are constructs A and B (construct validity) as it is to show that the relationship is causal and goes from one variable to the other (internal validity). Few theories specify target settings, populations, or times to or across which generalization is desired. Consequently, external validity is of little importance. In practice, it is often sacrificed for the greater statistical power that comes through having isolated settings, standardized procedures, and homogeneous respondent populations" (Cook & Campbell, 1979: 83).

Thus, for theory application there is little need of a representative sample, rendering statistical generalisations and the estimation of sampling error as futile (Calder *et al.,* 1981, 1982; Reynolds, 1999). "Homogeneous respondents are also preferred because they decrease the chance of making a false conclusion about whether there is covariation between the variables under study. When respondents are heterogeneous with respect to characteristics that affect their responses, the error variance is increased and the sensitivity of statistical tests in identifying the significant relationships declines" (Calder *et al.,* 1981: 200).

For this reason, the use of homogenous samples has become an established, if not desired practise, particularly as they lessen the probability of extraneous variables bearing an impact upon the research findings, as well as committing a Type II error (Calder *et al.,* 1981; Cook & Campbell, 1979). A Type II error occurs when it is reasoned that the groups involved do not differ, when they do; in other words, failure to reject the null hypothesis takes place, when in fact the null hypothesis is false (Pallant, 2001). That is, heterogeneous samples represent a threat to statistical validity (Calder *et al.,* 1981; Cook & Campbell, 1979).

Lynch (1982, 1983) contested the framework introduced by Calder and colleagues (1981) by arguing in favour of the use of non-probability sampling or probability sampling that resulted in heterogeneous samples. In terms of theoretical consumer research Lynch

draws attention to the relevance of external validity for issues such as construct (nomological) validity, and as inspired by the works of Cook & Campbell (1979) he further argues for methods such as 'deliberate sampling for heterogeneity' (Cook & Campbell, 1979), and the 'selective approach' (Lynch, 1982 & 1983).

In addressing the "Calder/ Lynch Dialogue" McGrath & Brinberg (1983) show how both sides can be readily reconciled by adopting a broader approach to the matter of external validity, as well as emphasising mutual areas of agreement, including the importance of sampling and the need to distinguish external validity from realism. Thus, in an endeavour to integrate Calder and colleagues (1981) framework with that of the varying styles of international research that have already been introduced, Table 5.3B below, sourced from Reynolds (1999), presents theory-based justifications for the various choices of sampling given in Table 5.3A.

Table 5.3B: Theoretical Basis of Sampling Choices in International Research

Type of Research	*Nature of Research*	*Nature of Research*
Descriptive	Effects Application	External Validity
Contextual	Effects Application	External Validity
Comparative	Theory Application	Internal Validity
Theoretical	Theory Application	Internal Validity

In keeping with the objectives of this thesis comparative, theoretical international research is of most relevance. As can be seen from the table above these types of international research relate to the category of theory application research. The central matter for this type of research is that of internal validity and, as a result, the handling of extraneous variables to guarantee between-country comparability is of vital concern. This type of comparability is enabled via the use of homogeneous groups, which are ordinarily chosen via non-probabilistic methods (see Table 5.3A).

Thus, in view of the research interests raised by the present thesis it is argued that the use of homogenous student samples is appropriate to ensure relatively similar background variables, i.e., education and origins of thought to elucidate upon deviations to isolate the workings of culture's management of time. To check the validity of this assumption an

item in the questionnaire asks the respondent to give their nationality to assess whether the presumed synchrony across the student sample and national culture is reliable or not.

Such types of assumptions have to be treated with care. By testing students say, from a British university it is not automatically presumed that the students will be a culturally 'British' national, as in the days of globalisation and migration, this outcome is certainly no longer guaranteed. Consequently, nationality will be asked for via an appropriate design of a questionnaire item (see item 'R8' on the questionnaire, Appendix 5.1A).

5.3.1 Country Selection

In terms of cross-national research conducted upon the construct of 'mind polychronicity' (that is, preferred temporal orientation) across categorisations, which incorporate the dual monochronic and polychronic approach, no study to date has compared the world's industrial and clock-time forerunner, Britain, with Greece (the West's predominant source of logic (logos) and rational thought), as a way of testing for mean differences. In terms of preferred temporal orientation little is known of the British approach to managing tasks over time, despite its place as the worlds first and foremost nation to instigate the 'industrial revolution', orchestrated by clock-time, and its current state as a high-tech society.

And although Hall (1989) and Hall & Hall (1990) categorise Northern Europe as essentially monochronic in orientation, one also needs to account for Hall's insight into high-tech societies that operate both monochronic and polychronic orientations and behaviours. Thus, the contemporary context of technology upon eventual societal orientations is deemed important. As this point has not been addressed in previous studies it is the aim of the present study to develop upon the standard dichotomous approach to polychronicity (either monochronic or polychronic) to incorporate the role of a dual approach (monochronic and polychronic); characteristic of high-tech societies.

In terms of the Greek sample, this culture is selected due to its heavy influence upon western thought and logic, and for the simple fact that 'poly-khronos' (multiple-time) is specifically a product of the Greek language, and arguably language serves to mould thought (Hall, 1989). Thus, by pursuing cultures that augment similar models of thought (logic; logos) across global schools of thought, i.e., universities, 'contextual grounding'

(Winter & Prohaska, 1983) is ensured; and yet, they are still geographically dispersed enough to avoid cultural interpenetration effects.

And, although Hall (1989) positions Greece as mid P-time on the continuum in terms of socio-cultural (emotion) polychronicity, it is of value to see how the context of a global school of thought (i.e., a university) acts to mediate upon preferred temporal orientations (mind polychronicity). Specifically, how does cultural/ emotion polychronicity, akin to a 'state of being', i.e., M/P-time (Hall, 1989) translate into 'mind polychronicity' (akin to a 'state of knowing')? In other words, how variable is culture's management of '*Time in the Mind*' (that is, preferred temporal orientation), within the global context of university learning?

In addition, very few empirical studies have investigated preferred polychronic time use whilst also accounting for its multidimensionality from the perspective of culture (Conte *et al.,* 1999). One known study in this area of cultural research is Tinsley's (1998) study of conflict resolutions across the Japanese, German and American cultures. Though no significant differences where found across managers from Germany and Japan, managers from the U.S. were significantly more polychronic in orientation. However, not mentioned by prior researchers is the fact that high-tech societies incorporate *both* monochronic and polychronic approaches (Hall, 1989), as a way to keep up with the pace of high-tech living and advancement.

Hitherto, the 'context of activities' (i.e., organisational drives towards technological advancement) entertained by certain cultures also needs to be accounted for when testing for mean cross-cultural differences in preferred temporal orientation (Hall, 1989; Hall & Hall, 1990). In terms of cultural (emotion) polychronicity, such high-tech societies may still be predominantly 'P-time' or 'M-time' (Hall, 1989). Hitherto, it is for this reason that preferred temporal orientations steeped in mind states of 'knowing' might not always coincide with more cultural/ 'emotionally'-steeped states of 'being' polychronic. And as elucidated from Hall's research, in many ways this is thanks to the contextual role of technology.

Platt's (1994) "French or Foe?" is positioned as compulsory reading material for the global organisation and taught to American university students as an instructive guide for

dealing with the French (see also <http://www.pollyplatt.com/pages/french/foe.htm>). On a par with Hall's cultural anthropological contributions, Platt (1994) advocates that people of Asia are typically polychronic, compared with more monochronic societies, i.e., America and Germany. With real life anecdotes Platt (1994) states certain American subcultures of African, Indian, and Hispanic descent are actually polychronically oriented, though steeped within a nation that is characteristically monochronic.

As made apparent in the literature review, and driving this thesis, is the need to finely tune the theoretical concepts of polychronicity to clearly demarcate a divide across polychronicity as a cultural indicator of 'being', i.e., 'emotion polychronicity', and polychronicity as a preferred temporal orientation indicative of a state of 'knowing', i.e., 'mind polychronicity'. A similar tale exists when demarcating 'mind polychronicity'/ preferred temporal orientation from 'behavioural polychronicity', which is indicative of a state of 'doing', i.e., multiphasic Type A behaviours.

Thus to account for the truly multiplicative nature of polychronicity, the construct can be improved upon by accounting for its multidimensionality (Conte *et al.,* 1999) via applications of the 'Emotion-Mind-Action Complex' proposed by this thesis to appropriately define one's conceptual arguments, research objectives/ questions, and parameters.

Specifically, because the current measures available relate to cognitive orientations, such as the IPV (Inventory of Polychronic Values), a mind-based measure of 'preferred temporal orientation', cultural/ 'emotional polychronicity' needs to be measured via alternative means and scales. In terms of 'behavioural polychronicity', measures concerning the multiphasic Type A behaviour pattern are appropriate.

5.3.2 Group and Individual Selection

To qualify the sampling frame particular conditions render the student sample as highly practical when one accounts for the role of 'context' upon behaviour (LaTour *et al.,* 1990). Hitherto, for the purposes of comparative, theoretical research, the characteristics that are akin to student samples are deemed desirable in terms of developing theory (Farber, 1952; Gordon *et al.,* 1986; LaTour *et al.,* 1990).

Student samples as a population of study also enable a 'universalistic' approach to research designed to ascertain causal relations across global concepts of action (behaviour) (Gordon *et al.,* 1986; LaTour *et al.,* 1990; Krughanski, 1975). Thus, when conducting survey research that centres upon fairly wide-reaching social issues the sampling of students for data is a valid option (Gordon *et al.,* 1986; LaTour *et al.,* 1990).

As a consequence, for the purposes of comparative, theoretical research homogeneous student samples are of benefit. Via the use of judgement-oriented, non-probability sampling, student samples obtained from Greece, Thessaloniki, were enabled care of collaborative efforts with the University of Macedonia, and the TEI of Thessaloniki. Thanks to these efforts the cross-cultural contingent crucial to the present thesis was successfully facilitated. To obtain responses from British student samples, data collection was enabled via classes made available by Swansea University's School of Business and Economics.

Pilot tests were conducted to clarify the best ways to minimise item non-response by thoroughly engaging the respondent, as well as address ambiguities in the wording of test instructions, as well as tackle other non-sampling errors, i.e., respondent fatigue and recording error by respondents completing self-report surveys, as a result of lack of care or imprecision (Craig & Douglas, 2000). Such pilot administrations were enabled via classes that were made available at both Swansea University (Britain), and the University of Aristotle, Thessaloniki (Greece).

5.3.3 Sampling Design Summary

In summary, non-probability sampling driven by theoretical judgement was used to recruit a sample of university students for survey participation across the British and Greek nations. To elucidate upon any problem areas as regards this thesis pilot tests were administered across both the British and Greek 'Global Schools of Thought'. The administrations proved critical in identifying non-sampling errors and omissions prior to the main research effort.

5.4 Analytical Design

In an attempt to describe the sample, a number of analytical techniques can be applied to measure the influence of cultural temporality upon speed and accuracy of response

behaviours, whilst accounting for the influence of culture and personal characteristics upon behavioural orientations towards stress or work.

5.4.1 Item and Scale Selection: Main Individual-level Variables

The following sections introduce the exogenous variables that have been selected to form the framework driving the present hypotheses proposed for testing. Commencing from the arguments pertaining to country selection choices, subsequent analyses focus on the individual-level characteristics that have been introduced in the previous chapter constituting the Conceptual Framework (see chapter 4, Figure 4.3A).

5.4.1.1 Individual-Level Characteristics: Sociodemographics & Personality

To introduce the initial sections relating to the analytical design a number of individual-level variables are included for analysis, including those relating to sociodemographics and personality. To reiterate, all items relating to personality and sociodemographics are to be requested via the means of a questionnaire administered post performance testing to reap reactions and states of emotions that are ordinarily associated with different cultural groups in timed test conditions. See the following sections.

5.4.1.2 Sociodemographic Data

In addition to nationality, sociodemographic background variables include expected grade, gender, age, and participation in part-time work whilst in study. Requests for such data were obtained via appropriately worded items on the questionnaire[25]. In terms of expected grade, considering the fairly equivalent level of educational ability assumed to exist across global schools of thought, significant differences may amount in terms of 'expectations' across cultures. This is a slightly varied approach to research that seeks a measure of 'grade point average' for example.

5.4.1.3 Personality

In terms of the 'subject/ subjective', i.e., individual differences, personality provides many a construct to assist the international marketing researcher appropriately frame and address research objectives. As regards the present thesis, constructs of interest include self-efficacy (see section 5.4.1.3.2); achievement strivings and impatience/ irritability

[25] Across both the British and Greek version questionnaires featuring at the very end, nationality is marked by item R8, expected grade is item R9, gender is item R4, age is item R7, and part-time employment is item R10.

(see section 5.4.1.3.3); preferred temporal orientation (see section 5.4.1.3.4), and the perception of time's passage vis-à-vis task complexity (see section 5.4.2.6), as well as the 'perceived control of time', discussed in the following section.

5.4.1.3.1 Perceived Control of Time

Perceived Control of Time is a measurement scale developed by Macan and Colleagues (1990) and positioned as a likely result of 'Time Management Behaviours' (see Macan, 1994). The scale is comprised of 5 items, and each item is scored according to a five-point Likert-type scale, spanning from 1 (*seldom true*) to 5 (*very often true*), which results in a total composite score spanning from 5 (low perceived control of time) to 25 (high perceived control of time). For questionnaire items relating to perceived control of time, please see Appendix 5.1A; items are labelled PCT1 to PCT5.

Examples of items include "I feel in control of my time" and "I underestimate the time that it will take to accomplish tasks". Four out of the five items are reverse-scored. Overall, the scale weighs up an individual's perceived reality as to the degree they feel they can personally shape the way time is managed. 'Reliability speaking' the alpha coefficient value for the scale is .68 (Macan, 1994; Nonis *et al.*, 1998)[26].

5.4.1.3.2 Self-Efficacy

In view of the cross-cultural contingent of this thesis a scale validated across many different nations is deemed most desirable. Accordingly, a scale of perceived general self-efficacy (GSE) developed by Jerusalem & Schwarzer (1992) is selected for analyses. Jerusalem & Schwarzer (1992) explain that on average the items take 4 minutes to complete, and scoring of responses are made on a 4-point scale. The sum of all the responses to the 10 items yields a final composite score ranging from 10 (low self-efficacy) to 40 (high self-efficacy). For questionnaire items relating to self-efficacy, please see Appendix 5.1A; items are labelled SE1 to SE10.

The 4-point Likert scale ranges from 1 (*not at all*) to 4 (*exactly true*) and has been designed for the general adult population, including adolescents, except for those under

[26] With reference to Macan *et al.*, (1990) the 'perceived control of time' scale constituting the 3rd factor of Macan's Time Management Behavior Scale', is differentially reported at an alpha coefficient reliability level of .69 (see Macan *et al.*, 1990: 764, table 2).

the age of 12. Available in 27 languages the scale originated as a German version created in 1979. Successfully applied internationally for at least 20 years the measure is appropriate for a many number of uses, to include its suitability as an indicator of quality of life at any point in time, as well as predict adaptation to subsequent life changes.

In particular, the scale was developed to assess an overall sense of perceived general self-efficacy with intentions to predict an individual's coping with daily hassles, as well as adaptation, following the experience of all sorts of stressful lifetime events (<http://userpage.fu-berlin.de/~health/engscal.htm>). The scale is typically self-administered, as part of a more widespread questionnaire.

The items refer to perceived coping and are indicative of an internally stable attribution of success (<http://userpage.fu-berlin.de/~health/engscal.htm>). Perceived general self-efficacy is an operative construct that is related to subsequent behaviour and therefore relevant for behavioural change and clinical practice. The scale is unidimensional and in samples across 23 nations specifically, Cronbach's alphas ranged from .76 to .90, with the majority in the high 80s. A number of correlation studies document criterion-related validity, with positive coefficients found with work satisfaction, favourable emotions, and dispositional optimism, and negative coefficients found with stress, anxiety, depression, health complaints and burnout (<http://userpage.fu-berlin.de/~health/engscal.htm>).

A point to reiterate is that 'perceived general self-efficacy' is a general measure, so it does not measure specific behaviour change. In such cases, it is necessary to add a few items to cover the particular content of the intervention or survey, i.e., physical exercise self-efficacy (<http://userpage.fu-berlin.de/~health/engscal.htm>).

5.4.1.3.3 Achievement Strivings and Impatience/ Irritability

Personality traits, achievement strivings and impatience/ irritability, are measurable via a 5-point Likert scale as created by Spence *et al.*, 1987. 7 items constitute the achievement strivings (AS) scale, and total scores range from 7 (low AS) to 35 (high AS). For questionnaire items relating to achievement strivings, please see Appendix 5.1A; items are labelled AS1 to AS7. 5 items constitute the impatience/ irritability (II) scale and range from a total score of 5 (low II) to 25 (high II).

Similarly, for questionnaire items relating to impatience/ irritability, please see Appendix 5.1A; items are labelled II1 to II5. Spence *et al.,* (1987) report an alpha coefficient reliability score of .79 for the achievement strivings scale across male and female samples. For impatience/ irritability, a reliability score of .67 is reported for the male sample, and .63 for the female sample.

5.4.1.3.4 Preferred Temporal Orientation (Mind Polychronicity)

Polychronicity defined as a preferred temporal orientation is a specific aspect of the entire multidimensional construct of polychronicity that is specifically driven by the 'mind' and cognitive processing (e.g., Haase *et al.,* 1979). In creating the preferred temporal orientation scale (the Inventory of Polychronic Values/ IPV) Bluedorn *et al.,* (1999) account for the construct's complexity; yet for purposes of interpretation they deliberately streamline the focus of the IPV measurement scale to circumvent errors resulting from 'information loss' and indistinctness.

Consequently, a unidimensional focus on the concept of polychronicity considers preferred temporal orientations only, to enable a more accurate picture of the finer intricacies constituting polychronicity (specifically, 'mind polychronicity').

The IPV (Inventory of Polychronic Values) consists of 10 items scored according to a 7-point Likert scale, with total scores ranging from 10 (monochronic orientation preferred) to 70 (polychronic orientation preferred) (Bluedorn *et al.,* 1999). For questionnaire items relating to preferred temporal orientation, please see Appendix 5.1A; items are labelled PC1 to PC10. To create a valid and reliable scale tapping preferred temporal orientations a total of 11 samples and 2,190 subjects were sampled to provide support for the scale as a compelling and consistent measure. As a measure of its reliability, the scale has produced alpha reliability coefficients around the .80 mark.

5.4.2 Scale Selection: Main Performance-related Variables

In terms of the outcomes investigated, the main variables in question include Type A behavioural orientations towards work or stress; objective measures of speed and accuracy; and life satisfaction. The following sections convey more of an in-depth impression of these outcomes starting with the Type A Behaviour Pattern.

5.4.2.1 Type A Behaviour Pattern (TABP)

Based upon existing measures, the ERCTA scale is a recent cross-cultural instrument designed to measure the Type A behaviour pattern, consisting of only eight items (Sutil *et al.,* 1998). Developed in the Spanish language with a Spanish population in 1996 (and presented in English in 1998) it is good measure for administration across large groups of subjects, in a relatively short space of time. Two version of the ERCTA scale exist, whereby version b employs a simpler type of terminology and language than version a.

Both versions of the ERCTA scale (a and b) have attained sufficient support, especially when considering their association with other TABP measures, their factorial structure, and also their ability in diagnostically differentiating types of individuals (Sutil *et al.,* 1998). Reliability and validity of the ERCTA scale has also been demonstrated via the means of alpha coefficients, factor analyses and mean differences to verify its state of internal consistency, criterion-related validity and construct validity as satisfactory (Sutil *et al.,* 1998).

To expand, reliability checks of the alpha coefficients by Sutil *et al.,* (1998) were performed via the SPSS package, 'RELIABILITY'. Elimination of item 8 resulted in an alpha coefficient figure of .6834 for ERCTA-a, and .7073 for ERCTA-b, which is justifiable when accounting for the fact that only a handful of items make up the bi-dimensional Type A scale (Sutil *et al.,* 1998). Scored according to a 5-point Likert scale, items 2, 4, and 7 combine to constitute Factor 1- total scale scores range from 3 (low work orientation) to 15 (high work orientation), and represent the more positive aspects of activity orientation. Specifically, Factor 1 accounts for Type A orientations of behaviour towards work, including attention to work, activity, and professional goals.

Alternatively, Factor 2 embodies orientations towards work tension, i.e., hurry-related stress, competitiveness and perfectionism (Sutil *et al.,* 1998). This later factor is comprised of 5 items and total scores may range from 5 (low orientation towards stress) to 25 (high orientation towards stress). Another point regarding item 8 of the ERCTA scale (a measure of emotional expression), concerns the fact it has resulted as independent of both Factors 1 and 2. Nevertheless, Sutil *et al.,* (1998) found item 8 to positively associate with Factor 2 and negatively with Factor 1, to signify that those

respondents that suffer stress also experience more difficulty in articulating their emotions.

Two core components were found to be particularly relevant to the Type A behaviour pattern, as evidenced by the results of factorial matrices performed by Sutil and colleagues (1998). These are orientations towards either tension/ stress, or those towards work. This correlation with the Framingham scale is mainly apparent with Factor 2 of the ERCTA scale, to suggest that as an indicator of coronary risk, the Type A behaviour pattern is largely infused by tendencies of hostility and stress. For questionnaire items relating to Type A behavioural orientations towards work and stress, please see Appendix 5.1A; items are labelled AB1 to AB8[27].

5.4.2.2 Accuracy and Speed

To procure objective measures of accuracy and speed as part of a 45 minute timed test session, three coding tests (copy, code forward, code backward); two letter-matching tests (physical identity, name identity), and 1 intelligence test (Ravens Advanced Progressive Matrices consisting of two parts) were administered (see Appendix 5.2A for all performance tests). A characteristic feature of all the three subdivisions of tests (coding, letter-matching, intelligence) is the aspect of increasing task complexity to engage greater cognitive activity (Fink & Neubauer, 2001; Frearson & Eysenck, 1986; Hunt, 1980).

For assessments of accuracy as measured by intelligence test scores, a commonly applied test is sought after to gauge Spearman's "*g*" (Diamond *et al.,* 2000; Fink & Neubauer, 2001; Frearson & Eysenck, 1986; Hunt, 1980), whereby "The relation between *g* and the idea of attentional resources is explored" (Hunt, 1980: 449). Over 20 years of research has been undertaken to examine the correlations between intelligence– as measured by approved psychometric tests, and information processing speed in ECTs, which demand increasing degrees of cognitive effort (Fink & Neubauer, 2001). And although computerised tests may be administered (see Bergstrom *et al.,* 1994; Diamond *et al.,*

[27] Due to deviations of eventual subscales from those obtained by Sutil *et al.,* (1998), (though the direction of all item relations is still in accord with theory), please see the following chapter, Section 6.3 'Factor Analysis (Principal Component Analysis)' to ascertain how in terms of the present data set, items are allocated across the two Type A behavioural subscales: orientations towards either work or stress.

2000), an acceptable alternative in terms of reliability (Fink & Neubauer, 2001), and in accord with Fink & Neubauer (2001), is a paper-and-pencil technique that employs Raven's (1967) Advanced Progressive Matrices (RAPM) Set I (twelve test items) and Set II (36 test items) (Fink & Neubauer, 2001). Due to matters of space, the matrices have not been presented as part of the thesis (see Raven, 1967).

As a procedural guide, Raven's intelligence test administered by Fink & Neubauer (2001) allowed a time limit of 10 minutes for Set I, and 20 minutes for Set II. The original time limit proposed for Set II was 40 minutes; yet, in view of the exceptionally high correlations of approximately .95 across 40 minute and 20 minute timed test administrations, and in accord with past research the 20 minute test session was opted for (Fink & Neubauer, 2001; Frearson & Eysenck, 1986). A similar tact was needed for Set I of Raven's intelligence test, whereby the total test time was halved to 5 minutes only. The pilot tests administered revealed all respondents sampled had completed the test in less than 5 minutes, and thus remained idle for the latter 5 minutes of Set I.

To attain measures of accuracy across the 3-tiered coding test, respondents were presented with "rows of stimuli to work on in three conditions: (1) COPY, i.e. write the items as given (e.g. B for B); (2) CODE FORWARD, i.e., write the next letter in the alphabet instead of the printed item (e.g. C for B); (3) CODE BACKWARD, i.e. write the preceding letter in the alphabet instead of the printed item (e.g. A for B). In the test participants were given two pages with seven rows of 10 items. The time limit per page was 30 s [seconds]. The dependent variable was the number of correct items within the time limit for each condition (copy, code forward, code backward), aggregated over both repeated presentations of each condition" (Fink Neubauer, 2001: 1012).

Similarly for "the letter matching test the participants were given two pages of four rows with 16 items (i.e. a total of 128 items) with a time limit of 25 s per page. Each item was composed of two letters which were either physically the same (e.g. 'AA'), semantically the same (e.g. 'Bb') or physically or semantically different (e.g. 'aB'). The following stimuli were used: uppercase and lowercase letters A/a and B/b. The test consisting of 128 items was given twice: In the first condition the participants were asked to judge the physical identity (PI) of the two stimuli, i.e. responded YES to items of the physically same type and NO to all other items. In the name identity (NI) condition participants had

to indicate the semantic identity of the two stimuli, i.e. stimuli of the types physically and semantically the same had to be responded to by YES; the opposite response NO was required...[for] semantically different stimuli pairs. The dependent variable was the number of correctly solved items aggregated over both test halves" (Fink & Neubauer, 2001: 1012 & 1013).

The 'mental speed approach' to psychometric intelligence advocates that speed of information processing is a core component of a person's intelligence (Fink & Neubauer, 2001; Frearson & Eysenck, 1986; Hunt, 1980; Neubauer, 1997; Neubauer & Knorr, 1998). The reasons for why concern the inverse relationship found concerning information processing speed during elementary cognitive tasks (ECTs) and intelligence (Fink & Neubauer, 2001; Frearson & Eysenck, 1986; Hunt, 1980; Neubauer, 1997; Neubauer & Knorr, 1998). In other words, faster speeds of response associate with greater levels of intelligence.

Thus, via the mode of psychometric testing, speed of information processing is an outcome suitable for objective measurement (Fink & Neubauer, 2001). This was managed via administrations of paper-and–pencil tests in line with Fink & Neubauer (2001). To assess speed of psychometric processing two types of tests were employed. The first type features a modification of Lindley, Smith & Thomas' (1988) coding test; the second is a variation of Posner's letter matching test (Fink & Neubauer, 2001; Posner & Mitchell, 1967; Neubauer & Knorr, 1998). The alpha coefficient measures of reliability regarding speed/ reaction time (RT) are also of a desired level. For example, pertaining to research by Fink & Neubauer (2001), reaction time reliability figures across the 3-part coding and 2-part letter-matching test ranged from .83 to .97.

To obtain mean reaction time (RT) measures, one simply needs to divide the score of correct answers into the total test time. For example, with the coding tasks, total test time per presentation is 30 seconds; for the letter-matching tasks, total test time is 25 seconds per presentation (Fink & Neubauer, 2001). In providing two presentations of each of the three coding tests and two letter matching tests, split-half reliability figures regarding reaction time can also be calculated (Fink & Neubauer, 2001).

Also to be tested across cultures is the assertion by Lindley *et al.,* (1998) that a purer indicator of speed of psychometric information processing, untainted by writing pace is available by deducting the 'mean reaction time' obtained for the copy condition (simply copying the letters presented) from the 'mean reaction time' obtained for the code forward (code forward by one letter in the alphabet) and code backward (code backward by one letter in the alphabet) provisos (see section 5.5 for a complete description of the procedures involved). Two different scores result- coding time forward (CTF) and coding time backward (CTB) (Fink & Neubauer, 2001; Lindley *et al.,* 1998).

Similarly, in terms of the letter matching tests it has been proposed that the time required for the physical identity test is a reflection of a processing related to visually discriminating stimuli (Fink & Neubauer, 2001; Hunt, 1980). The name identity test on the other hand, demands an additional, concomitant, cognitive process to be retrieved and engages long-term memory (LTM) (Fink & Neubauer, 2001; Hunt, 1980).

"The difference between RTs for NI and PI pairs, which will be called the NI-PI measure, can be regarded as a measure of the efficiency of retrieval of a highly overlearned linguistic association" (Hunt, 1980: 450). In other words, this variance results as the reaction times for name identity iterations are longer than those for the physical identity, indicative long-term memory retrieval time (Fink & Neubauer, 2001; Hunt, 1980). This too is to be investigated.

5.4.2.3 Role Ambiguity

To measure role ambiguity (uncertainty as to one's role) scale items sourced from Rizzo *et al.,* (1970) of a 7-point, six-item nature was employed. Scores range from 7 to 42. Higher scores indicate greater role ambiguity, and the interitem reliability coefficient found by Rizzo *et al.,* (1970) was 0.74 using Cronbach's (1951) alpha. Once reversed, greater scores reflect greater accounts of role ambiguity. For questionnaire items relating to role ambiguity, please see Appendix 5.1A; items are labelled RA1 to RA6.

5.4.2.4 Role Overload

In accord with Macan *et al.,* (1990) the role overload (too much to do, in too little time) scale was sourced from Beehr *et al.,* (1976) with an additional item incorporated: "I feel that I just don't have time to take an occasional break", increasing the typical internal

reliability coefficient of 0.56 to 0.68. Scores could range from 4 to 28, with higher scores indicating a perception of greater role overload. For questionnaire items relating to role overload, please see Appendix 5.1A; items are labelled RO1 to RO4.

5.4.2.5 Satisfaction with Life

The main focus of research presently investigated in terms of satisfaction is concerned with subjects in academia. Hitherto, an assessment of such an individual's measure of job satisfaction is hardly appropriate or of much value. Consequently, the focal measure of satisfaction for this thesis is on life satisfaction.

To expand upon this measure of life satisfaction, the 'Satisfaction With Life Scale' (SWLS), prompts an investigation into a respondent's general assessment of life in an attempt to theorise upon broader conceptualisations of life satisfaction (Diener *et al.,* 1985; Pavot *et al.,* 1991). As is required for research, this scale possesses very favourable psychometric properties, including high temporal reliability and high internal consistency (Diener *et al.,* 1985).

With respect to the scale each item is scored from 1 to 7, resulting in a possible range of scores from 5 (low satisfaction) to 35 (high satisfaction), whereby research has produced a test-retest correlation coefficient of .82, and a coefficient alpha of .87 (Diener *et al.,* 1985). For questionnaire items relating to satisfaction with life, please see Appendix 5.1A; items are labelled LS1 to LS5.

The SWLS of desirable psychometric quality has also been examined in light of its relationships held with other measures of subjective well-being and personality that it is deemed to be conceptually related to (Diener *et al.,* 1985; Pavot *et al.,* 1991), i.e., scales regarding temperament (Buss & Plomin, 1975; Diener *et al.,* 1985), Self-Esteem (Diener *et al.,* 1985; Rosenberg, 1965), the Neuroticism scale of the Eysenck Personality Inventory (Diener *et al.,* 1985; Eysenck & Eysenck, 1964), as well as social desirability (Crowne & Marlowe, 1964; Diener *et al.,* 1985).

Results indicate that the SWLS does not evoke a social desirability response set, and moderately strong correlations have been shown to exist with subjective well-being scales. Research has also established the scale's discriminant validity (Pavot *et al.,*

1991), which "leaves the respondent free to weight various domains (e.g. health or material wealth) and various feeling states (e.g., loneliness) in whatever way he or she chooses" (Diener *et al.,* 1985: 74).

Research by Diener *et al.,* (1985) on the SWLS has received support from follow-up research by Pavot *et al.,* (1991) who have established further evidence of validation regarding the scale. In particular, Pavot and colleagues have provided additional evidence concerning the temporal stability and convergent validity of the SWLS with relatively similar measures of life satisfaction, as well as other self-report measures of satisfaction, peer and family reports of satisfaction, and also a memory measure.

The SWLS bestows a number of benefits in that it is brief, and thus quick to administer, as well as producing levels of predictive validity as high (or higher) than quite a number of other much longer life satisfaction measures. It can also be applied across all age groups, allowing for focused appraisals to be conducted of diverse age groups on equivalent life satisfaction measures. Unless a wider range measure is required to accentuate the affective features of subjective well-being or it is advantageous to make use of a life satisfaction scale that is purposely designed for a specific population, for a great deal of applications the SWLS may well be the preferred measuring device.

Moreover, even though situational factors such as momentary mood can wield an impact upon the responses given to self-report measures, and particularly those designed to measure subjective well-being and life satisfaction, a considerable degree of cross-methodological agreement exists to suggest that a significant amount of stability is present in our day-to-day and momentary changes in the experience of mood and life satisfaction (Pavot *et al.,* 1991).

The next section introduces the subjective time estimation methodology incorporated by the present thesis examined for cultural variability across cognitive tasks of increasing complexity.

5.4.3 Subjective Time Estimation (STE) Methodology

A recently developed methodology of great promise in gauging the cognitive demands of an individual is the practice of subjective time estimation (STE) in the execution of

cognitive tasks (Fink & Neubauer, 2001). To explain, as part of the coding and letter matching tests, upon the completion of a test half participants are required to reckon the time given for task completion. To iterate, the total testing time was 25 seconds per presentation for letter matching; 30 seconds per presentation for coding (Fink & Neubauer, 2001).

Via the reproduction method (prospective research paradigm), respondents in previous studies STE akin to the present study have been required to push a computer key for the length of time subjectively deemed to be comparable to the length of time the respondents were tested. The problem with this is that filled time is not equal to empty time (Allan, 1979). Consequently, the method of reproduction employed was one on a par with 'verbal reproduction'. The respondent cognitively (subjectively) reckons the passage of time passed for a test presentation, and then writes it down at the end of each presentation.

Concurrently, the differing degrees of task difficulty in the tests for coding (copy<code forward<code backward) and in the test for letter matching (physical identity<name identity) enable a manipulation of simultaneous nontemporal task demands. As a point of interest, the ranking of task difficulty and in the letter matching and coding test has been determined via a pilot study (Fink & Neubauer, 2001). Also, to obtain reliable STEs (subjective time estimates) respondents are encouraged to be accurate.

5.5 Procedure

To reproduce a context akin to a global school of thought engaged in test conditions, respondents were tested according to class size (groups ranged from 20 to 50 in size). By separating respondents akin to seating arrangements deemed suitable for classroom-based examinations, only individual efforts of performance were collected. After receiving an encouraging, and personally administered introduction before each of the testing sessions, respondents were informed of the opportunity to receive feedback as regards the forthcoming tests, as well as the offer of a monetary incentive or free dining for those respondents with fully completed data packs.

Prior to testing, respondents were requested to remove watches and any timepieces (i.e., a mobile phone) from their view. The objective time interval (30 seconds per coding

presentation and 25 seconds per letter matching presentation) was marked by the words 'start' and 'stop' in conjunction with a timing device that was consistently applied across all samples.

To obtain reliable measures for speed of information processing respondents were instructed to complete each test condition as fast and as accurately as possible. This point was driven home across all data collection sessions and was conveyed as the principal cause for why tests were being performed. Specifically, respondents across all sessions were uniformly instructed that the tests were concerned with ascertaining measures of speed and accuracy. After completing a test half across the coding and letter matching tests respondents were required to reproduce their subjective time estimate. After completion of the paper-pencil ECTs, Raven's Advanced Progressive Matrices was administered, followed by the questionnaire.

5.6 Empirical Analysis: Hypothesis Testing

The empirical analysis is an important process to plan. And in preparing for data analysis variables need to be defined; that is, named and coded (Field, 2005; Pallant, 2001). This is best achieved by creating a codebook to record the labels and definitions of all variables. Data is subsequently entered and ordinarily modified (i.e., case deletion; moving an existing variable) (Pallant, 2001; Field, 2005).

The next stage of the process is to screen and clean the data. Specifically, this involves: (i) searching for inaccurate entries (errors); (ii) locating an error in the data file; (iii) rectifying the error (Field, 2005; Pallant, 2001). Once this stage is complete and all errors addressed an exploration of the data file can commence, i.e., distributions of variables (Field, 2005; Pallant, 2001).

5.6.1 Preliminary Data Analysis

Descriptive statistics provide a good starting place for researchers mainly due to the fact that such groundwork enables, (i) an adequate descriptions of sample characteristics, (ii) a way of checking for any violated assumptions pertaining to the data analysis techniques selected for hypothesis testing, and (iii) a way of addressing hypotheses.

Descriptives may be generated for categorical (i.e., age, gender, nationality) or continuous variables (i.e., the preferred temporal orientation continuum), and so that normality can be assessed (discussed later). Methods available for such analyses include graphical output, i.e., histograms, line graphs, scatterplots and boxplots (Field, 2005; Pallant, 2001; Tabachnick & Fidell, 2001). Unrepresentative scores that bias statistical models are called 'outliers' (extreme high or low scores) (Field, 2005; Maddala, 1977; Pallant, 2001; Tabachnick & Fidell, 2001). These may manifest across independent or dependent variables, and need to be addressed at this preliminary stage (Field, 2005; Pallant, 2001). Ways to achieve this involve deleting the outlier from the data set, transforming the dataset, or re-scoring (Field, 2005).

If transformation fails the outlier score could be adjusted (particularly if the outlier score is a cause of bias and is misleading), and the approaches available for adjusting outlier scores according to Field (2005: 79) are as follows: (a) next highest score plus one[28]; (b) convert back from a z-score; (c) mean plus two standard deviations.

Data manipulation is also a common process at this stage and concerns converting raw data into a working data file appropriate for hypothesis testing and conducting theory-driven data analyses (Field, 2005; Pallant, 2001). Procedures include the calculations of total scores, reversing negatively worded items, transformations of skewed/ peaked variable data distributions into those more 'normal', and the collapse of continuous variables (i.e., mono/polychronicity continuum) into more refined, clear-cut groupings (Field, 2005; Pallant, 2001) (i.e., monochronic/ MC; dual MC&PC; polychronic/ PC).

Scale reliability can also be assessed for once the researcher has inspected the file for inaccuracies. This involves the creation and/ or selection of scales in possession of adequate reliability (Field, 2005; Pallant, 2001). There are many sides to the notion of 'reliable', yet one main feature to consider concerns the matter of 'internal consistency'. This is defined by the extent to which items constituting a measurement scale 'gel as one'. The point is to ensure all items constituting a scale are measuring the same fundamental construct (Field, 2005; Pallant, 2001).

[28] This particular approach was employed for outliers identified for the Greek sample (n=187) and for the British sample (n=199). For a description of the procedure involved to identify outliers using z-scores please refer to Field (2005: 76-78).

A common indicator of internal consistency is Cronbach's (1951) alpha coefficient, which if above .7 is a good sign. All the same, due to the sensitivity of this value with respect to the number of items constituting a scale, it is not uncommon to find short scales (amounting to no more than ten items) accompanied with lower levels of reliability, i.e., .5 (Pallant, 2001). Hitherto, one's eventual selection of scales is an overriding concern.

Statistical selection is another important decision for researchers to make, as many factors abound to determine which statistical methods are most appropriate to address the research questions at hand (Field, 2005; Pallant, 2001). For an excellent "summary table of the main statistical techniques" see Pallant, (2001: 106 & 107). In accord with Pallant (2001), statistical tests may be either used to explore relationships across variables, or to explore how similar or different sampled groups are. These two overarching approaches are expanded upon in the following sections.

5.6.2 Statistical Techniques to Explore Variable Relationships

Bivariate analysis for hypothesis testing involves an examination of relationships across two variables only (Field, 2005; Page, 2003; Pallant, 2001). To engage upon such analyses, correlations are available to determine the magnitude of an association, as well as its trend (Field, 2005; Page, 2003; Pallant, 2001). The Pearson product-moment correlation coefficient "*r*", is an appropriate option for assessing relations across normally distributed, continuous variables; yet, also applicable for analyses involving one dichotomous (i.e., gender), and one continuous variable (i.e., mono/polychronicity scale scores). Its non-parametric alternative is the 'Spearman *rho* (rank order correlation)' appropriate for data ordinal or ranked in nature (Field. 2005; Pallant, 2001). Additional non-parametric tests feature in the latter half of section 5.6.3.

In addition to the straightforward bivariate correlation, there is also the option of 'partial correlation'. To explain, "partial correlation looks at the relationship between two variables while 'controlling' the effect of one or more additional variables" (Field, 2005: 123). Correlations may be applied to identify non-linear relations (i.e., curvilinear associations or no relationships at all), and outlier values. Correlations may also be relevant for tests investigating range restriction effects; association as opposed to

causality; and the relevance of practical (effect size; '*r*') versus statistical (i.e., sig. value) significance (Field, 2005; Pallant, 2001).

Importantly, statistical significance is not the same as practical significance; that is, "just because a test statistic is significant [it] doesn't mean that the effect it measures is meaningful or important. The solution to this criticism is to measure the size of the effect we're testing in a standardized way...The fact that the measure is standardized just means that we can compare effect sizes across different studies that have measured different variables, or have used different scales of measurement" (Field, 2005: 32). The following effect sizes offer a guideline as to what constitutes, a small, medium or large effect size:

- $r = .10$ (small)
- $r = .30$ (medium)
- $r = .50$ (large)

See Cohen (1988), Field (2005), and Pallant (2001).

'Practical significance' (effect size), i.e., Pearson '*r*' "can range from –1.00 to 1.00. This value will indicate the strength of the relationship between your two variables. A correlation of 0 indicates no relationship at all, a correlation of 1.0 indicates a perfect positive correlation, and a value of –1.0 indicates a perfect negative correlation" (Pallant, 2001: 120). To apply the systems of statistical endeavour to undertake analyses of theoretical reasoning and economic/ socio-cultural events, researchers also need to be familiar with the techniques of multivariate analyses (Kennedy, 1979, Pallant, 2001; Thomas, 1985).

Multivariate Analysis for hypothesis testing engages a wide genre of techniques to examine relations involving one continuously scored endogenous (dependent) variable and an array of exogenous (independent) predictors that can be theoretically or conceptually justified (Field, 2005; Page, 2003; Pallant, 2001; Tabachnick & Fidell, 2001). Multiple regression analyses are an obvious and accepted example, and enable enhanced degrees of complexity pertaining to investigations proposed and subsequent interrelations (Field, 2005; Page, 2003; Pallant, 2001; Tabachnick & Fidell, 2001; Thomas, 1985).

"Though the terms regression and correlation are used more or less interchangeably, regression is often used when the intent of the analysis is prediction, and the term correlation is used when the intent is simply to assess the relationship between the IVs [independent variables] and the DV [dependent variable]" (Tabachnick & Fidell, 2001: 111). "Regression techniques consist of standard multiple regression, sequential (hierarchical) regression, and statistical (Stepwise) regression. Differences between the techniques involve the way variables enter the equation" (Tabachnick & Fidell, 2001: 112). For example, "in standard multiple regression all independent (or predictor) variables are entered into the equation simultaneously" (Pallant, 2001: 135).

Therefore, to ascertain the suitability of a statistical technique, (i.e., multiple regression analyses) the decision-making behind selecting 'a method of estimation' involve matters of calculable expense (time and money); maximal levels of R^2 (amount of variance in the endogenous/ dependent variable accounted for by the exogenous/ independent variables)[29]; asymptotic assets of the estimator's sampling distribution (an asset found with a 'sizeable' sample); least squares (minimise the size of residuals); maximum likelihood (the greatest probability of obtaining the observed data from parameter values); unbiased estimator (equivalent mean value as to the sampling distribution of the estimator); best unbiasedness (the most efficient, unbiased estimator with the least variance) and mean square error (involves the tradeoff between low bias and low variance) (Field, 2005; Kennedy, 1979; Maddala, 1977; Thomas, 1985).

Specifically, theory-driven research assists in uncovering a 'Best Linear Unbiased Estimator' (BLUE) deemed most desirable, and thus applicable to "a standard estimating situation referred to as the classical linear model (CLR model). It happens that in this standard situation the OLS (ordinary least squares) estimator is considered the optimal estimator. This model consists of...assumptions concerning the way in which the data are generated. By changing these assumptions in one way or another, different estimating situations are created, in many of which the OSL estimator is no longer considered to be the optimal estimator" (Kennedy, 1979: 35).

Adjusted R^2 is representative of depreciations in predictive power. In addition, Adjusted R^2 represents the amount 'accounted-for' variability in the model's dependent variable drawn from the sample's population (Field, 2005).

Hitherto, to ensure accurate inferences concerning ones investigated population, certain assumptions must be satisfied (Field, 2005; Kennedy, 1979; Maddala, 1977; Pallant, 2001; Tabachnick & Fidell, 2001). Specifically, assumptions regarding multiple regression analyses relate to sample size, variable types, non-zero variance, multicollinearity (and singularity), outliers (see section 5.6.1), normality, linearity, homoskedasticity, and independence of residuals (Field, 2005; Kennedy, 1979; Maddala, 1977; Pallant, 2001; Tabachnick & Fidell, 2001; Thomas, 1985); all of which are explained below.

Sample size relates to whether sample findings can be generalised to other samples of a similar context (Pallant, 2001). It is advocated that a minimum of 15 respondents per independent variable is required for a dependable model (Field, 2005; Pallant, 2001).

Variable type across independent variables needs to be of a quantitative measurement (e.g., interval level) or categorical (that is, at least two groups), whereas the dependent variable needs to be quantitative and continuous (Field, 2005; Pallant, 2001).

Non-zero variance relates to the independent variables, which need to contain some degree of variance (Field, 2005).

Multicollinearity relates to the relations found across the predictors, which are highly correlated; that is, at least two of the explanatory variables are linearly related (Field, 2005; Maddala, 1977; Pallant, 2001). *Singularity* on the other hand results "when one independent variable is actually a combination of other independent variables (e.g., when both subscale scores and the total score of a scale are included)" (Pallant, 2001: 137). To test for multicollinearity, all independent variables were regressed on all other independent variables (Maddala, 1977; Moutinho & Goode, 1995).

To follow on, with respect to variable distribution and the character of the fundamental relations across variables, normality, linearity, homoskedasticity, and independence can be checked via assessments of the residual plots as generated by SPSS (Field, 2005; Pallant, 2001; Tabachnick & Fidell, 2001). To explain, residuals represent the difference in score across actual and predicted values of the endogenous variable (Pallant, 2001).

Normality can therefore be checked via an examination of residuals, which need to be of a normal distribution and can be managed via the use of Normality probability plots (p-p plots) and histograms (Field, 2005; Pallant, 2001; Tabachnick & Fidell, 2001).

Linearity is another assumption that needs to be met, and managed via inspecting residuals to ensure they linearly related with predicted endogenous variable scores (Field, 2005; Pallant, 2001; Tabachnick & Fidell, 2001).

Homoskedasticity is the assumption that relates to the residuals concerning predicted dependent variable scores. This primarily need to be of a 'constant variance'; that is, equivalent across all predicted scores (Field, 2005; Maddala, 1977; Pallant, 2001; Tabachnick & Fidell, 2001). Indications of patterns relating to the configuration displayed via the residuals/ error terms, i.e., a fan/ funnel shape implies 'heteroskedasticity' (Field, 2005; Maddala, 1977; Pallant, 2001; Tabachnick & Fidell, 2001).

Independence of residuals is a final consideration to address, and is the condition that ensures error terms are not correlated with each other; that is, independent. One can just observe how the standardised residuals are distributed on a scatterplot. The kind of distribution sought after is one where "the residuals will be roughly rectangularly distributed, with most of the scores concentrated in the centre (along the 0 point). What you don't want to see is a clear or systematic pattern to your residuals (e.g., curvilinear, or higher at one side than the other). Deviations from a centralised rectangle suggest some violation of the assumptions" (Pallant, 2001: 144).

Such multivariate techniques demonstrate the relations between variables, though this does not assume causality. The inference of a causal relationship is matter steeped in logic and experimentation, as opposed to matter of statistical analysis (Field, 2005; Tabachnick & Fidell, 2001). "An apparently strong relationship between variables could stem from many sources, including the influence of other, currently unmeasured variables. Another problem for theory rather than statistics is the inclusion of variables. Which DV [dependent variable] should be used and how should it be measured? If one already has some IVs [independent variables] in an equation, which IVs should be added to the equation for the most improvement in the model? The answers to these questions

can be provided by theory, astute observation, good hunches, or sometimes by careful examination of the distribution of residuals" (Tabachnick & Fidell, 2001: 112).

Another important statistical practice that deserves a mention is factor analyses, which unlike many others is specifically intended to serve the purpose of 'data reduction' (Field, 2005; Pallant, 2001). Pallant (2001: 151) explains, "It takes a large set of variables and looks for a way that the data may be 'reduced' or summarised using smaller sets of factors or components."

Overall, there are many statistical estimators for modeling relationships, and by far, the most widely used has been standard regression analysis (Ordinary Least Squares; OLS) (Field, 2005). Subject to a number of assumptions (see section 5.6.2) regression analysis possesses many a desirable property, and optimal estimators are considered as BLUE (Best Linear Unbiased Estimator) (Kennedy, 1979; Thomas, 1985) and constitutes the main mode of statistical analysis employed by the present thesis. The next section of statistical tests delves deeper into the techniques available for group/ condition-style investigations.

5.6.3 Statistical Tests to Explore Groups or Conditions

To ascertain group-/ condition-based differences and similarities the use of t-tests, and analysis of variance (ANOVA) techniques are of relevance (Field, 2005; Pallant, 2001). To expand, t-tests apply to two groups (i.e., British or Greek), whereas ANOVAs apply to analyses of two or more groups (Field, 2005; Pallant, 2001). As a guide to selecting the right t-test or ANOVA technique the following points are most useful and have been sourced care of (Pallant, 2001: 170):

- "t-tests are used when you have only *two* groups (e.g., males/females);
- analysis of variance techniques are used when you have *two or more* groups;
- paired-samples or repeated-measures techniques are used when you test the *same people* on more than one occasion, or you have matched pairs;
- between-groups or independent-samples techniques are used when the subjects in each group are *different people* (or independent);
- one-way analysis of variance is used when you only have one *independent* variable;

- two-way analysis of variance is used when you have two *independent* variables;
- multivariate analysis of variance is used when you have more than one *dependent* variable; and
- analysis of covariance (ANCOVA) is used when you need to *control* for an additional variable which may be influencing the relationship between your independent and dependent variable."

In performing such tests there are a number of points to account for, including general test assumptions, Type I/ II error, test power and 'alpha' (Field, 2005; Pallant, 2001). In terms of general assumptions the measurement level of the dependent variable is assumed to be continuous in nature; observations independent (i.e., free from bias), normally distributed data sets reflective of the larger population; and homogeneity (equality) of variance (i.e., Levene's test) (Field, 2005; Pallant, 2001). With Type I error a legitimate effect is believed to manifest, when in reality it is not supportable; yet, as already noted, a Type II error results when the 'no effect', null hypothesis is opted for, when in fact the alternative hypothesis stands (Field, 2005; Pallant, 2001).

Test 'power' is subject to the total number of respondents sampled (Pallant, 2001). As a guide, for sample size approximating 100 plus respondents, the problem of sufficient power is addressed (Pallant, 2001). To attain satisfactory 'power', statistical tables may also be used, which serve to guide desired sample size numbers (Cohen, 1988; Pallant, 2001) (see also 'effect size', section 5.6.2). Also to consider is the alpha level deemed appropriate for testing (i.e., a cut off .05/ 95% confidence, and .01/ 99% confidence that the final statistical result is better than chance) (Field, 2005; Pallant, 2001). For the present thesis the alpha level is set at .05 in accordance with its relatively fair-sized sample of 386 respondents (as smaller alpha values are advised for smaller sized groups) (Pallant, 2001).

A final topic to address in terms of exploring relations across groups is the use of non-parametric tests relevant for testing endogenous variables of non-normal distributions (Field, 2005; Pallant, 2001)[30]. To begin, the 'Chi-Square test for independence' is

[30] The Spearman Rank Order Correlation (Rho) is specifically used to assess the magnitude of a correlation concerning two continuous variables (Field, 2005; Pallant, 2001) and is more appropriately positioned as a feature of section 5.6.2.

without a parametric alternative and tests whether two discrete (categorical) variables are independent or related (Field, 2005; Pallant, 2001).

Another option is the Mann-Whitney test which employs 'ranked' median values as opposed to 'means', and tests for a difference across two independent categories (i.e., males and females) upon one endogenous, non-discrete variable (Field, 2005; Pallant, 2001). Its parametric alternative is the independent sample t-test (Field, 2005; Pallant, 2001). The Wilcoxon Signed Rank Test is a non-parametric alternative to the paired-samples t-test that employs 'ranked' versions of scores and not 'means', to deals with repeated measures (over time or condition) involving the same respondents (Field, 2005; Pallant, 2001).

As a non-parametric alternative to the one-way, between groups ANOVA the Kruskal-Wallis test is available, and compares scores relating to a continuous variable for three or more categories (Field, 2005; Pallant, 2001). Finally, the Friedman (ANOVA) test is the non-parametric counterpart of the one-way, repeated measures ANOVA and employs the same respondents measured over three or more conditions or point in time (Field, 2005; Pallant, 2001).

5.7 Main Study Administration and Schedule

As the penultimate section, the main study driving this thesis was scheduled for the latter half of 2006, and specifically administered over the month of December 2006 in Greece, at the University of Macedonia and the TEI of Thessaloniki. To obtain responses from Britain, samples were drawn from the University of Wales Swansea. Data collection sessions were administered over the months of June and December 2006.

5.8 Chapter Summary: Research Design

This chapter has served to address the research questions raised in the previous conceptualisation chapter by proposing a suitable design of research. Matters of relevance relating to the sampling frame, sampling technique and sample recruitment have also been addressed. Specifically, the two cultural samples selected for investigation sourced from Greece and Britain were recruited in conjunction with lecturers at the University of Wales, Swansea, as well as TEI of Thessaloniki and the University of Macedonia, in Greece. A further note to reiterate is that to entice the

participating student respondents to completely and attentively answers all test and questionnaire items, (and to the very best of their ability), a free lunch or £20 (or 20euros) was offered as an incentive.

To conclude, a dual sample cross-sectional research design with the use of paper-pencil techniques of survey and performance testing was used to gather data. Total session time was approximately 45 minutes. The method of non-probability (judgement) sampling was deemed most appropriate. In addition, the present chapter has also verified the eventual selection of scales. A questionnaire was administered post-performance testing and consisted of items dedicated to that of socio-demographic investigation. Also included were ten multi-item measurement scales relating to investigations of personality and behavioural orientations deemed relevant for addressing the research questions raised by the present thesis.

CHAPTER 6: DATA ANALYSIS

"Time, space, and causality are only metaphors of knowledge,
with which we explain things to ourselves."
Friedrich Nietzsche (1844–1900)

6.1 Introduction

In setting up a data file for statistical analyses, certain procedures need to be followed (Coakes & Steed, 2000; Pallant, 2001). In particular, the data file will need to be created for the purposes of inputting data, with values entered in accordance with one's codebook (Pallant, 2001). At this stage the data file needs to be checked for errors, with such errors then duly rectified (Coakes & Steed, 2000; Pallant, 2001).

Hence, once the data file has been created, data needs to be screened and cleaned prior to any planned analyses. Considering that the initial stage in the analytic process is to investigate data characteristics, it is essential to ensure the dataset has been inspected for errors (Coakes & Steed, 2000; Field, 2005; Pallant, 2001).

A complete dataset is unlikely as missing data do occur, and need to be appropriately handled so as not to misrepresent the data (Allison, 2002; Coakes & Steed, 2000; Field, 2005; Pallant, 2001; <http://www.statisticssolutions.com/Data-Inputation.htm> http://www.uvm.edu/~dhowell/StatPages/more_Stuff/Missing_Data/Missing.html>).
Hence, until one has statistically demonstrated that those observations with missing data are no different from those with values present (Allison, 2002) one needs to assume that missing observations significantly differ from those observations where values are given (<http://www.statisticssolutions.com/Data-Inputation.htm>).

Missing values are matters of item non-response that may result simply because the respondent failed to register an item or due to the respondent's state of well-being, indifference, insufficient understanding, and discomfort (Allison, 2002; Field, 2005; Hair, Anderson, Tatham, & Black, 1998; <http://www.statisticssolutions.com/Data-Inputation.htm>). Additional features, i.e., a faulty data collection device, or inaccurate methods of data entry may also result in a dataset with missing values (Field, 2005; <http://www.uvm.edu/~dhowell/StatPages/more_Stuff/Missing_Data/Missing.html>). In

those instances where variables display non-normal distributions, transformation may prove useful before proceeding with analyses, and for those distributions found to significantly stray from normality, non-parametric measures may be applied (Coakes & Steed, 2000). Alternatively, data values may have been incorrectly entered to result in outliers, and thus result in variable distributions that deviate from normality (Coakes & Steed, 2000; Pallant, 2001)[31].

In a nutshell, the influence of missing data is not only disadvantageous due to its 'hidden' biases (i.e., individuals who gave a response may be different from those who did not) but also due to its effect upon the resulting sample size available for analysis (Hair *et al.,* 1998).

One straightforward approach for dealing with cases characterised by missing data is that of listwise deletion or casewise deletion (also known as complete case analysis) (Allison, 2002; <http://www.statisticssolutions.com/Data-Inputation.htm>). Normally set as the default for statistics packages this procedure simply removes the cases with missing data from investigation (Allison, 2002). The outcome is a dataset that has no missing data that can be evaluated by usual methodologies (Allison, 2002), yet this method is problematic (<http://www.statisticssolutions.com/Data-Inputation.htm>).

The researcher may also identify if the missing data are randomly scattered or if distinct configurations are identifiable, as well as determine the pervasiveness of the missing data (Hair *et al.,* 1998; <http://www.statisticssolutions.com/Data-Inputation.htm>). As a benchmark, cases need not be deleted if less than 5% of the data is missing (<http://www.statisticssolutions.com/Data-Inputation.htm>). Hence, by examining the patterns of missing data, one needs to determine the scale of randomness that is evident. Missing data may be termed as *missing at random (MAR)*, whereby missing values of Y depend on X, but not on Y (Hair *et al.,* 1998).

Randomness of an advanced stage is referred to *missing completely at random (MCAR)*. When this happens there is no causal process that imparts bias upon the observed data, as the Y observed values are in fact a random sample of the entire Y values. Two main

[31] For information on the mechanics of preparing and screening a data file, refer to Coakes & Steed (2000) and Pallant (2001).

advantages result regarding data MCAR. First of all, hidden effects upon the results, which need to be considered when interpreting results, should not occur. Secondly, any of the imputation approaches introduced in the preceding section serve as possible solutions for dealing with missing values.

To reiterate, upon confirming an outlier is not the result of inaccurate data entry, three main corrective actions exist: removal of the case; transformation of the data; score adjustment (Field, 2005). In weighing up these three alternatives one needs to consider the possible loss of information that may need to be incurred by removing cases with outliers (Field, 2005). The impacts of transformation upon data distributions with outliers, compared with other data distributions that are normal to begin with are also of consequence (Field, 1005; Pallant, 2001). In dealing with outliers, histograms of data distributions, box plots and z-scores were used as the main tools of detection (Field, 2005; Pallant, 2001).

Chosen remedies however, need to be based more on the appropriateness of the procedure, as well as consequential effects upon findings, rather than on their capacity to deal with non-random processes (Hair *et al.,* 1998). Other ways to replace missing data include cold deck, regression, multiple imputation methods and model-based procedures (for more information see Hair *et al.,* 1998). To remedy the missing data issue faced by the present thesis the Full Information Maximum Likelihood Technique was determined as the most reliable approach and managed via AMOS (Analysis of Moment Structures).

Once the data has been screened and cleaned descriptives statistics and checks of reliability can commence, as presented below.

6.2 Results: Descriptive Statistics and Reliabilities

6.2.1 Categorical Variables

British and Greek Sample

As differentiated by the categorical variable "Nationality" from a combined sample of n=386 respondents, the British sample (n=199) amounts to 51.55% of the total sample, with the Greek sample (n=187) accounting for the remaining 48.45%. Due to the relatively large number of variables to be analysed, and with a need to interpret the

results with accuracy, different measures need to be grouped according to the respective line of research for a clearer picture of the relationships investigated.

Hence, to introduce the results section, there are five main types of variables that are under examination, and serve the conceptual model driving this thesis. The five main areas are:

1. Categorical Variables (see this section)
2. Scale Measurements (see section 6.2.2)
3. Accuracy Measures (see section 6.2.3)
4. Speed (Reaction Time) Measures (see section 6.2.4)
5. Subjective Time Estimates (see section 6.2.5)

The count and percentage frequencies of distribution relating to the first main variable type, 'Categorical Variables', are summarised in Table 6A below for both the Greek and British respondents, with an accompanying discussion of the results.[32]

Table 6A: Count and Percentage Frequencies of Categorical Variables

		British (n=199)	**Greek (n=187)**
Respondent Sex [R4]	Male	104 (52.3%)	78 (41.7%)
	Female	95 (47.7%)	109 (58.3%)
In brief, for the British sample more males than females have been sampled, with a difference of 9 respondents. Alternatively, for the Greeks, more females than males have been sampled, with a larger difference of 31 respondents.			
Respondent Faculty [R5]	Arts/ Social/ Health	18 (9%)	0 (0%)
	Science	18 (9%)	0 (0%)
	Engineers	2 (1%)	0 (0%)
	Business/ Law/ Economics	161 (81%)	187 (100%)
The British sample is predominantly sourced from the faculty of Business/ Economics/ Law, whereas the entire Greek sample has been sourced from this faculty.			
Year of Respondent [R6]	1st	85 (42.75%)	77 (41.2%)

[32] Graphical displays of distributions for categorical variables are not presented by the present thesis due to matters of limited space.

	2nd	2 (1%)	1 (0.5%)
	3rd	95 (47.75%)	35 (18.7%)
	4th	12 (6%)	63 (33.7%)
	Postgraduate/ 5th	5 (2.5%)	11 (5.9%)

For the British sample, the majority of responses have been gleaned from 3rd year and 1st year students. For the Greek sample, the 1st and 4th year students provide the majority of responses.

Age of Respondent [R7]	Mode = 21yrs	60 (30.2%)	65 (34.8%)

Unlike the other categorical variables, age is a continuous distribution scale and for both the British and Greek samples the most frequently recorded age is 21 years. Moreover, the British range of sampled ages is 18 to 36 years, whereas for the Greek sample, the range is 17 to 43 years. Both these distributions are positively skewed, hence, leaning more so to the younger end of the age scale.

Expected Grade Classification [R9]	1st	21 (10.6%)	20 (10.7%)
	2:1	128 (64.3%)	80 (42.8%)
	2:2	43 (21.6%)	79 (42.2%)
	3rd	2 (1.0%)	8 (4.3%)
	Pass	3 (1.5%)	0 (0%)
	Fail	2 (1.0%)	0 (0%)

The British sample is positively skewed around the 2:1 mark, whereas for the Greek sample expected grade is more or less equal across both the 2:1 and 2:2 marks, indicative of a more normal distribution. Also of interest, it seems that the expectation of a "Pass" or "Fail" for the Greek respondent sample, simply does not occur as an option. As a possible reason for why, this may be due fact Greek students are able to re-sit exams as many times as is necessary in order to pass. Yet, do the roles played by family honour and social appraisal also of significance for those individuals from polychronic cultures, i.e., the Greeks?

Work and Study? [R10]	Yes	95 (47.7%)	82 (43.9%)
	No	104 (52.3%)	105 (56.1%)

For both the British and Greek respondents a greater number of students opt out of working whilst studying, possibly relying on their savings, loan and/ or family.

Having described the frequency data for the categorical variables, the following section presents descriptive statistics and Cronbach alpha reliability figures for the scale variables.

6.2.2 Total Scale Descriptives and Reliabilities

Across all scales for both the British and Greek data sets, scores are normally distributed. Descriptive statistics and reliabilities of all scale scores are given below in Table 6B. See also Appendix 6A, Table 6A4 for skew and kurtosis figures regarding variable distributions, as well as a more detailed description of the graphical inspections made upon the data.

Table 6B: Total Scale Descriptive Statistics and Reliabilities

	British (n=199)			Greek (n=187)			Combined (n=386)
	Mean	***SD***	***Rel.***	***Mean***	***SD***	***Rel.***	***Rel. (Cronbach α)***
Achievement Striving [AS]	22.36	4.40	.785	24.02	4.30	.752	.774
Impatience/ Irritability [II]	14.92	3.52	.696	15.47	3.55	.637	.665
Role Ambiguity [RA]	21.41	5.19	.788	18.87	5.68	.769	.786
Self Efficacy [SE]	30.04	3.55	.788	29.62	4.11	.797	.788
Type A Factor 1 [+ve/ work][ABF1]	11.93	1.46	.650	14.71	1.70	.660	.680
Type A Factor 2 [-ve/ stress] [ABF2]	11.55	2.17	.426	9.75	1.99	.354	.344
Perceived Control of Time [PCT]	14.97	3.67	.663	17.11	3.34	.436	.596
Preferred Polychronicity [PC]	34.43	8.52	.783	32.56	9.39	.816	.797
Role Overload [RO]	15.61	4.40	.703	14.45	3.84	.441	.583
Life Satisfaction [LS]	22.88	5.87	.835	23.08	5.29	.787	.812

In order to verify that the same fundamental construct is being represented by its constituent scale items, one needs to see how reliably the scale items 'fit together' (Field, 2005; Pallant, 2001). Accordingly, Cronbach alpha coefficient values represent a standard check of a scale's 'internal consistency'/ 'reliability' (Field, 2005; Pallant, 2001). With reference to the Cronbach alpha values presented for the combined sample, ideally values need to be around .7 to .8 (Field, 2005; Pallant, 2001), and for most of the scales sampled resulting Cronbach alphas appear satisfactory. However, the Type A Factor 2 (orientation towards stress) Cronbach reliability value is way below .4. One reason for why concerns the low number of items (less than five) that represents this particular scale (Field, 2005; Pallant, 2001). In particular, "Cronbach alpha values are...quite sensitive to the number of items in the scale. With short scales (e.g., scales with less than ten items) it is common to find quite low Cronbach values (e.g., .5)" (Pallant, 2001: 85). Considering previous research has incorporated short scales with Cronbach alphas of .5 in value (Pallant, 2001), for the present thesis any combined sample reliability figures below .5 pertaining to scales of less of ten items are not to be included. Using this rule as a guide the scale to be omitted from hypotheses-testing is the Type A behavioural orientation towards stress (Type A Factor 2). Nevertheless, for further clarification concerning both the Type A Factor 2 (orientation towards stress), as well as the 'more reliable' Type A behavioural orientation towards work (Type A Factor 1) see section 6.3 'Factor Analysis (Principal Components Analysis)' to follow.

The next section focuses on descriptives that relate to the variables of 'Accuracy' as measured by the number of correct answers respondents attained from a range of differing measures; namely, Raven's Advanced Progressive Matrices (also a test of intelligence), the three variants of the coding tests, and the two variants of letter matching tests.

6.2.3 Accuracy Score Descriptives and Reliabilities

Accuracy score descriptives for Raven's Advanced Progressive Matrices (RAPM) Set I and II amount to a total of 48 possible correct answers. The British data set is approximately normal with a mean of 27.42 and an *SD* (standard deviation) of 6.506. For the Greek data set the distribution of scores tends towards normality, though there is a slight negative skew. Statistics wise, the Greek data mean score for Ravens Set I and II is 26.03, *SD*, 7.672.

As regards the remaining scores of accuracy (the coding and letter matching tests), for both the British and Greek data sets, results demonstrate approximate distributions of normality. Table 6C given below presents means, standard deviations and split half

reliabilities of all accuracy scores for the three-tiered coding tasks (copy, code forward, code backward) and the two-tiered letter matching test (physical identity and name identity).

Table 6C: Total Accuracy Score Descriptive Statistics and Reliabilities

	British			Greek		
	Mean	*SD*	*Rel.*	*Mean*	*SD*	*Rel.*
Copy	97.23	16.61	.554	88.73	17.87	.735
Code Forward	37.17	12.26	.806	40.32	12.94	.811
Code Backward	24.71	8.20	.758	22.32	7.99	.665
Physical Identity	75.94	14.31	.656	70.95	14.74	.716
Name Identity	70.64	13.59	.714	69.82	14.37	.714

Reliability figures appear satisfactory across all scores of accuracy, although the British Copy reliability result does show room for improvement. For a combined presentation of both reliability and normality tests as well as graphical displays pertaining to measures of 'Accuracy' see Appendix 6A and Table 6A1.

Having presented the preliminary findings that relate to the variables of 'Accuracy', the next section presents descriptive findings on the variables measuring 'Speed' (Reaction Time).

6.2.4 Speed (Reaction Time) Descriptives and Reliabilities

For both the British and Greek data sets, all speed (reaction) measures deviate from normal distributions and are positively skewed (with the exception of "Time Needed for Long-Term Memory Retrieval": NI_PI, which is normally distributed for both data sets). To refer to the means, standard deviations and reliability figures of all reaction time (speed) measures please refer to Table 6D below. See Appendix 6A for graphical displays and Table 6A2 for overall statistics.

Table 6D: Speed (Reaction Time) Descriptive Statistics and Reliabilities

	British			Greek		
	Mean	*SD*	*Rel.*	*Mean*	*SD*	*Rel.*
Copy	635.99	115.64	.669	704.31	152.82	.842
Code Forward	1799.59	699.64	.898	1642.15	615.98	.891

Code Backward	2707.39	927.94	.649	3074.22	1236.08	.667
Coding Time Forward	1163.60	702.03	.807	938.51	597.66	.789
Coding Time Backward	2071.40	935.49	.651	2369.91	1291.63	.658
Physical Identity	682.81	140.21	.630	734.81	160.09	.681
Name Identity	726.67	132.19	.686	743.06	158.22	.743
NI_PI	43.86	153.66	.695	7.29	141.09	.609

Split-half reliability figures appear satisfactory across all estimates of reaction time.

Having presented the preliminary findings that relate to the variables of "Speed" (Reaction Time), the next section presents descriptive findings on the variables measuring "Subjective Time".

6.2.5 Subjective Time Estimate (STE) Descriptives and Reliabilities

All STE variables for both the British and Greek data sets are positively skewed; thus, non-normal (see also Appendix 6A, Table 6A3). Resulting elementary STE descriptive statistics (means, and standard deviations) across the coding tests (copy, code forward, code backward), and the letter matching tests (physical identity and name identity) for both the UK and Greek Data samples are given in Table 6E.

Table 6E: Subjective Time Estimate Descriptive Statistics and Reliabilities

	British			**Greek**		
	Mean	*SD*	*Rel.*	*Mean*	*SD*	*Rel.*
Copy	37251.41	16147.42	.764	32824.81	14700.98	.793
Code Forward	28993.52	12768.826	.791	27190.96	12931.867	.846
Code Backward	26599.17	11682.98	.751	24816.68	12459.293	.871
Physical Identity	27594.60	11792.352	.857	25899.47	12747.503	.882
Name Identity	26894.48	11998.51	.877	24573.10	12329.611	.892

Split-half reliability figures appear satisfactory across all estimates of the subjective passage of time.

Having finalised the initial presentation of the descriptive statistics across all of the main different types of variables, the next main section of results focuses upon the application of factor analysis that was required to verify the appropriateness of the items that have been assembled to constitute the Type A ERCTA subscales.

6.3 Factor Analysis (Principal Components Analysis)[33]

In addition to the Cronbach alpha, items constituting a scale measure can be checked via the means of factor analysis. To gauge the appropriateness of factor analysis for reducing one's data, two main areas of consideration manifest: matters of sample size and the strength of the correlations among items/ variables (Pallant, 2001). "Correlation coefficients fluctuate from sample to sample, much more in small samples than in large. Therefore, the reliability of factor analysis is also dependent on sample size. Much has been written about the necessary sample size for factor analysis resulting in many 'rules of thumb'. The common rule is to suggest that a researcher has at least 10-15 participants per variable" (Field, 2005: 638).

In view of the data gathered from the both Britain and Greece this common rule for applying factor analysis has been met. Specifically, for the 8 items constituting the Type A ERCTA scale, a minimum requirement of 80 to 120 participants are needed to form an adequate sample size (Actual British n=199; Actual Greek n=187; Actual Total n=386).

Research by Sutil *et al.,* (1998) developed two factors within a Spanish population measuring both positive orientations towards work and negative orientations towards stress. The research conducted identified items 2 (activity level), 4 (Desire for maximum professional/ social goals) and 7 (preoccupation with work) to load onto Type A's (positive work orientation) factor one. Conversely, items 1 (experience of stress), 3 (perfectionism), 5 (competitiveness), 6 (sense of urgency) and 8 (difficulty communicating emotions) to load onto factor 2 constituting a negative work orientation.

Contrary to the afore-mentioned research findings, present analyses reveal that items 3 (perfectionism) and 5 (competitiveness) load more so onto factor 1 (positive work orientation) though to remain in sync with theory as both items load on factor 1 in the expected negative direction. And though previous research by Sutil *et al.,* (1998) in Spain, found items 3 (perfectionism) and 5 (competitiveness) to load positively onto factor 2 (negative work orientation), the present research reveals that these two items

[33] Despite the fact that principal components analysis (PCA) and Factor Analysis (FA) are conceptually distinct, the term 'factor' has often been applied to interpretations of output generated by both approaches (Field, 2005; Pallant, 2001). Specifically, the source of communality varies across the two methods (Field, 2005). With principal components analysis the data is transformed into an array of linear derivations, while with factor analysis, factors are reckoned via mathematical modeling. Consequently, 'factor analysis' has become a wide-reaching turn of phrase for this particular genre of data analysis techniques (Field, 2005; Pallant, 2001).

across 2 differing cultural samples, Britain and Greece, actually load negatively onto factor 1, causing no conflict.

It seems that lesser degrees of perfectionism (item 3) and competitiveness (item 5) seemingly combine with greater desires for maximum professional/ social goals (item 4) and greater preoccupations with work (item 7) to form a slightly amended version of the Type A behavioural orientation towards work. Interestingly, with item 2 (Activity level) differential findings result for the British and Greek samples. Found as the only item to vary as such across the British and Greeks, 'Activity Level' in Type A research represents a 'Time' and 'Mind' management tool that enables certain Type A's to perform *more and more in less and less time*. As with the Spanish population sampled by Sutil *et al.,* (1998), where this scale was created and developed, the Greeks sampled for the thesis at hand interpreted item 2, Activity level, as a feature of positive orientation towards work [34].

However, contrary to research orchestrated in Spain, though not surprisingly, for the British respondents sampled, 'Activity Level' loaded more so on the Type A Factor concerned with behavioural orientations towards stress, as opposed to work. As mentioned, this scale was developed in Spain, which from an emotive, socio-cultural perspective, is much more polychronic/ P-time in orientation. Accordingly, in terms of 'emotion polychronicity', 'Activity Level' is seemingly perceived as a positive thing. When considering temporal and socio-cultural patterns, lifestyle, climate and geography, the Spanish and Greeks seem set apart from the British. For the present research this certainly seems to be the case; particularly as quite unlike the Spanish and the Greeks, the British respondents sampled do not find the allure of being kept as 'busy as a bee' as a good thing.

Type A Factor 2 (behavioural orientation towards stress) presents a succinct collection of items that relate to the more negative side of emotion, mind and action. Included are

[34] It was also found that with the Greek sample, before rotation, Item 8 (Difficulty to Communicate Emotions) loaded onto Factor 2, as well as potentially creating a third and isolated factor. After rotation, this item's loading was stronger for an isolated factor, though this is not an unusual outcome (Sutil *et al.,* 1998). (However, in merging both the Greek and British data sets, item 8 solely loaded onto Factor 2). Output has not been presented due to matters of limited space.

items 1 (experience of stress), 6 (sense of urgency) and 8 (difficulty communicating emotions), which for the British also includes item 2 (activity level).

Although this ERCTA Type A scale seeks a global appeal (with many different translations of the scale readily available), research across cultures is unfortunately far from uniform. Specifically, *activity level* (essentially on a par with *action polychronicity*) can be seen as either a negative reaction (i.e., a response to role overload), or a positive preference. And which approach is adopted may feasibly stem from forms of cognitive and emotional acceptance and harmony (i.e., *mind polychronicity* and *emotion polychronicity*), due to a socio-cultural orientation based on an inbuilt ability to handle many things at once.

In a nutshell, when taking this scale across more divergent cultures, different items that originally constituted the negative and positive subcomponents of Type A, could of course, alter in loadings. And as revealed, item 2 (Activity level) certainly seems to load differentially across the British and the Greek respondents. Nevertheless, and as mentioned, in terms of reliability the Cronbach alpha value for the Type A behavioural orientation towards stress across the combined sample is below the minimum acceptance level and is not included in further analyses.

Having finalised the initial descriptive statistics pertinent for analysis, the following sections delve much deeper into the data and address the theoretical propositions raised during the conceptualisation stage (see Chapter 4). Thus, to commence the next stage of analyses, a series of correlation tests have been performed to tests relevant hypotheses. Preliminary level analyses and main level analyses of the data have been managed via t-tests, ANOVAs, Kruskal-Wallis, Mann-Whitney, and also multiple regression techniques.

6.4 Correlations, Splits Analyses and Multivariate Techniques

In testing hypotheses success depends on selecting the right statistic for the analysis of each research question (Pallant, 2001). See also Ch. 5, sections 5.6.2 to 5.6.3. This section addresses each of the hypotheses raised in the 'conceptualisation' chapter (Ch. 4) in accordance with the research objectives raised in the 'introduction' chapter (Ch. 1). In

presenting findings each hypothesis is accompanied with a review of the statistical assessment, the results, and subsequent analyses.

Thus, to begin with the results a recap of the research objectives is to precede those hypotheses relevant for addressing the objectives at hand. Thus, to attend to the first research objective,

Research Objective (I): How can the constructs of polychronicity and Type A behavioural orientations be both conceptually and theoretically refined to clarify present-day confusions pertaining to their underlying multi-dimensionality? *See hypotheses Ho1, Ho1a, Ho2, Ho3 and Ho3a.*

Specifically, in terms of the first hypothesis the aspect of polychronicity under investigation is that of 'emotion polychronicity' indicative of differing temporal cultures- P-time Greece and classically M-time Britain. Different behavioural response rates (speed and accuracy) are anticipated across the British and Greek cultures, as they are particularly diverse in terms of this more cultural side of polychronicity; that is, 'emotion polychronicity', or as Hall (1989) coins, M-time and/or P-time cultures.

To connect the research question 'Ho1' to the first research objective, it is expected that in comparing the roles of 'mind polychronicity' (preferred temporal orientation/ polychronic time use) and 'action polychronicity' (Type A behavioural orientations towards work), with that of 'emotion polychronicity' (P-time Greeks versus M-time British) differential results will transpire. This is anticipated in view of the differentiated emotion, mind and action dimensions that exist to constitute the connecting complex called 'polychronicity'. Furthermore, via applications of standardised testing methods measuring speed and accuracy, a benchmark barometer for the purposes of comparative research is conveniently provided.

Research Question

Ho1: Different socio-cultural orientations manifest different behavioural response rates (accuracy and speed). In timed situations, the clock-oriented, high-tech cultures attain higher levels of accuracy and speed than event-oriented, low-tech cultures. *Supported.*

Statistical Assessment

'Accuracy' is measured via the number of correct answers attained for the elementary cognitive task (ECT) pertaining to the 'Copy' coding condition, as well as scores of psychometric intelligence. To explain variability in accuracy multiple regression analyses are employed as the main tool of analysis. To select multiple regression techniques for exploring differences in behavioural response rates such as 'Accuracy', the distribution of the appropriate variables need to be examined and assessed for normality.

Normal data distributions allow for parametric testing procedures (i.e., t-tests, ANOVAs, regressions) whereas non-normal distributions call for non-parametric approaches (i.e., Mann-Whitney U Test, Kruskal-Wallis Test), sidestepping the need to meet certain stringent conditions akin to parametric testing, i.e., normality (Field, 2005; Pallant, 2001).

Variability in accuracy is explained by accounting for the simultaneous and contributory roles of 'emotion polychronicity' as defined by culture, 'mind polychronicity' as defined by preferred temporal orientation, and 'action polychronicity' as defined by Type A behavioural orientations to work. To limit the possibility of confounding effects and spurious relationships additional variables of potential explanatory import including self-efficacy, perceived control of time and achievement strivings for example, are also incorporated into the regression analysis.

To measure 'Speed', reaction times across all ECT variables are examined (copy, code forward, code backward, physical identity, name identity). As all measures of reaction time deviate from normality, the Mann-Whitney U Test is an appropriate non-parametric tool for assessing variability in speed across the British and Greek samples.

See Appendix 6A for an overall assessment of normality gleaned from statistical tests, histograms and normal pp (probability plot) plots[35] of the distributions of data for the above-mentioned accuracy and speed variables. See Appendix 6B for output relating to all parts of Ho1 (including Ho1a).

[35] A variant of the Normal PP plot is the Normal QQ (Quantile Quantile) plot to ascertain if data distributions are normal or not.

Results

Table Mreg1Ho1 below displays the correlations for significant variables only for predicting 'Accuracy' as measured by number of correct answers for the Copy coding test, as well as the unstandardised regression coefficients (b), the standardised regression coefficient (β), R, R^2, and Adjusted R^2. Only significant loadings are shown below.

Table Mreg1Ho1: Multiple Regression Results

Mreg1Ho1: Different Socio-cultural orientations and different behavioural response rates of accuracy as measured by scores of correct answers for 'Copy' Coding task.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*t* value	F	Sig.	Effect
Accuracy	31.4	9.8	6.9								
(Copy Coding)	%	%	%	(Constant)	91.630	17.301		5.296	3.393	.000	
				Nationality	-8.057	2.587	-.227	-3.114		.002	-ve
				Respondent Sex	4.307	1.841	.121	2.339		.020	+ve

In predicting accuracy using the Enter method of regression the number of correct answers for the Copy coding task adjusted R^2 is .069. Significantly better than zero, $F(12, 373) = 3.393$, $p < .001$, the model proposes two variables of predictive import; nationality: $\beta = -.227$, $t = -3.114$, $p < .005$, and respondent sex: $\beta = -..121$, $t = 2.339$, $p < .05$. See Appendix 6B for loadings of variables found insignificant; age, expected grade, achievement strivings, impatience/irritability, role ambiguity, self-efficacy, Type A behavioural orientation to work, perceived control of time, preferred polychronicity, and life satisfaction.

This section presents standard multiple regression results relating to the main correlates deemed useful to the prediction of accuracy, as measured by psychometric intelligence (IQ scores). In running a regression to predict psychometric intelligence, and in accordance with prior research by Fink & Neubauer (2001), the independent contributions of reaction times and subjective time estimates (STEs) were investigated via a multiple regression using the Enter method to predict psychometric intelligence.

Fink & Neubauer (2001: 1017) report two predictor variables; "(RT code backward: β = -.049, t = -5.95, p < .001 and STE code forward: β = .032, t = 3.85, p < .001) entered the equation and together they allowed a rather good prediction of psychometric intelligence (Multiple R = 0.66, adjusted R^2 = 0.43), i.e. 43% of intellectual variance can be accounted for by these two variables. Moreover this multiple regression analysis suggests that RT and STE reflect independent sources of intellectual variance".

In replicating the above study very poor results amounted in comparison. In actual fact in just entering STE variables and RT variables, Multiple R was 0.32, and adjusted R^2 was .081. Though the assumptions were met and the model was found to be significantly better than zero, $F(10, 375) = 4.371$, $p < .001$, the only two predictors in the model were measures of reaction time; RT code backward (as with Fink & Neubauer, 2001): β = -.139, t = -2.165, p < .05 and RT physical identity: β = -.154, t = -2.660, p < .01.[36]

To improve upon the model and address the first research objective, the differential impacts of 'emotion polychronicity' as defined by culture (M-time British versus P-time Greeks), 'mind polychronicity' as defined by preferred temporal orientation, and 'action polychronicity' as defined by Type A behavioural orientations to work are examined via multiple regression. The variables pertaining to these measures along with the number of incorrect attempts (RAPMdif) were also included alongside aspects of personality under investigation by the present thesis.

In view of these variable additions to refine predictions of accuracy as measured by psychometric intelligence, table Mreg2Ho1 below present findings from multiple regression analyses, which include the main statistics: strengths of association between variables, R, R^2, and Adjusted R^2, unstandardised regression coefficients (b), and standardised regression coefficients (β).

In checking the assumptions for both regressions Mreg1Ho1 and Mreg2Ho1, adequate signs of normality and linearity are visible. Homoskedasticity is tolerable (though constant variance is doubtful for the tail ends of the distribution), with a handful of outliers and no skew. Only significant loadings are presented in the table to follow. For

[36] For brevity only the results of this particular regression are reported in this thesis.

a comprehensive review of the statistics pertaining to this regression please refer to Appendix 6B.

Table Mreg2Ho1: Multiple Regression Results

Mreg2Ho1: Different Socio-cultural orientations and different behavioural response rates of accuracy as measured by scores of psychometric intelligence.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*t* value	F	Sig.	Effect
Psychometric Intelligence	83.8 %	70.2 %	69.7 %	(Constant)	34.456	1.746		19.738	127.286	.000	
				Incorrect Attempts	-.320	-.011	-.831	-29.038		.000	-ve
				STE Code Backward (ms)	5.65E-005	.000	.096	3.359		.001	+ve
				Nationality	-.980	.402	-.069	-2.440		.039	-ve

In predicting psychometric intelligence with the additional personality variables, adjusted R^2 rose to .697. Found to be significantly better than zero, $F(7, 378) = 127.286$, $p < .001$, the model proposes three variables of predictive import; number of incorrect attempts: $\beta = -.831$, $t = -29.038$, $p < .001$; STE code backward: $\beta = .096$, $t = 3.359$, $p < .005$); and nationality: $\beta = -.069$, $t = -2.440$, $p < .05$. See Appendix 6B for loadings of variables found insignificant- perceived control of time, impatience/irritability, preferred polychronicity, and life satisfaction.

In terms of speed, to verify current research efforts are in line with previous research, studies performed by Fink and Neubauer (2001) upon respondents sampled from the University of Graz, Austria, reveal a mean reaction time (speed) for the Copy Coding task of 612 milliseconds (ms). For the current investigation, the British speed/ reaction time regarding the Copy Coding task was slightly longer, ($M = 635.99$), and less than that obtained for the Greeks ($M = 704.31$). To test for statistical differences the Mann Whitney U test reveals that British respondents ($Mdn = 606.06$) significantly differ from Greek respondents ($Mdn = 666.67$) in reaction time to manifest faster rates of response speed, $U = 13630.50$, $p < .005$, $r = .23$.

The largely British superiority of performance fails to manifest for the code forward test not only in terms of accuracy, but speed as well. The Greeks (*Mdn* = 1500.00) are significantly faster than the British (*Mdn* = 1666.67), $U = 15712.50$, $p < .01$, and represents a modest effect size, $r = .13$. Back in accordance with the majority of the ECT challenges the British response speed (*Mdn* = 2500.00) for the Code Backward test is found to be significantly faster than Greek response speed (*Mdn* = 2727.27), $U = 15844.00$, $p < .05$, $r = .13$.

For the Physical Identity test the British exhibit faster speeds of response (*Mdn* = 657.89) than the Greeks (*Mdn* = 704.23). This difference is significant, $U = 14724.00$, $p < .001$, and represents a modest effect size, $r = .18$. Finally, for the Name Identity test, any additional differential rates of response speed fail to transpire, with the exact same median value resulting for both the Greeks and the British (*Mdn* = 714.29), $U = 18086.50$, *ns*, $r = .024$.

Analysis of Results

In predicting accuracy via 'Copy' scores of correct answers (Mreg1Ho1) only variables with significant loadings have been presented within the main body of the thesis, yet two variables not found to be significant predictors deserve more of a mention. Firstly, the predictive role of 'mind polychronicity' (preferred temporal orientation) upon accuracy is non-existent.

Secondly, the role of 'action polychronicity', specifically defined by Type A behavioural orientations towards work/ activity, upon outcomes of speed and accuracy is also non-significant. Thus, of these three facets only 'emotion polychronicity' representative of cultural expression (M-time British or P-time Greek) is effective in predicting variability in accuracy.

In terms of Mreg2Ho1 and in line with research by Fink & Neubauer (2001) STE code backward enters the model, however, STE is only significant in conjunction with additional variables raised by the present thesis; namely, 'number of incorrect attempts' (RAPMdif) and 'nationality'/ 'emotion polychronicity'. In predicting psychometric intelligence it is observed that nationality (British are more accurate than the Greeks)

plays a key role in predicting intellectual variance, as do rate of inaccuracy and the subjective estimate of time's passage.

As one would expect, the number of incorrect attempts is inversely related to psychometric intelligence. What's more in accord with previous research (e.g. Fink & Neubauer, 2001) longer STEs are associated with greater levels of psychometric intelligence.

Interestingly, as with the differential scores of accuracy attained across the two socio-cultural samples, the British seemingly outperform the Greeks across virtually all measures of speed, except for the Code Forward test. The only non-significant finding (as with the accuracy scores) results for the Name Identity contingent of the Letter Matching test.

The hypothesis concerning real and observable differences in behavioural response across the British and Greek samples is supported, and as expected the British achieve a high speed/ accuracy advantage over the Greeks. Thus, it seems in terms of hypothesising upon Hall's (1989) conceptualisation of Greece as mid P-time belt, support is found for the premise that P-time cultures that are more socially, and collectively oriented are characterised by slower pace (Hall, 1989; Levine & Bartlett, 1984; Levine *et al.,* 1980); specifically, speed of psychometric information processing.

Importantly, Britain as a nation is an environment typified by high speeds, demand and convenience, fuelled by a need for success, work, money, technology, and individualism- the suspected symptoms of clock time. Recognised as the prime instigator of the industrial revolution, Britain is a nation of workers tending towards near obsession. Also, due to less of an influence from the family (immediate and extended), this definitive lack of social orientation offers ample opportunity for the job to take over.

In contrast, a slower pace of life seems to typify the Greek mainland, and are seemingly driven by more polychronic ideals and lifestyles steeped in collectivism, family and tradition. Greece is also where east meets west, characterised by a climate and heat that affords its people more of a present day orientation. In contrast, British weather has traditionally been known for its variability, if not unpredictability. A climate

characterised by rain and clouds, is argued to force one to strive more for the future (as opposed to the 'Now'), if not a place where such conditions are a little more infrequent (and possibly one of the reasons for the rise of the British Empire).

By employing the benchmark barometer of 'accuracy' across elementary cognitive tasks, the differential effects of 'emotion-mind-action' polychronicity complex can be observed. 'Emotion polychronicity' as defined by nationality (M-time British or P-time Greek) is significantly more related to outcomes of speed and accuracy than say 'mind polychronicity' as defined by preferred polychronic time use, as well as 'action polychronicity', specifically defined by Type A behavioural orientations towards work, (though maybe even defined by orientations towards stress possibly resulting from internal states of incongruence).

To further endeavour in refining such complex constructs of 'emotion, mind and action' the following hypothesis aims to improve upon contemporary conceptualisations and interpretations of continuum-based scales (i.e., the mono/polychronicity continuum) that incorporate a valid 'dual approach' midpoint distinct from those of a 'neutral' conceptualisation.

Ho1a: High-tech cultures are both monochronic and polychronic in terms of preferred (mind-based) temporal orientation. *Supported.*

Statistical Assessment

To test this hypothesis, mean values of scores attained for the high-tech culture investigated by the present thesis simply need to be investigated (see Appendix 6B). For related research purposes, the mean value of scores attained by a comparatively lower-tech oriented culture represented by a Greek sample are also given along with standard deviation, standard error, and sample size statistics.

Results

Using the 10-item, 7-point, Inventory of Polychronic Values (IPV) by Bluedorn *et al.,* (1999), to interpret the continuum scores relating to three differing categorisations of preferred (mind-based) polychronicity – monochronic; dual monochronic & polychronic;

polychronic, 'monochronic' scores are less than 30; dual monochronic & polychronic scores from 30 to just under 50, and 'polychronic' scores from 50 to 70.

It is apparent to see that the British culture do in fact score at the mid-range and score higher on the polychronicity scale as compared to the Greeks. Ironically, the Greeks are more P-time/ higher in 'emotion' polychronicity as a cultural observation gleaned from anthropology (Hall, 1989).

Nevertheless, as polychronicity can be expressed in terms of emotion, mind and/or action, in psychometrically testing for cultural differences in terms of mean-levels of preferred (mind-based) polychronicity, the British sample (M = 34.43, SD = 8.524, SE = .604) scores significantly higher compared to the Greek sample (M = 32.563, SD = 9.393, SE = .687), $t(384) = 2.05$, $p<.05$, $r = .10$. Hence, British respondents show greater levels of polychronic time use preferences (mind polychronicity) than the Greeks. For brevity, independent sample mean (t)-test output tables are not presented here (see Appendix 6B).

Analysis of Results

It is important to understand polychronicity in accordance with its multiplicative aspects (Ancona *et al.,* 2001a,b; Hall, 1989; Palmer & Schoorman, 1999). As the thesis aims to show just because a culture is argued to be P-time (i.e., Greece) or both M-time and P-time (i.e., Britain), it is only one dimension of 'polychronicity', which is a multifaceted construct. Such a dimension, as coined by the present thesis is referred to as 'emotion polychronicity', which is distinct from matters of *preferred temporal orientation-* coined as *'mind polychronicity'* indicative of the more 'cognitive-driven' dimension of polychronicity.

In support of the literature review conveying Hall's description of M-time and P-time, the hypothesis that high-tech cultures, i.e., the British society typify both styles of preferred temporal approach, is supported. Analyses of mean scale scores assisted in identifying that the mean score for the British sample supports a dual monochronic and polychronic preference for managing activities to time.

In fact the results posit that British respondents show greater levels of polychronic time use preferences (mind polychronicity) compared to the Greeks. Thus, for the purposes of

greater clarity, an important distinction to make is between 'mind polychronicity' akin to mentally speculated preferences and 'emotion polychronicity' akin to feeling a sense of belonging towards either one culture or another.

Reasons for why involve those clarified by Palmer & Schoorman, (1999), namely the importance of *context* for any given situation (i.e., the technological and explicit low context of global schools of thought sanctioned by monochronic time management mentalities), and how this may mediate upon behaviours i.e., a preferred temporal orientation. Thanks to recent research efforts, i.e., those by Palmer & Schoorman (1999), as well as Ancona *et al.,* (2001b), polychronicity is acknowledged for its deeper intricacies as a *multi*-dimensional variable.

Chapter 3 raised the enquiry of how accurately the IPV would be at capturing the dual pronged approach of monochronic and polychronic time management of a typical high-tech society, i.e., Britain. Having gleaned the results this enquiry can now be addressed. From the results it is clear that the IPV in capturing the dual M-time and P-time approach of a high-tech society, i.e., Britain, was demonstrably accurate.

This thesis also questioned whether the prevailing time-to-activity management ethics in systems of education and learning are universal or culturally unique. This too can now be addressed. Specifically, it seems from the rather keen adoption of a monochronic approach to preferred patterns of time management by the Greeks, (and significantly greater than that by the British), certain ethics and understandings of time management across global schools of thought are, in fact, universal.

Above all, the time management that is espoused today is universally enforced without regard for socio-cultural intervention, not only across worlds of work, but also academic institutions of higher learning that set the global standards of education for scholars worldwide. Even so, as the stakes increase, and as most PhD students are aware, the polychronic approach towards managing tasks over time can be crucial to success.

As a consequence, more research is called for to establish the dual M-time (monochronic/ MC) and P-time (polychronic/ PC) approach towards managing activities over time as a valid tactic employed by high-tech societies. Empirical research prior to this thesis has

overlooked the value of *consciously* employing the mid-range of the MC-PC continuum, by assessing its strengths and weaknesses, as well as the costs and benefits of a dual approach in a global marketplace of behaviour, consumption and innovation.

As has been shown, different dimensions of polychronicity render differential results in terms of speed and accuracy. For purposes of additional validation, do these different facets of polychronicity, (i.e., emotion and mind) play differential roles upon subjective outcomes, i.e., 'expectations', as with those characteristically objective, (i.e., test performance scores of speed and accuracy)? Thus, to introduce the second research question,

Ho2: Different cultural and/ or specific temporal orientations (i.e., monochronic, polychronic or both) manifest differential expectations of achievement. *Partially supported.*

Statistical Assessment

Expectations of achievement are measured via responses to an ordinal scale of six categories ranging from "First Class Honours" to "Fail" on the questionnaire labelled "Expected Grade".

To statistically examine expectations of achievement via the parameter of expected grade across two temporally distinct cultures, regression techniques are inappropriate due to the 'Expected Grade' data being ordinal in nature. Tests such as multiple regression analyses require the dependent variable to be a continuous scale. Subsequently, the Chi-square test for independence is deemed an appropriate tool for analysis. "Non-parametric techniques are ideal for use when you have data that is measured on nominal (categorical) and ordinal ranked scales" (Pallant, 2001: 255).

"...the chi-square test does not rely on assumptions such as having continuous normally distributed data...however, the chi-square test still has two important assumptions: For the test to be meaningful it is imperative that each person, item or entity contributes to only one cell of the contingency table. Therefore, you cannot use a chi-square on a repeated measures design... The second important point is that the expected frequencies should be greater than 5. Although it is acceptable in larger contingency tables to have

up to 20% of expected frequencies below 5, the result is a loss of statistical power (so, a test may fail to detect a genuine effect)" (Field, 2005: 686).

Results

As expected, from the perspective of Nationality (as opposed to the IPV), significant association is found between nationality and expected grade χ^2 (5) = 29.980, p = .000. In other words, by testing for differences in achievement expectation from the perspective of culture, Ho2 gains support. See Appendix 6C for output.

Conversely, in testing Ho2 across categorisations either monochronic or polychronic in preferred temporal orientation, as measured by the IPV, no relation was found with self-appraised expectations of achievement (expected grade), χ^2 (5) = 6.434, $p > .05$. The same non-significant result is found across three categorisations of the IPV, which includes an additional mid-range category relating to a combined approach of both monochronic and polychronic tendencies (dual MC&PC), χ^2 (10) = 9.652, $p > .05$.

Analysis of Results

As anticipated, to demarcate the dimensions of polychronicity, socio-cultural orientations (emotion polychronicity) compared with preferred temporal orientation (mind polychronicity) impose differential effects upon expectations of achievement. What is more, via examinations of the contingency table it is clear that the percentages of respondents expecting to receive a 1st are more or less equivalent across the British and the Greeks. The greatest discrepancy however, lies with the numbers of people that expect to attain a 2:1 and a 2:2 across the two cultures.

Interestingly, expectation of success follows a normal distribution for the Greeks, whereas for the British this distribution is skewed towards to upper end of expected grade. In particular, 64.3% of British respondents compared to only 42.8% of Greek respondents expect to attain a 2:1. In terms of achieving a 2:2, only 21.6% British responses were recorded for this category, compared to 42.2% of Greek respondents- a percentage of respondents seemingly more equivalent to the number of Greeks expecting a 2:1.

In other words, the distribution of expected grade for the Greeks is fairly equivalent across the 2:1 and 2:2 grades, whereas for the British expectations are predominantly situated towards the upper end of the grade scale, concentrated around the 2:1 mark.

Reasons for why expected grade vary so across both the British and Greek samples are argued to relate to the highly driven nature of the British society, seemingly accompanied by high expectation. The British have been accustomed to a relatively longer history of industrialisation, helping to mould its mechanistic mindset and money-motivated activity. Hitherto, the nation's plus points, i.e., relatively superior speed and accuracy responses, is argued to lead to increased expectations of success. Could this also lead to a greater experience of disappointment?

Maybe the British are work-obsessed aspiring for an unobtainable future? Could this explain the unrealistically high expectations of performance? Are such overestimations of achievement normal for such a future-driven, high-tech, high demand society? Do such achievers aspire for ambitions other than material acquisition? In view of the links, is high expectation a characteristic of high-tech, convenience-oriented societies driven by a highly future oriented need to stay one step ahead?

Examined in accord with Hofstede's dimensions of individuality versus collectivism, high expectation of achievement and a future self *is* more characteristic of individualistic societies, i.e., Britain, rather than collective societies, i.e., Greece. To introduce the next hypothesis, in terms of analogies made with gender, classically M-time cultures marked by low levels of 'emotion polychronicity' are male, whereas P-time cultures characterised by high levels of 'emotion polychronicity' are female (Hall, 1989). Thus,

Ho3: Males are more monochronic than females, whereas females are more polychronic. *Not supported.*

Statistical Assessment

To test for gender differences within each nationality, multiple regression analyses were performed. In checking the assumptions for regression adequate signs of normality and linearity are apparent. Homoskedasticity is adequate, with a few outliers and no skew.

Only significant loadings are presented in the table to follow. For a comprehensive review of the statistics pertaining to this regression please refer to Appendix 6D.

Results

Table Mreg1Ho3: Multiple Regression Results

Mreg1Ho3: Gender and Mind Polychronicity

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*t* value	F	Sig.	Effect
Preferred Polychronicity	21.4 %	4.6 %	2 %	(Constant)	24.989	8.700		2.872	1.798	.004	
				Self-efficacy	.449	.137	.191	3.286		.001	+ve

In predicting variability in preferred (mind-based) polychronicity with the additional personality variables to control for extraneous influences, adjusted R^2 only amounts to .020. Found to be bordering significance, $F(10, 375) = 1.798$, $p = .059$, the model proposes one variable of predictive import; self-efficacy: $\beta = .191$, $t = 3.286$, $p < .05$, and gender plays no role. Additional variables found to be insignificant are nationality, role ambiguity, perceived control of time, life satisfaction, age, achievement strivings, impatience/ irritability, and a Type A behavioural orientation to work.

Analysis of Results

A number of parameters may be at play to moderate gender-related differences and one possible reason for this non-significant finding across both British and Greek male and female respondents relates to mode age. The most frequently occurring respondent age for both the British and Greek samples is 21 years and may be perceived as an early, if not formative stage for gender-infused impacts to take full effect upon an individual's development in terms of a preferred temporal orientation.

As younger generations move away from home, and as the responsibilities of life increase, most women fuelled by the ticking of their biological clocks eventually aspire for *both* a family and a career. It is at this stage in the life cycle that women are expected to develop greater polychronic tendencies than men, in view of the multiple concerns that face women pursuing not only financial autonomy, but matrimony too. In other words, though preferred patterns of time-to-activity management have been found to vary across

culture, they may also depend on a person's stage in the life cycle (i.e., infancy, childhood, adolescence, adulthood), as well as the context, the individual's nature (i.e., inclination towards high self-efficacy), and variety of activities to be performed.

Accordingly, these patterns may also be subject to change over time, with respect to developments that naturally occur when say, women for example, transcend further from adolescence into adulthood. Testing this though however, is beyond the scope of the present thesis, and would require a design of research longitudinal in approach.

Hitherto, the traditional role of women has predominantly focused upon raising children, caring for the home, preparing meals and so forth. Though this still remains as so in current times, further responsibilities involve an added attention to matters of education, employment, finance and childcare.

Thus, when women take on the multiple roles of motherhood, domesticity, family, and employment, greater evidence of preferred polychronic time use is expected to emerge. As to the extent to which the woman's preferred role is either swayed by the influence of genetic tradition or the temptations of the modern world (if not both), socio-cultural factors are deemed to exert some level of control.

Finally, another potential reason for this non-significant finding may relate to the blurring of gender-role differences. Specifically, in contemporary, fast-moving societies the clear-cut division concerning men, women and performance, in areas of research relevant to the present thesis (i.e., cognition, performance and achievement), is argued to be fading (Fiengold, 1988; Stumpf & Stanley, 1996).

In terms of the lack of gender-related differences pertaining to the dimension of 'mind polychronicity', the next hypothesis addresses whether gender-, as well as culture-related differences exist across the correlates of time urgency and the Type A behaviour pattern; specifically personality traits, achievement strivings and impatience/ irritability.

Ho3a: Men are more achievement strivings and impatient/ irritable than women, as are cultures of a highly developed western orientation steeped in advanced states of technology. *Not Supported.*

Statistical Assessment

Separate multiple regression analyses were performed to ascertain sources of variance in achievement strivings (see Mreg1Ho3a) and impatience/irritability (Mreg2Ho3a). In checking the assumptions for regression, adequate signs of normality and linearity are visible. Homoskedasticity is satisfactory, with not too many outliers and no skew. Only significant loadings are presented in the table to follow. For statistics including insignificant independent variables (preferred polychronicity, life satisfaction, age, impatience/irritability, mean reaction times for Copy coding and the two letter-matching tests, physical identity and name identity), refer to Appendix 6E.

Results

Table Mreg1Ho3a: Multiple Regression Results

Mreg1Ho3a: Achievement Strivings, Gender and Culture

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*t* value	F	Sig.	Effect
Achievement Strivings	67.3 %	45. 3%	43.1 %	(Constant)	23.970	3.276		7.316	20.434	.000	
				Respondent Sex	1.285	.359	.145	3.576		.000	+ve
				Nationality	1.093	.523	.123	2.092		.037	+ve
				Role Ambiguity	-.383	.037	-.482	-10.326		.000	-ve
				Perceived Control of Time	.313	.052	.259	6.044		.000	+ve
				Type A Behaviour Orientation to work	-.325	.113	-.154	-2.870		.004	-ve
				Mean Reaction Time Code Forward	.001	.000	.138	2.729		.007	+ve
				Mean Reaction Time Code Backward	-.002	.000	-.162	-3.090		.002	-ve

In predicting variability in achievement strivings with additional explanatory variables to account for extraneous influences, adjusted R^2 amounts to .431. The model, $F(15, 370) = 20.434$, $p < .001$, proposes seven variables of predictive import. In addressing the hypothesis gender: $\beta = .145$, $t = 3.576$, $p < .001$ and nationality: $\beta = .123$, $t = 2.092$, $p < .05$ are highly predictive. Also of import are role ambiguity: $\beta = -.482$, $t = -10.326$, $p < .001$, perceived control of time: $\beta = .259$, $t = 6.044$, $p < .001$, Type A behavioural

orientation to work: β = -.154, t =-2.870, p < .005, mean reaction time code forward: β = .138, t =2.729, p < .01, mean reaction code backward: β = -.162, t =-3.090, p < .005.

Table Mreg2Ho3a: Multiple Regression Results

Mreg2Ho3a: Impatience/Irritability, Gender and Culture

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*t* value	F	Sig.	Effect
Impatience/ Irritability	23.4 %	5.5 %	1.9 %	(Constant)	18.237	3.407		5.352	5.352	.000	
				Nationality	.735	.421	.104	1.749		.081	+ve
				Life Satisfaction	-.081	.034	-.128	-2.376		.018	-ve

In predicting variability in impatience/irritability with additional explanatory variables included to control for extraneous influences, adjusted R^2 only amounts to .019. Found to be bordering significance, $F(14, 371) = 1.535$, $p = .096$, the model proposes one variable of definitive predictive import; life satisfaction: β = -.128, t =-2.376, p < .05, and nationality plays a borderline role: $\beta = .104$, t =1.749, $p = .081$. Variables lacking in predictive import are role ambiguity, self-efficacy, perceived control of time, preferred polychronicity, age, achievement strivings, and also speeds of response for the Copy, code forward, and code backward coding tests, as well as the physical identity and name identity letter-matching tests.

Analysis of Results

Contrary to expectation, achievement strivings is a trait more apparent in women than men. Also, in terms of cultural influence, the Greek sample is significantly more prone to achievement strivings than the British. Though the results positioning women and the Greek respondents as more achievement striving are unanticipated, in terms of the contemporary state of the job market, the rewards of work apparent in high-tech societies (wages and promotion), and increasing levels of time conflict and stress, this outcome seems realistic.

For example, it has only been in recent times that women have been granted entry into the job market, thus, a greater need to achieve seems to be apparent. For instance, even today in the 21st century, women still strive for the right to an equal wage. Men on the

other hand and regardless of culture, do generally get a higher wage or faster access to promotion or senior positions compared to women.

In terms of socio-cultural disparities the role of achievement strivings is poles apart when comparing the British and Greek samples. Yet, as elucidated by the present thesis, the pace of life and technology in Britain is notably faster, as well as more demanding in its need for achievement, as well as speed and accuracy. Accordingly, the striving for achievement may leave a bad taste in the average Briton's mouth- particularly if s/he is already feeling the strain of trying to keep up with the rate of contemporary technological progress and the ever-increasing demands of such new learning.

Also deserving of a mention are the additional variables found to explain variability in achievement strivings. It is found that greater perceived control of time and longer speeds of response for the code forward test tend to greater levels of achievement strivings. In contrast, greater levels of role ambiguity, Type A behavioural orientations to work, as well as longer response times for the code backward coding test tend to greater levels of achievement strivings.

In terms of impatience/ irritability no significant loadings were found with gender, yet nationality was found to be a borderline predictor of variability in impatience/ irritability explained by the model. Contrary to expectation however, is the result that it is actually the Greeks that manifest greater signs of impatience/irritability.

Reasons for why the Greeks are significantly more impatient and irritable than their British counterparts may be a consequence of incongruence. Specifically, in terms of emotional expression and preferred socio-cultural (emotion) polychronicity, the Greeks are positioned as mid P-Time belt, thus higher in terms of 'emotion polychronicity' compared to the British. It may be reasonable to expect Greek respondents to be more at ease, if not more open with matters of emotional expression (i.e., impatience/ irritability), due to greater levels of 'emotion polychronicity' as compared with the British respondents. Simultaneously, the British may also be suppressing feelings of impatience/ irritability in accord with social norms and expectations.

Also, the contextual environment of a global school of thought (university) is highly monochronic, dictated by the clock, as well as defined by schedules, deadlines, and timed examinations- a potential cause of incongruence for P-time cultures such as Greece, which may manifest as impatience/ irritability. The British in comparison are a culture founded upon a historical context governed by the clock and schedules (Thompson, 1967; Zerubavel, 1982) and therefore less perturbed by the 'monochronic-way'.

A paper presented by Musson, Sandal, Harper & Helmreich (2002) at 'The World Space Congress', is one known study that has examined achievement strivings and impatience/ irritability cross-culturally- specifically, Australia, Norway, Great Britain and the US, as part of a battery of traits featured by the Personal Characteristics Inventory (PCI). Musson *et al.,* (2002) state of all the traits assessed achievement strivings and impatience/ irritability amounted as the least reliable, however, these were the only two scales from the battery that hinted at definitive cultural variation, yet more research was called for.

To contribute to research the present effort certainly seems to suggest that achievement strivings and impatience/ irritability are subject to cultural influence, as opposed to globally applicable traits of personality (Musson *et al.,* 2002).

Thus far, this chapter has covered the range of hypotheses that elucidate upon the finer, multidimensional, intricacies of polychronicity, the Type A Behaviour pattern and the correlates of time urgency, to address the first research objective. In terms of the second research objective, another coping mechanism is addressed, and from which the 'Emotion-Mind-Action-Complex' was inspired. This field centres upon 'self-efficacy', and is a feature of the 2nd research objective following below.

Research Objective (II): The second major research objective driving this thesis is to test for relationships across self-efficacy and 'mind polychronicity' (preferred temporal orientation). Is this relationship culturally invariant within the context of global schools of thought? *See hypotheses Ho4, Ho5*[37].

[37] See Ho4 for hypothesis testing examined by previous research efforts. See Ho5 for new hypothesis testing to address research gaps involving relations across preferred polychronicity (mind polychronicity) and self-efficacy.

Ho4: Higher levels of psychometric intelligence and lower levels of role ambiguity engender greater levels of self-efficacy. *Supported.*

Statistical Assessment

Preliminary analyses via independent sample t-tests upon self-efficacy were conducted to test for disparities across culture to find self-efficacy. Though the British scored slightly more on the self efficacy scale (M = 30.04, SD = 3.55, SE = .25) compared to the Greeks (M = 29.62, SD = 4.11, SE = .30), yet this deviation was not found to be statistically significant, $t(384) = 1.069$, *ns* (this output is not presented).

To address a prediction of variability in self-efficacy a standard multiple regression analysis was performed. Role ambiguity and psychometric intelligence were entered into analysis as predictor variables alongside others including culture and gender to account for extraneous influences. Analysis was conducted via SPSS for an evaluation of the data and the assumptions. An evaluation of assumptions revealed little skewness and outliers, good normality, linearity and homoskedasticity (See Appendix 6Q Multiple Regression Assumptions). Table Mreg1Ho4 below displays the correlations for significant variables only, the unstandardised regression coefficients (b), the standardised regression coefficient (β), R, R^2, and Adjusted R^2. Only significant loadings are shown below (for total regression output please see Appendix 6F).

Results

Table Mreg1Ho4: Multiple Regression Results

Mreg1Ho4: Self-efficacy, psychometric intelligence, and role ambiguity.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*T* value	F	Sig.	Effect
Self-efficacy	48.3%	23.3%	21.5%	(Constant)	38.343	2.570		14.1918	12.711	.000	
				Nationality	-.857	.375	-.112	-2.284		.023	-ve
				Respondent Sex	-:833	.361	.064	.057		.022	-ve
				Psychometric intelligence	.083	.025	.155	3.309		.001	+ve
				Role Ambiguity	-.319	.038	-.465	-8.329		.000	-ve

The final model that results is significantly different from zero, $F(9, 376) = 12.711$, $p < .001$. In contributing to explaining variability in self-efficacy (Adj. $R^2 = 21.5\%$) four variables are found to be significant predictors: nationality (British or Greek), psychometric intelligence, gender, and role ambiguity.

Analysis of Results

In support of Ho4 and previous research efforts, the interplay of self-efficacy and psychometric performance is statistically significant. As anticipated, those categorised as high in self-efficacy attain higher levels of cognitive performance accuracy, marked by higher IQ, relative to those low in self-efficacy. That is, increased confidence in one's intellectual abilities positively relates with greater psychometric intelligence.

In accordance with previous research efforts investigating self-efficacy as a desirable antecedent of academic competence (Sadri, 1996), salesperson performance (Krishnan *et al.,* 2000; Lee & Gillen, 1989; Vinchur *et al.,* 1998), research productivity (Taylor *et al.,* 1984) and insurance sales (Barling & Beattie, 1983), present thesis findings assist to strengthen this stance. Accordingly, these results (and irrespective of culture) appear to qualify the old saying "You Can Do Anything If You Put Your Mind To It!"

Interestingly, results of the multiple regression analyses in conjunction with additional variables of potential explanatory import run counter to the preliminary analyses involving independent sample t-tests; the latter revealing self-efficacy as constant across these two very diverse cultures of Britain and Greece. Sadri (1996: 52 & 53) states, "self-efficacy expectations are derived from four sources of information: performance accomplishments, modelled exposure, verbal persuasion and psychological arousal. In terms of these sources, a dominant force in forming and reinforcing self-efficacy is likely to be culture. An individual's ethnic-racial background is generally viewed as a powerful influence of his/her beliefs, values and actions. This is a factor which remains under-researched in the study of vocational behaviour".

In view of the multiple regression results it may be plausible to suggest that the presence of additional extraneous factors also need to be accounted for in one's model. Specifically, psychometric intelligence, role ambiguity, gender and culture account for 21.5% of the variability found in self-efficacy. In support of Ho4, greater levels of

psychometric intelligence tend to greater levels of self-efficacy, whereas lower levels of role ambiguity tend to greater levels of self-efficacy. What is more, men experience greater levels of self-efficacy, and with this particular combination of variables, the British are significantly more prone to self-efficacy than the Greeks.

Thus, in contrast to Sadri (1996) present research findings lend support to a construct of self-efficacy that *is* subject to cultural variability. In particular, before one may argue that self-efficacy achieves 'construct equivalence' across homogeneous student-based samples across culture, other forces of influence need to be incorporated (i.e., role ambiguity, psychometric intelligence, and gender), as done so by this thesis. Still on the subject of self-efficacy research has yet to investigate it relations with preferred (mind-based) polychronicity, and particularly across culture. This is addressed in the following section of results.

Ho5: Polychronics show greater signs of self-efficacy compared to Monochronics. *Supported.*

Statistical Assessment

For a report of preliminary analyses conducted across categorisations of preferred polychronicity and self-efficacy see the latter part of Appendix 6G. Applying techniques of multiple regression predictions of variability in self-efficacy stemming from preferred polychronicity were examined.

Additional variables of potential influence were also included to control for extraneous sources of variance. Analysis was conducted via SPSS for an evaluation of the data and the assumptions. An evaluation of assumptions revealed little skewness and outliers, good normality, linearity and homoskedasticity (See Appendix 6Q Multiple Regression Assumptions).

Table Mreg1Ho5 below displays the correlations for significant variables only, the unstandardised regression coefficients (b), the standardised regression coefficient (β), R, R^2, and Adjusted R^2. Only significant loadings are shown below (for total regression output please see Appendix 6G).

Results

Table Mreg1Ho5: Multiple Regression Results

Mreg1Ho5: Self-efficacy and Preferred Polychronicity.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*T* value	F	Sig.	Effect
Self-efficacy	27.3 %	7.4%	5.7%	(Constant)	26.529	2.172		12.214	4.340	.000	
				Preferred Polychronicity	.064	.021	.150	3.003		.003	+ve
				Respondent Sex	-1.068	.394	-.139	-2.708		.007	-ve
				Achievement Strivings	.121	.049	.140	2.489		.013	+ve

The final model that results is significantly different from zero, $F(7, 378) = 4.340$, $p < .001$. In contributing to explaining variability in self-efficacy three variables are found to be significant predictors: preferred polychronicity, respondent sex, and achievement strivings. Insignificant predictor variables are nationality, age, and perceived control of time, with impatience/ irritability resulting as a borderline predictor.

Analysis of Results

With reference to preliminary analyses (see Appendix 6G) despite self-efficacy's promising appeal as an individual and/or cultural variable of much explanatory import (Sadri, 1996; Taylor *et al.,* 1984), its role in conjunction with these more refined categorisations of preferred temporal across cultures has not been empirically tested other than by the present thesis. In an examination of agentic competence and self-efficacy, Sadri (1996) touches upon the potential relevance of the monochronicity-polychronicity continuum, as a cultural construct deemed valuable for elucidating cultural diversity or similarity, though no measures were applied. This line of research certainly deserves more response and in view of the significant relationship found by the present thesis across preferred polychronicity as measured by the IPV and self-efficacy, many implications for work- and learning- related behaviours are envisaged.

Specifically, results of the main regression analysis are in support of the preliminary analyses whereby greater levels of preferred polychronicity tend to greater levels of self-efficacy. In addition, men are found to possess greater levels of self-efficacy, and those

more achievement strivings possess greater levels of self-efficacy. Also, in addition to addressing the ends of the continuum the present thesis argues in favour of future research that incorporates the monochronicity-polychronicity continuum mid-point in an effort to tease out the finer intricacies of preferred patterns of temporal orientation influenced by increasing tendencies towards high-tech living.

For the present thesis the IPV as a measure of 'preferred temporal orientation' was administered within the 'context' of academia, characterised by above average intelligence. However, to generalise these findings to a larger populace much more research into the combined effects of self-efficacy and temporal orientation is needed to ascertain how performance outside the monochronic model of managing 'time-to-activity' teaching and education is affected.

Mono/polychronicity constitutes ways of managing tasks to time (clock or event); a related field is that of 'perceived control of time'. Thus, to offer innovative and refined empirical efforts, this thesis also applies tri-dimensional categorisations to elucidate upon 'perceived control of time' to account for high, medium and low levels. This constitutes another important variable that has not been tested for cultural variability in relation to monochronic *and/or* polychronic time use preferences.

Considering that life satisfaction is an important outcome linked to research pertaining to perceived control of time and personality, Ho6a below applies the statistical technique of multiple regression to ascertain the strength and direction of how personality traits, specifically self-efficacy, achievement strivings and perceived control of time, impact upon life satisfaction. Also tested for is the role that culture plays in such an array of relations. Thus, to address gaps in the literature,

Research Objective (III): What are the effects of perceived control of time upon preferred temporal orientation (mind polychronicity) and satisfaction across cultures? *See hypothesis Ho6, Ho6a.*

Ho6: Cultures high in perceived control of time incorporate more monochronic tendencies in the approach to task-to-time management. *Supported.*

Statistical Assessment

In addressing Ho6, it is useful to see if any differences in perceived control of time exist across the British and Greek samples. This is managed by performing an independent (student) sample t-test. To explore relationships further and to test for any further interaction effect concerning differing levels of perceived control (Low PCT; Mid PCT; High PCT) and culture (as measured by nationality) upon preferred mono/polychronicity, a two-way between groups ANOVA is subsequently presented. See Appendix 6H for output relating to Ho6.

Results

Given the cross-cultural constituent of this thesis, it is interesting to see if perceived control of time is culturally divergent. The t-test reveals that the Greek respondents (M = 17.11, SD = 3.34, SE = .24) claim higher levels of perceived control of time than the British (M = 14.97, SD = 3.69, SE = .26). This difference is found to be significant, $t(384) = -5.984$, $p<.005$, and represents a medium effect size, $r = .30$.

Having established perceived control of time is culturally diverse, how is 'preferred temporal orientation' affected by *both* perceived control of time and 'nationality'? To test this, a 'two-way between-groups ANOVA' (a.k.a. General Linear Model/ Univariate ANOVA) is deemed an appropriate technique for unravelling possible interaction effects. The results reveal nationality as a significant main effect, $F(1, 380) = 4.666$, $p < .05$, and categorisations of perceived control of time, ranging from low to medium to high, $F(2, 380) = 4.826$, $p < .01$. To add further support to the model, the interaction is also significant, $F(2, 380) = 9.734$, $p < .001$.

Analysis of Results

Perceived control of time is subject to cultural variability. And though not empirically tested until now, results suggest that out of the two cultural groupings the culture found to be more monochronic in temporal orientation (the Greeks) *do* also perceive a greater control over time. Specifically, results from the ANOVA reveal Greeks respondents Low in PCT (M = 45.167, SE = 3.579) are definitively polychronic in preferred orientation compared to any other PCT categorisations (bearing in mind that the total IPV scale midpoint is 40, and greater scores equate with greater 'mind polychronicity').

Alternatively, the Greek PCT category found to be the most monochronic in preferred temporal orientation are those classified as Mid PCT (M = 31.812, SE = .848), closely followed by High PCT (M = 32.627, SE = 1.019) respondents. Hence, as perceived control of time increases from low levels to either midpoint or higher levels, Greek respondents apparently engage in a more monochronic orientation for managing tasks to time.

As a matter of interest, the variability in scores regarding preferred temporal orientation for British respondents is less marked across PCT categorisations, although (and as expected) the respondents that score highest in terms of a monochronic orientation are those High in PCT (M = 31.882, SE = 1.504), closely followed by Low in PCT (M = 32.487, SE = 1.404), then Mid PCT (M = 35.720, SE = .781).

For cultures high in perceived control of time whilst performing activities, lesser experiences of stress are also expected due to accurately estimating how long differing activities take to complete. Maybe a new construct to consider is the 'perceived control of time over activity'?

In particular, underestimations of how long different events take over time seems an obvious cause of daily distress and hassles for those running late for appointments, juggling chores, with plans for each and each hour of the day, and hence, being unable to live in the glory-filled moment of 'now'; the 'eternal present'. Accordingly, and in line with previous research findings the present thesis *has* found empirical evidence to support the stance that a low perceived control of time relates to a greater incidence of stress (Macan, 1994; Spector, 1986; Thompson, 1981), yet due to matters of time and space these findings are not presented here. In terms of satisfaction,

Ho6a: Technology, culture and personality affect satisfaction. For high-tech, clock-oriented cultures, self-efficacy and perceived control of time are significant predictors. For low-tech, event-oriented cultures, self-efficacy and achievement strivings are significant predictors. *Supported.*

Statistical Assessment

Multiple regression analyses have been undertaken upon the Greek and British samples separately. Additional variables of potential influence were also included to control for extraneous sources of variance. Little skewness and outliers, good normality, linearity and homoskedasticity (See Appendix 6Q Multiple Regression Assumptions) is found. Tables Mreg1Ho6a and Table Mreg2Ho6a below refer to the British and Greek sample respectively, with correlations shown for significant variables only, unstandardised regression coefficients (b), the standardised regression coefficient (β), R, R^2, and Adjusted R^2 (for total regression output please see Appendix 6H).

Results

Table Mreg1Ho6a: Multiple Regression Results – British Sample only

Mreg1Ho6a: Self-efficacy, Perceived Control of Time and Satisfaction.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*T* value	F	Sig.	Effect
Life Satisfaction	38.2 %	14.6%	12.4%	(Constant)	6.807	5.183		1.313	6.587	.000	
				Perceived Control of Time	.318	.117	.199	2.722		.007	+ve
				Self-efficacy	.531	.111	.321	4.770		.000	+ve

Table Mreg2Ho6a: Multiple Regression Results – Greek Sample only

Mreg2Ho6a: Self-efficacy, Achievement Strivings and Satisfaction.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*T* value	F	Sig.	Effect
Life Satisfaction	26.5 %	7%	4.4%	(Constant)	13.132	4.347		3.021	2.725	.003	
				Achievement Strivings	.173	.099	.140	1.752		.081	+ve
				Self-efficacy	.235	.096	.183	2.445		.015	+ve

Final models are significantly different from zero; British, $F(5, 193) = 6.587$, $p < .001$, and Greeks, $F(5, 181) = 2.725$, $p < .05$. To explain variability in satisfaction clear cultural variability in support of the hypothesis is found. To increase satisfaction, the British sample clearly benefit from perceived control of time and self-efficacy, whereas the Greeks benefit from achievement strivings (borderline significant) and self-efficacy. Insignificant predictor variables are age of respondent and preferred polychronicity.

Analysis of Results

In running linear regression models separately across the two national samples some interesting results transpire in support of the hypothesis. Achievement strivings holds no predictive quality across the British respondents, however it bears borderline significance across the Greek sample in predicting satisfaction. Alternatively, with reference to only the Greek respondents, the regression model reveals a loss of predictive power in terms of perceived control of time. Self-efficacy however, across both the British and Greek samples remains highly significant.

A possible for reason for why the 'Clock-time British' not only perceive less control of time, yet also believe this tends to greater levels of life satisfaction may be a consequence of living in a high-tech society. Racing to make appointments, rushing to beat the traffic, and aspiring to remain one step ahead may become a constant, losing battle, and this very lack of control over time (if not one's mind) arguably detracts from the Briton feeling satisfied. In contrast, this apparent conflict and lack of control over time is not a symptom suffered by the Greeks, and yet also fails to feature as a predictor of life satisfaction.

The role of achievement strivings also manifests differential effects across culture. Found to be of little consequence in terms of the British respondents, achievement strivings for the Greeks is actually borderline significant in predicting life satisfaction. Could it be plausible to suggest that maybe achievement strivings for the British is more on a par with stress, i.e., role ambiguity (see Ho8)?

In terms of ascertaining reliable predictions of orientations towards work, stresses, as well as satisfaction across global schools of thought, certain variables as dictated by theory and empirical findings are proposed. Accordingly, to tackle the fourth research objective,

Research Objective (IV): What are the predictors of a positive Type A behavioural orientation towards work? Conversely, what are the main predictors of stress-related outcomes such as role ambiguity? *See hypotheses Ho7 and Ho8.*

Ho7: Cultures high in emotion polychronicity (P-time) are more positively oriented towards work than cultures low in emotion polychronicity (M-time). Greater levels of achievement strivings and lower levels of impatience/ irritability are also argued to manifest. *Partially Supported.*

Statistical Assessment

A prediction of a Type A behavioural orientation towards work was enabled via the use of a standard multiple regression analysis. Impatience/ irritability, age, preferred polychronic time use, achievement strivings, nationality and gender were entered as predictor variables.

Analysis was conducted via SPSS for an evaluation of the data and the assumptions. Results of the evaluation of assumptions found little evidence of skewness or problematic outliers, good normality, linearity and homoskedasticity (See Appendix 6Q Multiple Regression Assumptions). Table Mreg1Ho7 below displays the correlations for significant variables only, the unstandardised regression coefficients (b), the standardised regression coefficient (β), R, R^2, and Adjusted R^2. Only significant loadings are shown below (for total regression output please see Appendix 6I).

Results

Table Mreg1Ho7: Multiple Regression Results

Mreg1Ho7: The Role of culture and personality in the prediction of a positive work orientation.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	Beta	*T* value	F	Sig.	Effect
Positive Work Orientation	69.2 %	47.9%	47.1%	(Constant)	10.541	.864		12.206	58.024	.000	
				Nationality	2.901	.161	.690	18.060		.000	+ve
				Respondent Sex	-.299	.162	-.071	-1.841		.066	-ve
				Achievement Striving	-.079	.018	-.166	-4.293		.000	-ve
				Impatience/ Irritability	.051	.022	.086	2.296		.022	+ve

The final model that results is significantly different from zero, $F(6, 379) = 58.024$, $p < .001$. In contributing to a positive work orientation three variables are found to be significant predictors: nationality (indicative of the British or Greek culture), achievement striving and impatience/ irritability. Respondent sex was found to be a borderline predictor. Two variables were not included in the final model: age of respondent and preferred polychronic time use (IPV).

Surprisingly, in view of the directions of relationships for achievement strivings and impatience/ irritability the results imply that lesser degrees of achievement strivings actually contribute to a positive work orientation, alongside some display of impatience and irritability! Using Adjusted R^2, 47.1% of the variability observed in a positive work orientation (Type A factor 1) is accounted for the independent variables. As this value is fairly high for such social scientific research, further attention from the academic field is warranted.

Analysis of Results

The findings from the regression offer preliminary support for advocating time urgency correlates, achievement strivings (AS) and impatience/ irritability (II), as suitable antecedents of a Type A behavioural orientation towards work. However, and contrary to expectation, it seems that too much striving for achievement can actually detract from an orientation towards work. Unlike much former research, which have found achievement strivings (AS) to be an appropriate trait to engender desired performance gains (Britton & Tesser, 1991; Macan *et al.,* 1990), and impatience/ irritability (II) to engender problems of health (Spence *et al.,* 1987, 1989), the present thesis finds AS runs counter to an orientation towards work in the context of academic study.

Other empirical studies offering a similar result to include a study by Jepson & Forrest (2006) in which positive relations were found across measures of personal achievement strivings, perceived stress and Type A behaviour.

In study by Jex *et al.,* (2002) respondents more achievement strivings were most likely to have an adverse reaction to stress. Jex *et al.,* (2002: 989) also found "that those high on achievement strivings always reported higher levels of job satisfaction and lower levels of psychological strain than those low on achievement strivings." Accordingly,

achievement strivings may not always be the most optimal means for a desired end, although in certain western/ high-tech societies it may be taken for granted that achievement strivings is *always* a good thing. Arguably 'culture' has a significant role to play in terms of these rather surprising relations.

Similarly, certain high-tech societies are arguably more susceptible to the adverse effects of ever-increasing rates of activity, and may consequently suffer the effects of role ambiguity. Moreover, based on studies by Bluen *et al.,* (1990) and Spence *et al.,* (1987, 1989) lower levels of achievement strivings, self-efficacy and life satisfaction are also argued to amount. Accordingly,

Ho8: Role ambiguity is more characteristic of high-tech cultures than nations more socially/ P-time oriented. Lower levels of achievement strivings, self-efficacy and life satisfaction are also argued to manifest. *Supported.*

Statistical Assessment

To test for the prediction of role ambiguity from measures related to personality, time and culture, a standard multiple regression analysis was performed.

Results

In running a regression model to predict role ambiguity the resulting significant predictors in the regression model were self-efficacy, culture (as measured by nationality), life satisfaction, and achievement strivings. Variables found to be insignificant were psychometric intelligence, perceived control of time and Type A (orientation towards stress).

Table Mreg1Ho8 presents the correlations linking the variables, unstandardised regression coefficients (b), standardised regression coefficients (β), R, R^2, and Adjusted R^2. Only significant loadings are presented here (Appendix 6J for complete regression output).

In evaluating the assumptions of multiple regression signs of normality, linearity and homoskedasticity were apparent, as well as a total of four outliers and little evidence of skewness (see Appendix 6Q; Multiple Regression Assumptions).

Table Mreg1Ho8: Multiple Regression Results

Mreg1Ho8: Culture and Personality in the Prediction of Role Ambiguity.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	B	*t* value	F	Sig.	Effect
Role Ambiguity	67.3%	45.2%	44.1%	(Constant)	51.464	3.010		17.100	38.935	.000	
				Nationality	-2.037	.612	-.183	-3.331		.001	-ve
				Self-Efficacy	-.462	.059	-.317	-7.820		.000	-ve
				Achievement Strivings	-.557	.056	-.443	-10.036		.000	-ve
				Life Satisfaction	-.103	.041	-.104	-2.553		.011	-ve

Results

The eventual model is significantly different from zero, $F(8, 377) = 38.935$, $p<.001$. In the prediction of role ambiguity, nationality, self-efficacy, achievement strivings and life satisfaction negatively load as significant predictors in the model. Achievement strivings and self-efficacy are the most predictive, followed by nationality and then life satisfaction.

In terms of Adjusted R^2 a good result amounts, whereby 44.1% of the variability observed in role ambiguity is accounted for by the independent variables. Non-significant predictors are impatience/ irritability, Type behavioural orientations towards work, perceived control of time and age.

Analysis of Results

In view of the negative loadings, lesser degrees of achievement strivings, self-efficacy and life satisfaction lead to greater role ambiguity. Furthermore, Greeks experience less role ambiguity than the British. In terms of the variables proposed for experimentation by the present thesis, this particular combination of personality and cultural traits are most predictive of role ambiguity. According to Hall (1989:58), "All cultures with high technologies seem to incorporate both polychronic as well as monochronic functions." What is more "The two systems are logically and empirically distinct. Like oil and water, they don't mix" (Hall, 1989: 45 & 46). In view of the results it seems that the difficulty in combining the two diverse approaches to managing time over activity

involves a cost. Specifically, in environments shaped by high speed and demand for accuracy, high-tech societies pay a price; the price not only seems to be stress, i.e., role ambiguity, but also a positive work orientation (see Ho7).

To alleviate this syndrome new teachings are called for (if not teachings already known, i.e., 'Ancient Truths') that manage combinations of both temporal orientations (M-time and P-time) to states of behaviour and consciousness that are not only conducive to high speed and accuracy, but also less stress and more of a positive attitude towards work. To conclude, in view of the pace of life that characterise high-tech cultures as dictated by expansions in technology, the rival influences of mechanistic (i.e., speed and accuracy) and humanistic (i.e., the onslaught of physiological symptoms of stress) systems are seemingly at work.

Thus, in order to overcome an outcome of role ambiguity, the findings support a culturally differentiated strategy that builds upon a person's experience of self-efficacy (i.e., mind over matter), life satisfaction and achievement strivings. Achievement strivings and impatience/ irritability seem to play important roles in terms of orientations towards work or stress. Consequently, it is in the interests of efficiency and effectiveness to also understand the finer intricacies of such factors across objective measures of speed and accuracy. Also of importance, is the issue concerning the role of culture. Thus to address gaps in the literature,

Research Objective (V): What are the relationships across speed, impatience/ irritability, and achievement strivings, and how is this differentiated according to culture? *See hypothesis Ho9.*

Ho9: Speed correlates more so with the II (impatience/ irritability) than with AS (achievement strivings), and in a negative direction. *Partially supported.*

Statistical Assessment

Speed is not normally distributed, thus regression analyses are not suitable. Accordingly, analyses involving achievement strivings and impatience/ irritability with that of speed (reaction time/ RT) are managed via the Spearman's rank correlation coefficient- a non-parametric bivariate correlation tool appropriate for the non-normal data distributions

that result across all speed (reaction time/ RT) variables. To recap, the variables for speed are, RT copy, RT code forward, RT code backward, coding time forward, coding time backward, RT physical identity, RT name identity, and time needed for long-term memory retrieval. To test the proposition that faster measures of speed correlate with greater impatience/irritability, tests across all speed/ reaction time (RT) variables were performed upon the group as a whole, and upon the British and Greeks separately. Please see Appendix 6K for all output.

Results

As a combined group, though correlations between impatience/ irritability and measures of reaction time (speed) are all in the expected negative direction (greater impatience/ irritability is correlated with faster measures of speed/ reaction time), none of the correlations are statistically significant. The same non-significant results amounts for correlations concerning speed variables with achievement strivings. In this case however, all correlations (bar RT Copy and time needed for long-term memory) are positive.

In light of cultural factors, in terms of British respondents, the only correlation that was significantly correlated with impatience/ irritability, and in the expected negative direction was RT Copy (*rho* = -.156, n = 199, p = .014); faster reaction times correlate with greater levels of impatience/ irritability. In accordance with the hypothesis, this particular RT Copy correlation with impatience/ irritability (II) is stronger than that with achievement strivings (AS), though that too is negatively related, yet not significant.

All other speed/RT variables correlated with either II and AS, however, are positively related. The other significant correlation here is between AS and RT Name Identity; specifically greater achievement strivings correlates with longer reaction times for the Name Identity task. In other words, longer reaction times tend to relate with greater levels of achievement strivings and impatience/ irritability.

With the Greeks, though the majority of correlations between speed/ RT measures and II are in the expected negative direction (except for RTCopy and contrary to the British), the only relationship to tend towards borderline statistical significance is that between II and RT code forward (*rho* = -.105, n = 187, p = .077). That is, greater levels of

impatience/ irritability correlate with faster measures of reaction time for the code forward Coding task.

Furthermore, though relations across AS and speed/ RT do not reach levels of significance, all of these correlations (except the one between AS and RTCopy, and also AS and RT Physical Identity/ RTPI) are in the expected negative direction; less speed, greater achievement strivings.

Analysis of Results

As a combined whole statistical significance failed to manifest for these particular proposed relations, yet the direction of the correlations concerning impatience and irritability did fall in accordance with expectation. The majority of correlations resulting across achievement striving and speed were in a positive direction, suggesting a tendency for greater levels of achievement striving to result in longer measures of reaction time, bringing to mind the old-time saying, imbued with good advice, "more haste, less speed".

It was only when the groups were split according to nationality that relationships became more defined. Interestingly, and as a general rule, for the British it was found that greater levels of II correlated with longer measures of reaction time. Conversely, for the Greeks as a rule, and as hypothesised, an inverse relationship was found across measures of speed/ reaction time and impatience/ irritability.

Seemingly, it appears that for the Greeks increased levels of II aid one to attain faster reaction times, whereas for the British this does not seem to be the case. Contrary to expectation, increased II actually tends to longer times of reaction for British respondents, almost appearing as if the very experience of II only makes matters worse.

In a related theme, how do diverse cultures characterised by similar patterns of thought and logic manage the effects of role overload? Thus, to address the sixth objective,

Research Objective (VI): What is the relationship across preferred temporal orientation and role overload; specifically, are cultures categorised as P-time i.e., the Greeks, particularly adept at handling role overload in view of socio-cultural tendencies towards 'many-at-a-time'? *See hypothesis Ho10.*

Ho10: A negative relationship is hypothesised to exist between preferred polychronic time use and role overload, and especially for cultures more socially oriented (i.e., the Greeks), than those more individualistic (i.e., the British). *Supported.*

Statistical Assessment

Preliminary analyses to investigate the relationship between role overload (as measured by role overload scale) and polychronic time use (as measured by the IPV) were conducted via Pearson's product-moment correlation coefficient. Main analyses accounting for extraneous variables were orchestrated via a multiple regression. Table Mreg1Ho10 presents the correlations linking the variables, unstandardised regression coefficients (b), standardised regression coefficients (β), R, R^2, and Adjusted R^2. Only significant loadings are presented here (Appendix 6L for complete regression output). In evaluating the assumptions of multiple regression signs of normality, linearity and homoskedasticity were apparent, as well as a few outliers and little evidence of skewness (see Appendix 6Q; Multiple Regression Assumptions).

Table Mreg1Ho10: Multiple Regression Results

Mreg1Ho10: Culture and Personality in the Prediction of Role Overload.

Dep. Var.	R	R^2	Adj. R^2	Independent Variable	B	Std. Error (b)	B	*t* value	F	Sig.	Effect
Role Overload	42.9%	18.4%	16.3%	(Constant)	-.647	2.811		-.230	8.480	.818	
				Nationality	-1.993	.515	-.263	-3.873		.000	-ve
				Respondent Sex	1.129	.370	.149	3.049		.002	+ve
				Achievement Strivings	.165	.053	.193	3.121		.002	+ve
				Impatience/ Irritability	.129	.051	.121	2.531		.012	+ve
				Age	.234	.065	.172	3.605		.000	+ve
				Expected Grade	1.096	.243	.222	.4514		.000	+ve

Results

The eventual model is significantly different from zero, $F(10, 378) = 8.480$, $p<.001$. In the prediction of role ambiguity British respondents are significantly more prone to role overload than Greek respondents. Also of significance, females are seemingly more

susceptible to role overload than the male respondents, and as achievement strivings, impatience/irritability, age and expected grade increase, so too does role overload.

Preliminary analyses reveal a negative relationship exists between preferred polychronic time use and role overload across both the British and Greek sample, yet this relationship is particularly pronounced and borderline for the Greek sample only (r = -.099, n = 187, p = .089). This result falls in line with the conjecture that this negative relationship is more typical of respondents steeped in cultures more socially oriented. In other words, as preferred polychronic time use patterns increase, role overload decreases- and particularly so for cultures more P-time in orientation (emotion polychronicity) due to greater levels of congruence across the differential aspects of emotion, mind and action polychronicity. This finding is further supported by the multiple regression analysis (see Table Mreg1Ho10).

Analysis of Results

Overall, in an effort to alleviate the experience of role overload in one's professional life, it is partially supported that those cultures programmed with a more multi-dimensional, if not more 'emotion polychronic' approach towards socio-cultural interaction (i.e., the Greeks) are perfectly situated to counteract the experience of role overload by preferring to implement a more polychronic approach (mind polychronicity) compared to those less 'P-time' (emotion polychronicity) in socio-cultural orientation, i.e., the British. Female respondents are also significantly more susceptible to role overload, as are older respondents, as well as those incurring greater levels of achievement strivings and impatience/ irritability.

In terms of preferred temporal orientation (mind polychronicity) as a coping strategy for managing 'activities-to-time (clock time and/ or event time)', to advise 'high-tech societies', it is of interest to see how culture intervenes to affect relations found across objective measures of speed and accuracy. Speed and accuracy are of paramount managerial and organisational relevance, and are examined for cultural variability in terms of the mono/polychronicity continuum, presently missing from the literature. Thus to address the penultimate objective,

Research Objective (VII): What is the specific interplay across mind polychronicity (i.e., preferred temporal orientation), speed and accuracy? *See hypotheses Ho11 and Ho12.*

Ho11: Preferred polychronic time use (IPV) and speed will be negatively correlated, i.e., high polychronic time use relates with faster reaction time speeds. *Partially Supported.*

Statistical Assessment

Due to non-normal data distributions across measures of reaction time (speed) regression analyses are not appropriate. Accordingly, a Spearman's Rank Order correlation was used to examine the relationship between polychronicity (as measured by the IPV) and speed (as measured by reaction time across ECTS). Tests were performed on the whole sample, and then broken down according to nationality. See Appendix 6M for output.

Results

For the total sample, all correlations are in the expected negative direction. The only speed variable to significantly correlate with polychronic time use is the speed (reaction time) measure for the Copy coding test (RTCopy), $rho = -.092$, $n = 386$, $p < .05$. That is, greater polychronic time use associates with faster measures of speed for the Copy task.

For the British sample results change a little. Firstly, there are no significant correlations across the speed variables with 'mind polychronicity', and not all correlations are in the expected negative direction. Specifically, though the correlations fail to reach statistical significance, it is of interest to note that preferred polychronic orientation positively related with two speed variables for the British sample. The speed variables in question are the mean reaction times for 'code backward' ($rho = .005$, $n = 199$, $p > .05$) and 'physical identity' ($rho = .041$, $n = 199$, $p > .05$). That is, longer reactions are found to associate with greater levels of 'mind polychronicity'.

Conversely all relations for the Greek sample are in the expected, negative direction. That is, greater levels of 'mind polychronicity' (preferred polychronic orientation) associate with faster responses times. Nevertheless, in accord with the combined sample result, only the 'Copy' speed variable attains a borderline significant relationship with 'mind polychronicity' ($rho = -.110$, $n = 187$, $p = .066$). Thus, in contrast to the British,

and to explain the aggregate group result, it is due to the Greek sample that a negative correlation exists across speed and preferred 'mind polychronicity'.

Analysis of Results

In terms of the more 'emotional' sides of polychronicity akin to socio-cultural forces thus far, the Greeks have been shown to manifest a slower pace (i.e., reaction time/ psychometric speed). However, the Greeks have also been shown to be significantly more monochronically oriented than the British, and seemingly not only employ 'mind polychronicity' to successfully reduce role overload, but also to reduce speed of psychometric response.

Two important points come to mind. Firstly, the British are arguably both monochronic and polychronic in orientation if conceptualised as a high-tech society. Also, 'P-time' as defined by Hall in the present thesis is referred to as 'emotion polychronicity' (i.e., 'home is where the heart is') to represent a person's national culture. This, however, does not necessarily translate into 'mind polychronicity'- just as 'mind polychronicity' may not always translate into 'behavioural polychronicity'.

Reasons for why concern the role that 'context' and the 'environment' that characterise global schools of thought, have to play. Specifically, in terms of mass organisation, structure and scheduling, as well as specific orientations towards the clock and order, global schools of thought need to incorporate monochronically-oriented technologies. And although P-time cultures, i.e., the Greeks may be typified by a slower pace of life, it is actually the 'Poly-Khronos' Greeks and not the British that attain significant relations across increased levels of preferred mind-based polychronicity and faster measures of speed.

Ho12: Preferred polychronic time use (IPV) and accuracy of response are positively related. *Partially supported.*

Statistical Assessment

To test the relationship between polychronicity (as measured by the IPV) and accuracy (as measured by number of correct answers across ECTs) a Pearson product-moment correlation was used across the combined sample, and then applied separately to the

British and Greek samples. In performing checks of normality, linearity and homoskedasticity, no violations were detected.

To assess whether differential scores of psychometric intelligence test scores (an additional measure of accuracy) result across the three differing categorisations of the mono/ polychronicity continuum a one-way between groups analysis of variance with post-hoc tests is performed across the sample as a whole, and then repeated to account for national culture. For all output please see Appendix 6N.

Results

For the combined sample, as with speed, the only accuracy variable to manifest a significant correlation with preferred polychronic time use is the Copy coding variable (Copy). The correlation with the Copy accuracy variable with polychronicity ($r = .098$, $n = 386$, $p = .027$) is also stronger than that found for its speed measure (RTCopy). In splitting the combined sample according to nationality, no significant relations were obtained for the British sample. For the Greek sample on the other hand, the relationship across preferred polychronic orientation and 'Copy' coding accuracy is positively significant, ($r = .147$, $n = 187$, $p = .022$).

In terms of applying psychometric intelligence scores as a measure of accuracy, the combined sample of British and Greek respondents were divided into three groups according to their preferred temporal orientation (monochronic/MC, dual MC & PC, polychronic/PC) to explore the impact of 'mind polychronicity' upon a psychometric measure of accuracy. A statistically significant model is reported at the '$p < .05$' cut-off point, $F(2, 383) = 3.429$, $p = .033$.

For the combined sample post-hoc comparisons using Tukey HSD indicate the mean accuracy (intelligence) score for polychrons are significantly higher than those attained by monochrons. What is more, scores of intelligence for those of a dual approach were significantly lower than that for polychrons, though not significantly more than monochrons. Analyses were then conducted across the British and Greeks samples separately.

In terms of British respondents the overall ANOVA result fails to reveal a significant model, $F(2, 196) = 2.122$, $p > .05$. Post-hoc analyses reveal that though polychrons attain the highest levels of psychometric intelligence accuracy, followed by those of a dual approach, and monochrons last, differences are just outside the range of statistical significance ($p = .091$).

As with the British, Greek polychrons attain the highest scores of psychometric intelligence accuracy. The overall model is just beyond statistical significance; $F(2, 184) = 2.223$, $p = .111$. Via analyses of the post-hoc comparisons those more polychronic in orientation attain borderline levels of statistical superiority over those that incorporate the 'dual monochronic and polychronic approach'. Second place monochrons however, do not significantly differ from either polychrons or those of a dual approach.

Analysis of Results

In terms of the t-tests, the Greek respondents rather than the British are able to boast a relationship across preferred polychronicity and accuracy. As regards the ANOVA tests, across both the Greek and British samples polychrons attain greater scores of accuracy. The only deviation in result concerns the categories that make second and third place. For the British sample and in line with the combined sample approach those of a dual monochronic and polychronic approach feature in second place. Conversely, for the Greeks monochrons perform better than those of a dual approach.

To address the final research objective, subjective estimates of 'Time's' passage are tested for cultural variability, during the performance of increasingly complex tasks over timed durations, unknown to respondents. Is the passage of time culturally deviant? Hitherto,

Research Objective (VIII): If the subjective experience of time changes across tasks of increasing cognitive challenge, is it also subject to cultural variability? *See hypotheses Ho13 and Ho13a.*

The following set of findings address the relationships between the objective clock-based measures of time, activity and the resulting subjective estimate of the passage of time.

Ho13: As the complexity of cognitive challenges increase, the subjective experience of the passage of time decreases. Clock-time, high-tech cultures subjectively experience greater time to pass by than low-tech, event-oriented cultures. *Supported.*

Ho13a: Those more monochronic in orientation are also more accurate at estimating the true passage of time whilst performing a simple, non-taxing activity. *Partially Supported.*

Statistical Assessment

Monochronicity as with polychronicity can be defined according to emotion, mind and action. Looking at variability explained by emotion and mind, in terms of emotion mono/polychronicity cultural differences are assessed. Mind mono/polychronicity is assessed via the IPV to measure preferences pertaining to the mono/polychronicity continuum.

Subjective time estimation (STE) data are of non-normal distributions, thus to test for any significant STE differences across cognitive tasks of increasing complexity, the Friedman ANOVA Test is selected; the non-parametric alternative to the one-way repeated measures analysis of variance (Pallant, 2001).

Results pertaining to Ho13a are specific only to the Copy coding test and are featured as part of the next section to follow, entitled 'Comparisons of British and Greek STE Coding Data'. See Appendix 6O for all output relating to Ho13 and Appendix 6P for Ho13a.

Results

In terms of variability explained by 'emotion mono/polychronicity' STE descriptives for each of the British and Greek data sets are given directly below. Results pertaining to the three part coding task component are presented first, followed by the two part letter-matching task component. Hereafter, tests examining differences within each data set are presented and discussed. To conclude this particular section, results obtained from a Mann Whitney U test dealing with culture-based STE differences are presented.

Descriptives: Table Ho13A Subjective Time Estimates (ms)						
	British Sample			Greek Sample		
	Mean	*Median*	*St. Dev*	*Mean*	*Median*	*St. Dev*
Copy	37251.41	35000	16147.42	32824.81	30000	14700.98
Code Forward	28993.52	27500	12768.83	27190.96	25000	12931.87
Code Backward	26599.17	25000	11682.98	24816.68	22500	12459.29
Physical Identity	27594.60	25000	11792.35	25899.47	22500	12747.50
Name Identity	26894.48	25000	11998.51	24573.10	22500	12329.61

For the UK data set a significant outcome concerning coding STEs is apparent. With a Sig. Level of .000 ($p < .001$), the results suggest that significant differences in subjective time estimates occur across the three conditions of coding complexity. The mean ranks of the subjective time estimates significantly decline as the complexity of coding tasks increases ($\chi^2(2) = 158.99, p<.001$).

For the Greeks, subjective time estimation (STE) data distributions across each of the coding conditions reveal that as the complexity of the coding task increases from copy, to code forward and to code backward, subjective time estimates steadily decline. To ascertain whether distributions are significantly different, the results of the test support the contention that significant differences do occur across the three conditions of coding complexity. A comparison of the mean ranks reveals a steady decline in subjective time estimates as the complexity of coding tasks increases ($\chi^2(2) = 99.94, p<.001$).

Comparisons of British and Greek STE Coding Data

Examined are the differences in subjective time estimates across the two sampled nationalities, the British and Greek. As the STE data deviates from normality the Mann-Whitney U test is an appropriate non-parametric (assumption-free) test that is able to compare British and Greek-based subjective time estimates over the series of cognitively challenging tasks. In particular, the Mann-Whitney U test "is used to test differences between two independent groups on a continuous measure" (Pallant, 2001: 260).

Though the Mann-Whitney U test is considered as the non-parametric alternative to the independent samples t-test, medians as opposed to means are used to compare the groups (Field, 2005; Pallant, 2001). Hence, from the output below one is able to investigate the

existence of any possible differences that may exist in subjective time estimates concerning British and Greek respondents.

British STE (milliseconds/ ms) of the Copy task (*Mdn* = 35000ms) is significantly more than that for the Greeks (*Mdn* = 30000ms), *U*= 15353, $p < .005$, with a modest effect size, $r = -.15$. British STE (ms) of the Code forward task (*Mdn* = 27500ms) is not found to be significantly more than the Greeks code forward STE (*Mdn* = 25000ms), *U*= 1660.5, *ns*, $r = -.09$. British STE (ms) of the Code backward task (*Mdn* = 25000ms) is just significantly more than that for the Greeks (*Mdn* = 22500ms), *U*= 16442, $p < .05$, $r = -.1$.

To address Ho13a, in terms of 'emotion mono/polychronicity' the findings concerning subjective time estimates for the straightforward Copy task, reveal the British experience a significantly greater passage of time than the Greeks. Specifically, British STEs are considerably higher and more inaccurate than the Greeks as regards the true passage of objective time for this test. The true passage of time for this test was 30 seconds (30000 ms/ milliseconds), and though acclaimed for a strong grip on the mechanics of clock time, the British actually overestimate how much time has actually passed. In fact, this overestimation is out by approximately one third of the actual duration.

In terms of 'mind mono/polychronicity' the Greeks actually scored at the lower end of the dual MC/PC mid-range category, and significantly less so than the British to suggest less of a polychronic orientation in comparison. When examining the roles of emotion and mind polychronicity (that accounts for the dual approach) simultaneously upon subjective estimates of time's passage for a straightforward task those more *polychronic* are more accurate than monochronics and those operating the dual approach at estimating the true passage of time across both the British and Greek samples, though differences are not significant.

In terms of the British tendency to overestimate time for a simple cognitive test, such a result ties in with the theory that people in the achievement strivings countries of the 'West', i.e., Great Britain, are speeding up, losing time, and temporally out of sync. Though built upon principles of expectation, punctuality, speed and achievement, for a straightforward, unchallenging Copy task the British respondents overestimated the experience of clock-time's actual passage, to think more time had passed them by, than

had actually been the case. This simple conclusion has many implications, and particularly for a society governed by mental models that equate the value of time to money. Precisely, the subjective experiences of the loss of more time than has actually passed are expected to generate feelings of time running out, speeding up, and ageing before one's time.

As expected and in line with theory, with the deepening of cognitive involvement instigated by the increasing complexity of the Coding task, STEs significantly fell across both the British and Greek samples. Interestingly and as anticipated, the Greeks across all levels of complexity subjectively experienced less time passing them by than their British counterparts.

Letter-Matching Test STEs

To analyse the British and Greek subjective time estimate data for the letter matching tests, distributions of normality need to be inspected (See Appendix 6A). For the British and Greek samples, the data distributions for both the physical identity tests and the name identity tests are positively skewed, hence deviating from normality. As a point of interest, the letter matching data of subjective time estimates featured by Fink & Neubauer (2001) were normally distributed, resulting in a parametric test, such as the t-test for dependent observations (paired sample t-tests) being suitably appropriate.

Nevertheless, considering that the STE data at hand is non-normal, a non-parametric test is required. With one independent categorical variable, letter matching, across two levels (physical identity and name identity) and one continuous dependent variable, subjective time estimate (STE), the Wilcoxon Signed Rank test (also known as the Wilcoxon matched pairs signed ranks test) is the most appropriate non-parametric statistic to apply (Pallant, 2001). Thus, when faced when repeated measures across differing conditions or time frames with the same subjects the Wilcoxon Signed Rank test is recommended (Pallant, 2001).

UK Data Set

Wilcoxon Signed Ranks Test

The UK sourced distributions of STE data for the physical identity and name identity tests are both non-normal. Consequently, the Wilcoxon Signed Rank Test is applied. Below are tables outlining the main descriptive statistics and results of the rank test.

From the output the Z value and the significance level associated with it (Asymp. Sig. (2-tailed) (p-value = .215) a non-significant result is observed. Hence, the null hypothesis cannot be rejected, as significant differences in subjective time estimates across the two letter matching conditions have not been found. This non-significant result is supported by the information presented in the output entitled "Ranks" and "Statistics".

Specifically, mean subjective time estimates for physical identity (*Mdn* = 25000ms) and name identity (*Mdn* = 25000ms) are 27594.60ms and 26894.48ms respectively, with the same median values. And although mean subjective time estimate just slightly falls as the letter-matching test increases in complexity from physical identity to name identity, this increase is not significant, $T = 5640$, *ns*, $r = -.09$.

The Z value and the significance level associated with it (Asymp. Sig. 2-tailed) is of most relevance (Pallant, 2001). As part of the output presented in Appendix 6P, with a Sig. Value of .006 the null hypothesis stating the existence of no differences in subjective time across the two letter matching conditions is rejected. For details as to where actual differences exist one may refer to the output entitled 'Ranks' and 'Statistics' to see that mean subjective time estimates for physical identity and name identity are 25899.47ms and 24573.10ms respectively. As anticipated, as the complexity of the letter matching task increased from physical identity to name identity, subjective time estimates significantly declined, $T = 3663.5$, $p<.01$, $r = -.20$.

Comparisons of British and Greek STE Letter Matching Data

The British (*Mdn* = 25000) subjective time estimate of the passage of time is significantly more than the Greeks (*Mdn* = 22500) at the first level of letter matching complexity (physical identity: only one line of thought considered; *physical identification*), $U = 16420.5$, $p<.05$, $r = -.1$. To recap, as task complexity increases the concomitant subjective experience of time is expected to lessen. For the more complex

condition (name identity: two lines of reasoning considered; *physical identification and semantic identification*) the British (*Mdn* =25000ms) and Greeks (*Mdn* =22500ms), experience significantly different subjective durations of time.

The British not only experience time passing by faster, but when one examines the actual mean values across both samples for the letter matching tests, the British reap little sensation of a decrease in experienced time vis-à-vis the actual passage of time (objective clock time = 25000ms), despite increasing task complexity. In contrast, yet as anticipated, the Greeks subjective time estimates are significantly more affected, U = 15945, $p<.05$, r = -.12.

Analysis of Results

Subsequently, in terms of the relationships across STEs and indicators of stress, it may be reasonable to state that the perceived loss of time is expected to create dissonance, and as shown, certain relationships vary according to culture. Hence, in considering the literature review and the findings so far, it is expected that people that are subjectively experiencing a greater passage of time than has actually passed as measured by the clock, will consequently incur greater levels of stress (i.e., role overload, role ambiguity) and less satisfaction in life. Is this a characteristic of high-tech societies?

As noted via first-hand personal observations whilst collecting data from Greece, the Greek students sampled seem to portray a definitive polychronic attitude in the management of their academic life quite unlike that observed for the British students sampled. To elaborate, and in accordance with cultural research on polychronicity, the argument that espouses the Greeks are more socially- (as opposed to schedule-) oriented than their British counterparts was certainly apparent in the lectures attended outside of data collection sessions, manifesting as steady streams of latecomers and students that answered their phones whilst in a lecture to then continue the call by leaving the lecture room.

Even so, despite the apparent lack of division governing the roles of a Greek's professional and social life, the findings suggest that in adopting and reckoning the passage of the predominant time management model driven by the clock and linear conceptions, the Greeks are actually more proficient at the task than the British.

Indicative of a potential discord underlying the sampled British mentality, pertaining to subjectively estimating an objective passage of time, this result does in actual fact tie in with the finding revealed via applications of the IPV scale- a measure of preferred polychronic time use (mind polychronicity). Specifically, the Greeks are more monochronic/ clock-oriented than the British within the setting of a global school of thought. Thus, the finding that the Greeks are more proficient than the British at estimating the passage of clock time is not too surprising. This is also in accord with present findings relating to Greek respondents possessing significantly greater levels of perceived control of time compared to the British respondents (see Ho6).

6.5 Chapter Summary: Data Analysis

In clarifying complex, multidimensional constructs such as polychronicity and Type A behavioural orientations for the purposes of theoretical, comparative research efforts, the hypotheses addressed throughout the present chapter have served to illuminate the finer performance-related motivational dimensions and coping mechanisms, arising from the collective culture- as well as individual-based realms of emotion, mind and/ or action. To ascertain the existence of 'cultural variability' vis-à-vis 'equivalence' across global schools of thought (universities), speed and accuracy outcomes have been incorporated to create an objective benchmark that allows for international comparison and replication.

Compared to the 'Poly-khronos Greeks', the 'high-speed', 'high-accuracy' 'Clock-time British' (see Ho1) are apparently feeling overworked, as marked by the experience of significantly higher levels of role overload, role ambiguity and behavioural orientations towards stress (see Ho8). The 'high-tech' British society (characterised by dual M/P-time technologies) is steeped in an environment whereby the connotation of 'activity level' (a specific indicator of 'action polychronicity') tends more toward a detrimental behaviour-related outcome rather than a work-related opportunity.

Specifically, the results of the bi-dimensional Type A factor analyses reveal 'activity level' (action polychronicity) for the Greek sample is in accord with research conducted by Sutil *et al.,* (1998) upon a Spanish population. For the British sample and contrary to prior research concerning this recently created bi-dimensional scale measure of Type A behavioural orientations, 'activity level' actually loads more so as an orientation towards stress rather than work. Unfortunately, due to the low Cronbach alpha reliability value

for the scale, main statistical analyses concerning Type A behavioural orientations to stress have not been included.

Interestingly, in terms of 'emotion polychronicity' as inspired by Hall's (1989) description of M/P-time cultures, Mediterranean nations are P-time (high in emotion polychronicity) to include Greece and Spain, whereas North European states are more M-time (low in emotion polychronicity), to include Britain, which is also a 'high-tech' society. Hitherto, cultures high in 'emotion polychronicity', i.e., Greece and Spain seem to perceive 'activity level' (action polychronicity) as a favourable attribute of a behavioural orientation towards work. In comparison, M-time Britain is low in 'emotion polychronicity', and positions 'activity level' (action polychronicity) as a behavioural orientation towards stress.

In this respect, harmony across the elemental dimensions of polychronicity, 'emotion', 'mind' and 'action', appear to elucidate upon eventual behavioural orientations towards either work or stress. To explain, the Poly-khronos Greeks (and the Spanish) are P-time cultures (Hall, 1989), and thus, high in emotion polychronicity- a condition arguably more favourable for possessing a more positive inclination towards, and preference (mind polychronicity), for matters of 'activity level' (action polychronicity). The clock-time British are culturally defined as M-time (low emotion polychronicity), yet are also 'high-tech' (Bradsher, 2007; <http://english.peopledaily.com/cn>; Piga & Poyago-Theotoky, 2005; The Economist US, 2001), and are possibly less likely to experience congruence across the three elemental dimensions of polychronicity, emotion, mind, and action.

To better conceptualise and theorise the endeavours of international marketing research, applications of the 'Emotion-Mind-Action Complex' allow for a more clarified impression of the interplay present across individual-, cultural- and context-related coping mechanisms (emotion), the role of the rational mediator (mind), and observable reactions/ behaviours (action). The primary application of 'EMAC' by the present thesis has been to provide clear demarcations across dimensions of Type A behavioural orientations (action polychronicity), emotion polychronicity (P-time and/ or M-time cultures), and mind polychronicity (cognitively-driven preferences for multi-tasking, task-switching behaviours) (see Ho2, Ho3a, Ho5).

Consequently, as indicated by the present thesis, for thought-based preferences for multi-tasking and task-switching (mind polychronicity) to successfully translate into a successful behavioural orientation (action polychronicity) some sort of emotional consent is arguably tantamount to an overall experience of congruence (harmony). Thus, although multi-tasking is synonymous with the technology-infused world (Turner & Reinsch, 2007) it comes at a price, and particularly so for cultures less P-time in terms of 'emotion polychronicity'.

Benchmark barometers of speed and accuracy gleaned from cognitively challenging conditions akin to global schools of thought (universities) allowed for standardised comparisons for hypotheses pertaining to cultural variability (see Ho1); personality, i.e., achievement strivings and impatience/ irritability (see Ho9); mind polychronicity (preferred temporal orientations) (see Ho12) and also the subjective experience of time's passage (see Ho13a).

Conceptual confusions across personality traits such as achievement strivings, impatience/ irritability, and Type A behavioural orientations towards stress or work have also been addressed by the present thesis and have been shown to demonstrate differential effects across both gender and culture (see Ho3a).

The results also reveal that applications of the tri-dimensional approach are relevant for refining interpretations of scale measurements, i.e., the mono/polychronicity continuum (see Ho1a). For example, by refining the preferred temporal orientation continuum (mind polychronicity), to incorporate the dual approach, the category characterised by the greatest degree of variability in terms of impatience/ irritability across the Greek and British respondents was those of a high monochronic orientation.

Up until the present research endeavour empirical investigations into the cognitive aspects of polychronicity have predominantly centred upon that of a bi-dimensional tact: either monochronic or polychronic. Very few efforts address the midrange of the continuum, which have only ever been conceptualised as 'neutral'. This thesis argues for an alternative category to be considered. Specifically, as long as the majority of the responses pertaining to the mono/polychronicity continuum are not of an indifferent

response (neither agree nor disagree) a dual monochronic and polychronic preference is seemingly at play, typical of high-tech societies. Thus, to advance upon contemporary efforts concerning the continuum from that of a diametric consideration to one more dialectical, the combined approach is also deemed necessary to present an informed doctorate of philosophy representative of the essential stages of 'thesis', 'antithesis' and 'synthesis'.

Self-efficacy was also examined for differential relations across the triad of 'mind polychronicity' categorisations to reveal findings not previously investigated (see Ho5). Specifically, as part of preliminary-level analyses differences in self-efficacy were tested for across the three preferred temporal categorisations, monochronic/ MC, dual MC and PC, and polychronic/ PC, to elucidate upon findings gathered from conventional diametric conceptualisations; namely, monochronic or polychronic. A definitive relation across self-efficacy and high levels of mind polychronicity was only obtained via the tri-dimensional approach, improving upon the 'either monochronic or polychronic' approach.

Innovative results employing multivariate techniques are also offered in terms of the roles played by personality traits, involving achievement strivings, perceived control of time, as well as culture upon life satisfaction (see Ho6a). Interestingly, and in operation with self-efficacy, although perceived control of time is a trait possessed more so by the Greeks (see Ho6), the British model positions perceived control of time as a factor that leads to greater levels of life satisfaction. A similar relation fails to manifest for the Greek model, which actually positioned greater levels of achievement strivings alongside self-efficacy as relevant for greater levels of life satisfaction. This positive and significant link across achievement strivings and life satisfaction however, was not found for the British model.

Cultural variability has also been supported in terms of relations hypothesised across speed vis-à-vis personality traits- specifically, impatience/ irritability and achievement strivings (see Ho9). Similarly, relations pertaining to mind-based preferences for polychronicity and culture (indicative of emotion polychronicity) with respect to role overload have also been divulged and are supported as hypothesised (see Ho10).

This thesis has also shown that the presence of cultural variability in terms of the mono/polychronicity continuum across objective performance measures of speed, whereby the Greeks manifest a significant and inverse relation across mind polychronicity and speed, not found for the British (see Ho11). Alternatively, comparisons of measures of accuracy have allowed for more informed insights (see Ho12) to divulge comparatively equivalent results across both the British and Greek national samples; in particular, those higher in preferred mind polychronicity are found to be most accurate (see Ho12). Lastly, objective and subjective passages of time have been examined in terms of cultural variability to reveal a definitive lack of equivalence in terms of the subjective experience of time's passage vis-à-vis task performance of increasing cognitive challenge (see Ho13 and Ho13a).

It seems that via the seemingly successful adaptation to that of the context of a monochronically scheduled global school of thought, the Greeks are significantly more monochronically clock-oriented and also possess greater levels of perceived control of time compared to the British sample. Interestingly, the British sample was found to be *both* monochronic and polychronic in terms of their preferred time management behaviours (mind polychronicity). For an overall presentation of discussions and summaries pertaining to the afore-mentioned findings, please see the next chapter.

CHAPTER 7: DISCUSSIONS AND SUMMARIES

"Not everything that can be counted counts, and not everything that counts can be counted."
Albert Einstein (1879-1955)

"We are shaped by our thoughts; we become what we think. When the mind is pure, joy follows like a shadow that never leaves."
Buddha (563 BC-483 BC)

7.1 Introduction

Chapter 1 (Introduction) began with an overview of the main structural elements driving the present research endeavour. Specifically, culture, alongside constructs of personality, and mechanisms of coping were investigated for effects upon outcomes of speed and accuracy; behavioural orientations towards work; and life satisfaction. See Figure 1.2A (Ch. 1, Section 1.2A) for an overview of the 'Structural Model of Main Linkages' constituting the present research effort.

Eight research objectives were identified as well as a series of accompanying hypotheses (research questions) to address current gaps in the literature pertaining to the academic and international marketing research arena. Having presented the individual results relating to each of the hypotheses (research questions) as part of the preceding chapter, the underlying theme of the present chapter is to summarise the results obtained in accord with each of the research objectives that have served to drive this thesis from thought into empirical action.

7.2 Recap of Research Objectives

To provide a discussion of the main findings gleaned from the present study it is necessary to tie the results of the preceding chapter into a coherent theme. Thus, to convey the main marketing research findings it is necessary to refer back to the main research objectives initially introduced in Chapter 1 (Introduction). Hence, to recap:

Research Objective (I): How can the constructs of polychronicity and Type A behavioural orientations be both conceptually and theoretically refined to clarify present-day confusions pertaining to their underlying multi-dimensionality? *See hypotheses Ho1, Ho1a, Ho2, Ho3 and Ho3a.*

As a sign of 'Time's' growing presence, recent years have witnessed a number of learning disciplines, spanning the fields of sales and marketing, consumer behaviour, economics, quantum mechanics, and systems of computing (in addition to philosophy and anthropology) to become increasingly aware of the need to expand traditional conceptualisations of temporal perceptions (e.g. Conte & Gintoft, 2005; Frei *et al.,* 1999; Ruiz & Reynolds, 2007; Zhang *et al.,* 2005). Accordingly, much more research is incorporating alternative, more multiplicative theory-driven models of time-related decision-making that develop upon the prevailing western model of linear time management (Ancona *et al.,* 2001b; Palmer & Schoorman, 1999).

Thus serving to drive this thesis, in view of time valuation tendencies in an ever-increasing global economy, research across cultures is necessary to determine which behaviours are culture-specific, and which are universal (Blount & Janicik, 2001). In terms of conceptual improvements as regards constructs of polychronicity and Type A Behaviour Patterns, and as inspired by Bandura's (1977a,b, 1982) social and cognitive learning theory, an appreciation of the exact, multi-dimensional nature of such 'coping' constructs is essential.

Without clearly defined demarcations of what exactly is being measured (i.e., a *personality* trait or an overt *behaviour* pattern; *preferences* for multi-tasking/ *'mind' polychronicity* or actual multi-tasking *behaviours/ 'behavioural polychronicity'*?), such multi-dimensional constructs of an 'Emotion-Mind-Action Complex' are inaccurately conceptualised and misconstrued. Quintessentially, to identify a globally applicable framework of complex coping strategies and mechanisms in general, techniques of comparative, theoretical methods of research are of relevance.

Theoretical, conceptual, and empirical contributions from research fields, such as self-efficacy, polychronicity, and Type A have provided the theoretical and conceptual basis of the 'Emotion-Mind-Action Complex'. In terms of contributions to research, to enable a more refined appreciation of Type A behaviour pattern in terms of its overlap with polychronicity this thesis has presented the 'Emotion-Mind-Action Complex' (EMAC); a rudimentary tact to assist in differentiating Type A from polychronicity. Specifically, when inspecting 'polychronicity' as a tri-dimensional 'Emotion-Mind-Action Complex'

it is unique to the 'Emotion-Mind-Action Complex' that characterises Type A Behaviour (see section 4.2, ch.4).

To briefly recap, the emotional and cognitive motivational states described by Hall's (1989) 'polychronicity' *are not* equivalent to emotional and cognitive states characteristic of the overt Type A Behaviour Pattern (Friedman & Rosenman, 1974), although multi-tasking, task-switching behaviours *are* (action polychronicity). This specific approach to conceptualisation is a main contribution offered by the present endeavour, and aims to clarify the overlap that exists across polychronicity and Type A- namely an overlap that in terms of 'action' (behaviours), rather than in terms of 'emotion' or 'mind'.

Hitherto, inconsistent research efforts have arguably resulted from errs with respect to conceptualisation and theory, as well as from a lack of awareness concerning the actual dimension, i.e., emotion (e.g., cultural affiliation), mind (e.g., cognitive preferences), and/ or action (e.g., behavioural orientations) under investigation. Thus, whilst accounting for matters of multi-dimensionality pertaining to the differential contributory mechanisms of coping, i.e., cognitive and emotional sources of motivation and intent, traits of personality vis-à-vis distinct behavioural orientations (i.e., Type A) also need to be more precisely differentiated to address current states of conceptual entanglement.

In terms of the bigger picture, these fields are concerned with coping mechanisms and are subject to influences arising from the individual, culture, environment, context and nature of task performed. Specifically, to invoke a more informed impression of factors such as polychronicity and the Type A Behaviour Pattern, the role of task and context also have to be justifiably built into one's model to reckon behaviours. In terms of undertaking comparative research this specification was deemed essential to better understand the different dimensions of polychronicity and the Type A Behaviour Pattern.

Thus to address gaps in the literature and build upon theory, this thesis has explored the proposition that individual and cultural orientations of 'time' significantly impact upon 'response time' behaviours across cultural groupings (see Ho1). Moreover, pertaining to the mono/polychronicity continuum, and unique to prior research efforts, this thesis has also addressed the relevance of the dual approach, i.e., the midrange category (dual MC&

PC), in addition to the extreme perspectives, i.e., monochronic (MC) *or* polychronic (PC) (see Ho1a).

The mono/polychronicity continuum has also been examined for its differential impacts upon expectations and employment that manifest from socio-cultural, 'emotion-based' elements of polychronicity (in keeping with Hall's cultural anthropological descriptions of M-time, P-time, and dual M/P-time societies) vis-à-vis cognitively driven preferences (mind polychronicity) as measured by Bluedorn *et al.,* (1999) Inventory of Polychronic Values, IPV) (see Ho2). Also gender-related analogies pertaining to the continuum have also been addressed (see Ho3).

Similarly, to demarcate the role of socio-demographics and personality from overt behaviour patterns, the differential effects of achievement strivings and impatience/ irritability vis-à-vis Type A behavioural orientations towards work have been tested for via the design of comparative research methods. This has enabled a more refined impression of the specific relations at play regarding Type A behavioural orientations and personality (i.e., achievement strivings and impatience/ irritability) across culture, gender and 'mind polychronicity' (see Ho3a)

Consequently, research pertaining to global strategy, cultures, organisations, individuals and high-tech societies is argued to benefit via applications of 'EMAC'. In addition, tri-dimensional categorisations of mono/polychronicity, which incorporate the dual monochronic/ MC and polychronic/ PC approach (as opposed to only the extremes; that is *either* monochronic *or* polychronic), unique from 'neutral' categories (Zhang *et al.,* 2005; Lindquist & Kaufman-Scarborough, 2003), are also advised.

Hitherto, by undertaking comparative research an informed understanding of 'Culture's Management of Time across Global Schools of Thought' is offered, and provides a benchmark for comparing *mechanisms of coping* and *behavioural orientations* investigated by similar research efforts (Graham, 1981, 1982; Hall, 1989).

To offer new research contributions, applications of a tri-dimensional categorical approach was tested for the first time by the present thesis for its relations with perceived self-efficacy. Driven to address related theoretical and empirical gaps in the literature,

and to engender more refined interpretations of the mono/polychronicity continuum across culture, the second main research objective was identified, and offers innovative findings. To recap,

Research Objective (II): The second major research objective driving this thesis is to test for relationships across self-efficacy and 'mind polychronicity' (preferred temporal orientation). Is this relationship culturally invariant within the context of global schools of thought? *See hypotheses Ho4, Ho5.*

Findings from the present study were in line with previous research efforts in terms of self-efficacy's role upon outcomes of desired performance (Barling & Beattie's, 1983; Krishnan *et al.,* 2002; Lee & Gillen, 1989; Taylor *et al.,* 1984; Vinchur *et al.,* 1998) (see Ho4). In addition, self-efficacy was also revealed as a negatively related predictor of stress (Bandura, 1977a,b; Jerusalem & Schwarzer, 1992; Kirmeyer & Diamond, 1985; Folkman & Lazurus, 1980; Price, 1982) (see Ho4). Greater self-efficacy leads to less role ambiguity (see Ho8).

In addition, as previous research findings offer no clues as to the cultural variability in measures of life satisfaction that may result from central sets of personality-style predictors, i.e., self-efficacy, perceived control of time, and achievement strivings (AS), this thesis does. Also addressed by the present thesis are the relations, which exist across monochronic *and/or* polychronic time use preferences and perceived control of time both within and across culture. Thus to recap,

Research Objective (III): What are the effects of perceived control of time upon preferred temporal orientation (mind polychronicity) and satisfaction across cultures? *See hypothesis Ho6, Ho6a.*

It is revealing to see that perceived control of time is subject to cultural variability (see Ho6). Interestingly, it is the 'Poly-Khronos' Greeks (high in emotion polychronicity) that perceive a greater control of time than the 'Clock-time' British. Hitherto, not only are the Greeks more monochronic than the British in preferred temporal orientation (low mind polychronicity) in the context of academic study, but they also perceive themselves to have a greater control of time. Hence, despite being the home of Greenwich Mean

Time, Britain's future (as defined by university-taught academics), perceive significantly less control of time than the Greeks. Also, in view of Britain's high-tech, high-speed and high-accuracy tendencies, it is surprising to find the British respondents sampled perceive little control of time. Is this is consequence of stress? Is 'Time' always running out?

Outcomes such as these bring home the importance of context, and how behaviour can be adapted to cope with virtually any system of organisation- be it the system of society and its normative codes and values to engage a sense of emotional involvement (belonging), or the deep-rooted clock-work mentality of global schools of thought, i.e., universities, to engage the mind. Apparently, the Greeks perceive significantly greater levels of mastery regarding the control of time, and more so than the historically steeped, 'Clock-time British'. The following passage taken from Hall (1989: 46) captures the essence of how the differing systems of cultural and clockwork time and teaching infiltrate one another, as well as how they may come back to haunt us:

"Once, in the early '60s, when I was in Patras, Greece, which is in the middle of the P-time belt, my own time system was thrown in my face under rather ridiculous but still amusing circumstances. An impatient Greek hotel clerk, anxious to get me and my ménage settled in some quarters, which were far from first-class, was pushing me to make a commitment so he could continue with his siesta. I couldn't decide whether to accept this rather forlorn "bird in the hand" or take a chance on another hotel that looked, if possible, even less inviting. Out of the blue, the clerk blurted, "Make your mind up. After all, time is money!" How would you reply to that at a time of day when literally nothing was happening? I couldn't help but laugh at the incongruity of it all. If there ever was a case of time not being money, it was in Patras during siesta in the summer."

Of interest Hall describes the Greek clerk as 'impatient', a trait empirically supported by the present study, and particularly so for Greeks categorised as monochronic. Though signs of emotional expression may be more the norm for P-time (high emotion polychronicity) cultures, i.e., Greece, impatience may also potentially arise from incongruence experienced across one's personal and work life.

To address the latter half of the third research objective 'perceived control of time' was tested for cultural variability in predicting satisfaction with life, across global schools of thought (see Ho6a). Also incorporated in the model as predictors of life satisfaction, were self-efficacy and achievement strivings. A significant model resulted for the combined sample, which was broken down according to national culture (British and Greek) to test for cultural effects. Some very interesting changes resulted.

Specifically, in predicting life satisfaction across the British respondents only, the link with achievement strivings lost statistical significance; only perceived control of time and self-efficacy remained significant. Alternatively, with the Greek respondents, perceived control of time lost its significant link to life satisfaction, whereas achievement strivings increased in significance. Self-efficacy nevertheless, across both the British and Greek samples, remained highly predictive. However, in terms of which culture perceives greater control of time, it is the Greeks- although this does not lead to an experience of greater satisfaction. In contrast, the British of significantly lesser levels of perceived control of time compared to the Greeks, are more accurately modelled by a positive link from perceived control of time to life satisfaction.

In terms of the British, is it possible that it is the yearning for an experience not mastered (i.e., perceived control of time) that creates the belief that it may lead to greater levels of satisfaction?

Moving on, the next major research objective addressed by the present thesis relates to the identification of the socio-cultural and personality parameters that were predictive of desired orientations towards work, as well as those less desirable. Thus, to recap on the specific research objective addressed,

Research Objective (IV): What are the predictors of a positive Type A behavioural orientation towards work? Conversely, what are the main predictors of stress-related outcomes such as role ambiguity? *See hypotheses Ho7 and Ho8.*

A standard multiple regression was performed to predict Type A behavioural orientations towards work (Ho7). In contributing to a positive work orientation three variables were found to be significant: nationality (indicative of the British or Greek culture),

achievement strivings and impatience/ irritability. Respondent sex was found to be a borderline predictor. To recap findings from Ho3a, across both the British and Greek samples, men are more positively work oriented than women, as are the Greek respondents. Conversely, in terms of achievement strivings, women are more typical of this trait than men across both cultures.

Hitherto, the straightforward relationship one would have expected from the present thesis is a link across achievement strivings and a positive work orientation. The converse is actually apparent. In fact, a certain level of impatience and irritability is seemingly desirable for a positive work orientation- a relationship stemming predominantly from the Greeks. In terms of 'emotion polychronicity' the P-time Greeks typify higher levels of this cultural dimension compared to the 'Clock-time', 'High-tech' British. Thus, it seems that it may be a good idea to 'let it out' from time to time, which should then afford a more positive orientation towards work. The results appear to suggest that it cannot always help to bottle your feelings up. Maybe suppressing one's darker side merely manifests elsewhere?

To suggest it may be appropriate to release such feelings of impatience/ irritability to some would seem like strange advice- particularly to those of societies where the display of anger is frowned upon. All the same, it is these very same societies (i.e., the British) that are incurring significantly higher levels of role overload and role ambiguity compared to those that do 'let it out' from time to time (i.e., the Greeks) (see Ho8).

Of interest, in predicting role ambiguity (Ho8), achievement strivings was negatively related. That is, lesser degrees of achievement strivings tend towards greater role ambiguity. Thus, although achievement strivers might know what they are doing (i.e., they experience less role ambiguity), a positive outlook is not necessarily afforded. As the old saying goes, 'you can't have your cake and eat it'. Also by pursuing the path of achievement strivings, individuals take on greater workloads, work longer hours, have less time to 'create one's day' (Dispenza, 2006), address their 'emotions', reflect on the self, and 'put one's day to rest'.

Hitherto, although achievement strivings is a way to get 'recognition', and have a 'goal' in life, it is argued as conditional upon the norms and values perpetuated by the culture

one is steeped in, as well as the strains incurred. Accordingly, too much striving for achievement may tend to little actualisation, and particularly so for the British.

There may also be much benefit to reap by expressing the so-called 'negative', which may simply constitute the everyday tensions and hassles faced by everyday society. Without the correct channelling of these tensions and energies that call for 'action', where would martial arts be now? By being able to accept the darker side of personality as normal, such behaviours can then be channelled appropriately to alleviate the mind, body and spirit from day to day stressors. As the old saying goes 'Everything in moderation'; thus, it is possible that the expression of anger can be productive, as well as provide relief, if consciously managed.

The dichotomy of thoughts (logic) and feelings (emotions) is brought to mind. In accordance with whether a culture is high or low context, the approach to problem solving and decision-making is not always a consequence of rational processing. Steeped in a culture of 'logic' initiated by the Greeks certain cultures, i.e., the British may perceive rational deduction as the only means to successfully express themselves (Hall, 1989).

For example, "The Japanese see our syllogistic method and its deductive reasoning as an effort to get inside their heads and do their thinking for them... the way to reach the Japanese was not with the low context logical reasoning of Thomas Aquinas, but by emphasizing something else-namely the wonderful feelings that one had if one were a Catholic. Feelings are rooted in one part of the central nervous system, while words and logic are a function of an entirely different area of the brain. To reach people, you have to know which part of the brain to involve!" (Hall, 1989: 63).

In view of the findings, it may be reasonable to suggest that it is a ***culture's management of time, activities and change*** that dictates *why* a certain part of the brain is predominantly called upon by differing cultures. To explain, certain cultures may call upon traits of impatience and irritability to 'get them going', 'get things done', and to propel ideas into action via the use of emotion. Therefore, maybe emotions are more at play than rational thought, i.e., 'what others might think of them'? Maybe the expression of impatience and irritability is actually better than 'bottling it up'? It is argued that as

long as the individual believes it is a 'bad thing' to feel impatient and irritable then any sign of it may cause internal states of dissonance. Of interest, how are emotions affected by brain and how do they enable or prevent a positive work orientation?

Consequently, could there be an 'American' bias in terms of prior empirical findings that concern achievement strivings, and impatience/ irritability? To delve deeper into these traits, it is a good idea to recap on their relations with speed, as differentiated by culture. Thus, leading onto the fifth research objective,

Research Objective (V): What are the relationships across speed, impatience/ irritability, and achievement strivings, and how is this differentiated according to culture? *See hypothesis Ho9.*

Due to non-normal distributions across speed/ reaction time (RT) measures, Spearman's rank correlation coefficient was used. In comparing the British against the Greeks, greater levels of impatience/ irritability (II) correlated with longer measures of reaction time across British respondents. Of much surprise, increased II actually correlated with longer reaction times across British respondents, almost appearing as if II actually served to worsen matters. In contrast, though in line with the hypothesis, the Greeks use of speed/ reaction time was inversely related to impatience/ irritability. Greater levels of Greek impatience/ irritability tended towards faster reaction times. This was not found for the British. Consequently, the Greek respondents are able to engage traits of impatience and irritability to speed activities up.

The present research extends upon previous work by Ishizaka *et al.,* (2001) via examinations of relations across attentional strategies and performance that also account for cross-cultural variability. Specifically, prior to the present endeavour, achievement strivings and impatience/ irritability (valuable characteristic measures of personality that also contribute to an understanding of time urgency) have not been examined for cultural variation across objective measures of speed of psychometric information processing; hence, this gap in research is also addressed.

In a related vein and in view of such cultural implications, it is of interest to ascertain how effectively cultures as diverse as Britain and Greece, though still characterised by

similar patterns of thought processing and logical reasoning, managed the effects of role overload. Hitherto, a recap of the sixth objective is required,

Research Objective (VI): What is the relationship across preferred temporal orientation and role overload; specifically, are cultures categorised as P-time i.e., the Greeks, particularly adept at handling role overload in view of socio-cultural tendencies towards 'many-at-a-time'? *See hypothesis Ho10.*

To address gaps in the literature it was of interest to divide the sample according to nationality and gain an untainted impression of the strength and magnitude of actual relations across preferred temporal orientation (mind polychronicity) and role overload. In support of hypothesis Ho10, a significant inverse relationship was found for the Greek sample only, in terms of relations across role overload and preferred temporal orientation.

This result was anticipated and suggests the Greeks (high in emotion polychronicity) are more adept at alleviating the experience of role overload via increased levels of cognitively driven, polychronic coping mechanisms (mind polychronicity). Does this relationship fail to manifest for the British due to being less favourably situated as a 'clock-time', 'high-tech' nation? For example, maybe it is easier for cultures more 'P-Time' (higher in emotion polychronicity) to engage in increased levels of 'mind polychronicity' to manage the effects of stress? Maybe 'harmony' across the elements of the 'Emotion-Mind-Action Complex' is the key?

As a diagnostic tool, preferred temporal orientations (mind polychronicity) is a coping device and aids in the management of 'activities-to-time (clock time and/ or event time)'. To advise diverse cultures, as well as those more complex, i.e., 'high-tech societies', the dual monochronic *and* polychronic approach has been conveyed by the present thesis as a highly relevant research effort (see Ho1a).

Gaps have also been addressed by assessing speed and accuracy differentials across more distinguished demarcations of the mono/polychronicity continuum. Thus, in terms of the penultimate objective,

Research Objective (VII): What is the specific interplay across mind polychronicity (i.e., preferred temporal orientation), speed and accuracy? *See hypotheses Ho11 and Ho12.*

To address this research objective, measures of speed and accuracy were assessed for cultural variability. In accord with hypothesis Ho12, the Greek sample manifests a significant inverse relation with 'Copy' speed (reaction time/ RT). A similar relationship failed to manifest for the British. Of interest, all relations across speed and preferred polychronicity were in the expected negative direction for the Greek respondents. This was not replicated by the British sample. Specifically, two measures of speed were in fact positively related with preferred 'mind polychronicity'. Accuracy results were on a par with those gleaned for speed.

By refining the construct of polychronicity across three dimensions to also include the midrange, dual approach, more information was made available. Specifically, those high in preferred polychronic orientation attain higher levels of accuracy, as measured by scores of psychometric intelligence, though this outcome was only statistically significant for the Greek sample.

Finally, this thesis also served to address the lack of empirical study pertaining to culture's role in terms of the subjective experience of time vis-à-vis objective measures of time over tasks of increasing complexity. Thus, to recap on the final objective,

Research Objective (VIII): If the subjective experience of time changes across tasks of increasing cognitive challenge, is it also subject to cultural variability? *See hypotheses Ho13 and Ho13a.*

As shown by the present thesis the subjective experience of time is greatly affected by culture, task and complexity, and bears an enormous effect upon subjective time estimates (STEs). For example, in terms of the Copy task, British respondents experienced significantly more time pass by as compared to the Greeks. Also, British STEs were considerably higher and more inaccurate than the Greeks under straightforward, non-taxing test conditions. Thus, despite being a prime nation to drive

the mechanics of clock time into a global reality, the British significantly overestimated the passage of time.

What does this mean? One response is of concern. In particular, if the subjective experience of losing more time than has actually passed is occurring, then debatably less time is spent in the 'here and now'. Hitherto, feelings of time running out, or speeding up, may be more of a day-to-day reality, and particularly for societies 'high-tech' in orientation.

As expected and in line with theory, with the deepening of cognitive involvement instigated by the increasing complexity of the Coding task, STEs significantly fell across both the British and Greek samples. Interestingly and as anticipated, the Greeks subjectively experienced less time passing them by than the British.

To conclude, in discussing the subjective view of time Kaufman-Scarborough (2006) is drawing the parallels to where time is NOT money and uses the example of ageing. "The subjective, or experiential aspects of time, are chosen, experienced, and perceived by individuals based on their own innate characteristics. They are valued in and of themselves, based upon matters of inherent worth, rather than valued as money in the context of wages...Although it has been paralleled to money, there are many important distinctions between time and money. For instance, time cannot be stored and invested like money. Instead, accumulating the passage of time in one's life represents 'aging', while accumulating money indicates that wealth is being accrued" (Kaufman-Scarborough, 2006: 67). In terms of 'face value' it seems that for the vast majority, the saving of time means the 'spending' of more and more money in an effort to look less 'spent'.

7.3 Chapter Summary: Discussions and Summaries

To conclude this chapter a vast array of hypotheses have been generated to specifically address the main research objectives at the heart of this thesis. To now apply the empirical findings into operational tools of multiple managerial implications, as well as suggest future lines of research and bring a close to this thesis, please read onto the final chapter.

CHAPTER 8: MANAGERIAL IMPLICATIONS, LIMITATIONS, FUTURE RESEARCH AND CONCLUSIONS

"Perfect present has no existence in our consciousness. As I said years ago in Erewhon, it lives but upon the sufferance of past and future. We are like men standing on a narrow footbridge over a railway. We can watch the future hurrying like an express train towards us, and then hurrying into the past, but in the narrow strip of present we cannot see it. Strange that that which is the most essential to our consciousness should be exactly that of which we are least definitely conscious."

Samuel Butler (1835–1902)

8.1 Introduction

In terms of practical implications for research the present thesis has unravelled how culturally variant the management of 'activities (one at a time or many at a time)-to-time (clock or event)' is in actuality. Cultural variability in terms of emotional expression, coined as 'emotion polychronicity' by the present thesis, serves to clarify confusions pertaining to the multi-dimensional construct of polychronicity; a triad complex made up of emotion, mind and action.

In targeting a culture/ audience the differential role exhibited by polychronicity in terms of emotion, mind and action, can assist researchers, managers and businesses alike to promptly recognise the most sought after combination of factors that will engender desired levels of monochronicity and/ or polychronicity most suited for positioning a product/ service category within a new target audience/ culture. For example, "more polychronically oriented consumers may be more successfully marketed to by learning which types of activities they would like to have combined with others" (Bluedorn *et al.*, 1992: 23). As an important implication stemming from the present study, those pursuing a dual monochronic and polychronic have typically not been accounted for. Also, depending upon context and nature of activity it is plausible to expect that such entities may also incur incongruence across internal and external sources of timing sensibilities.

For the present study the universalistic setting of a global school of thought serves to 'contextually ground' the current research endeavour so as to limit the effect of extraneous variables, and thus aid more exact impressions of variability arising from specific traits of culture (i.e., high-tech versus low-tech; P-time versus dual M/P-time),

personality (i.e., achievement strivings, impatience/irritability), sociodemographics (i.e., age, gender), as well as mechanisms of choice and coping (i.e., mind polychronicity).

In view of the present research findings, one implication of the present study is that personality and culture play important roles to not only differentially relate to the 'perceived control of time' (Research Objective III), but also to the subjective experience of time's passage, which are subject to matters of context and task complexity (Research Objective VIII). Oft differences stemming from personality and culture go unrecognised. However, to engender refined theoretical and empirical conjecture this thesis reveals findings of practical application pertinent to cultures and organised entities driven by efficiency and effectiveness. Specifically, by identifying unique sources of variability across key performance measures, speed, accuracy, Type A behavioural orientations to work, as well as stress-related outcomes, cross-cultural activity-to-time-management interventions can be proactively administered.

For example, to inform the international business community, in light of the fact traits of personality, culture and coping mechanisms bear differential effects upon speed, accuracy, satisfaction and behavioural orientations, clear internationally applicable profiles and characteristics can aid an accurate identification of not only the 'most speedy' and 'most accurate', but also the 'most stressed' and the 'most satisfied'.

Speed and accuracy are also shown to be characteristic symptoms of the high-tech society dependent upon influences arising across both culture and traits of personality (Research Objective I and V). High speed and accuracy are key indicators of success and one main implication relates to the identification of personalities suitable for high-tech societies to undertake velocity management and maximise product and service delivery response (Rubin, 2001). Interestingly, the present research identifies that the deployment of certain traits (i.e., impatience/ irritability) has been shown to relate with certain advantages, namely, reduced speed of response across Greek respondents. However, this advantageous relationship was only identified with respect to the 'Poly-khronos' Greeks. In fact, the traits of impatience/ irritability actually served to hinder British performance; specifically, increased traits of impatience/ irritability tended towards longer response times.

Yet relations across impatience/ irritability and speed of response are not globally equivalent, therefore positioning culturally differentiated strategies as significant. Relevant to diagnostic health practitioners, applications of the 'Emotion-Mind-Action Complex' are of great assistance in distinguishing the multidimensional areas of Type A behavioural research and understanding its overlap with 'action polychronicity'. Each of the three facets constituting the complex derives from an explicit source and focuses on an aspect of 'coping'. Consequently, if any perspective is isolated on its own, a mere hint of the construct is only afforded, as in absence of the triad, singular unidimensional assumptions fall short of accurately encapsulating the total depth of the construct of coping investigated, i.e., polychronicity and the Type A Behaviour Pattern.

Accordingly, the 'emotion-mind-action complex' assists the meticulous researcher in conveying new and accurate theoretical and comparative research findings developed upon refined theoretical conjecture and contribution (Research Objective II & IV). Managerial implications include advancing from global constructs of Type A to constructs more bi-dimensional (namely behavioural orientations towards work or stress) as well as accounting for the differential roles played by emotion, mind and action to accurately account for sources of variability manifest in orientations to stress or work and thus enable accurate diagnosis and treatment.

Not surprisingly, high-tech societies significantly monochronic and polychronic in orientation are incurring greater levels of role ambiguity and role overload, by unconsciously attempting to merge these two extreme temporal orientations (Hall, 1989) in absence of guidance from theory-driven thought and empirical endeavour (Research Objective IV and VI).

By positioning cultures/ audiences in accordance with the triad of potential mono/polychronic expressions the hazards attached to the launch of new services and products in different cultures can be reduced. The present study revealed significant cultural differences across observable product/ service-related behaviours, speed, accuracy, and the subjective passage of time, akin to global schools of thought. In particular, high-tech, clock-time Britons are speedy and accurate, characterised by low levels of emotion polychronicity, who prefer to operate a dual MC/PC approach (mind-

polychronicity). In fact, the British score significantly higher than the Greeks in preferences for multi-tasking (mind polychronicity).

However, in terms of action polychronicity the British are significantly less inclined towards Type A Behavioural orientations to work than what the Greeks are, as well as less achievement striving. Thus, running contrary to the US- (and Canadian)-based implications pertaining to the management of time urgency and Type A, achievement strivings does not engender positive effects across all cultures, i.e., Type A behavioural orientations to work- and for the British sample in particular.

Impatience/ irritability actually engenders more of a positive orientation to work; a relationship particularly apparent across the Greek respondents sampled. Also, achievement strivings did not serve to engender a positive Type A behavioural orientation to work; in fact it is significantly related in an inverse direction. As a result and contrary to the majority of previous research conducted on time urgency correlates (AS/II) that purports respondents high in impatience/ irritability can be treated to ease problems with poor health with no adverse effects upon performance (Barling & Charbonneau, 1992; Bluen *et al.,* 1990; Spence *et al.,* 1987, 1989) current findings run counter to such implications.

The role of culture intervenes upon these relations, as in some cultures not all impatience/ irritability is condemned as 'detrimental'. In actual fact, it may actually help to let one's feelings out from time to time. These cultural deviations in findings reflect a significant contribution to the arenas of research on AS/II, by accounting for the established norms that pertain to emotional expression, as well as how these norms varies across culture.

Thus, it would not be appropriate to treat the Greeks sampled by the present thesis for impatience/ irritability. Interventions would severely disrupt temporal efficiencies attained, i.e., faster speeds of response and a positive Type A behavioural orientation to work. Subsequently, a main implication stemming from such a finding is that impatience/ irritability may in fact be beneficial and not prove detrimental in terms of performance speed, as well as encouraging P-time entities a more positive orientation towards work.

For managers, such research can be applied to more specific, and culturally driven market segmentation strategies, as well as appropriate culturally adapted advertising strategies that tap traits of culture (i.e., clock-time versus event-time cultures) and personality (i.e., perceived control of time, achievement strivings, impatience/ irritability) most suited and aspired for by the target audience/ culture.

To inform upon time-related managerial implications and to drive this final chapter, it is the specific quality pertaining to the marketing of the 'subjective experience/ dilation of time' that is missing from the literature. Overlooked for its value and relevance in terms providing a 'New Consumer Experience' and in view of gaps in the literature pertaining to the dilation effects of time, the present thesis aptly captures the experience of time as subject to cultural variability (Research Objective VIII). Accordingly, the 'new consumer experience' can be enhanced via applications of international marketing research to identify mechanisms to alter the consumer's subjective experience of time.

Nevertheless, despite its huge number of implications, research pertaining to the subjective experience/ dilation of time according to culture and tasks of increasing complexity is still in its early stages and not understood or even acknowledged for its relevance to marketing research, sales, servicescape, customer relations management, as well as marketing to businesses and consumers.

Consequently, in an endeavour to address gaps pertaining to 'time dilation' in the literature, as well as attend to the main empirical findings arising from the present study, this chapter aims to summarise upon the main managerial implications drawn from tackling the research objectives, as well as convey a novel way to 'act on', 'think', and 'feel' about 'Time'.

8.2 Managerial Implications

Findings from the present study are particularly innovative in terms of the practical relevance they bear upon cultural societies and management styles that combine the dual MC/PC approach, and which are also characterised as increasingly competitive and high-tech in orientation. Thus, overlooked by previous research efforts the present study now

conveys in detail the practical and managerial implications arising from its main findings.

As a way to 'act upon' the findings conveyed by the present thesis, this section discusses ten main themes inspired by current research findings. These areas concern, (1) International Marketing Research; (2) Human Resource and Stress Management, Education and Training; (3) The 'Management of Time' and the 'Timeless Consumer'; (4) Servicescape; (5) Customer (Dis)Satisfaction/ Loyalty; (6) Service Delivery and Waiting Time; (7) 'Event Time'; (8) Sales and Personal Selling; (9) Intercultural Negotiations; and (10) Research Design. These are discussed below in order of presentation.

8.2.1 International Marketing Research

With respect to international marketing research efforts, there has clearly been a need to develop general levels of empirical applicability so as to appropriately advise strategists and scholars alike (Völckner & Sattler, 2007). Accordingly, the present thesis has examined a number of constructs inspected for levels of cross-cultural comparability employing British and Greek samples. To refine theoretical endeavour and advise accordingly, the value of the mono/polychronicity continuum's midrange has been conceptualised to convey the relevance of the dual monochronic and polychronic orientation observed to manifest across societies differentiated according to factors, such as culture and technology.

Thus, in order to address current gaps in the literature and present innovative and informed research findings, improving upon that which is currently available to academics and practitioners, diametric modes of reasoning (i.e., '*either* this *or* that') are advanced upon to offer a greater degree of 'research synthesis' by incorporating the 'dual monochronic *and* polychronic' for global scale administrations of empirical investigation.

A significant number of implications have been identified and serve to address current research gaps in literature pertaining to the role of personality traits, i.e., achievement strivings and impatience/ irritability and their relations with behavioural orientations towards work. Specifically, exact directions of relations have been duly proposed,

presented and supported, which also serve to elucidate upon the differential effects of performance arsing from aspects of personality, behaviour, culture and context. To elaborate, prior empirical research efforts have not theoretically or comparatively clarified the exact complex of relationships connecting personality traits, achievement strivings and impatience/ irritability to that of Type A behavioural orientations, as done so by the present thesis.

Two cultures (the British and the Greek) have been differentiated according to levels of emotional/ P-time expressions, and findings disclose significant variability across objective measures of accuracy and speed, as well as the subjective dilation/ experience of time vis-à-vis tasks of increasing cognitive complexity. By accounting for the differential aspects constituting the construct of polychronicity as well as its overlap with the Type A Behaviour Pattern coined as 'action polychronicity' a sensible and reliable measurement of the constructs can commence.

By confusing *preferences* for polychronicity for actual polychronic *behaviours*, i.e., the Type A behaviour pattern (action polychronicity) characterised by multi-tasking behaviours, the implications drawn from international research efforts are conceptually confused and managers are duly misinformed. To re-iterate, multi-layered thoughts and preferences do not automatically translate into multi-tasking behaviours (Ruiz & Reynolds, 2007; Taylor *et al.,* 1984).

Moreover, the findings presented on self-efficacy and polychronicity across distinct dimensions of mind, emotion and action, are deeply relevant across many disciplines dealing with human resource and stress management (HRSM), as well as motivational, coping, and learning strategies. In fact, a number of managerial implications are identified for specific application across human resource and stress management (HRSM), education, and training, discussed in the following section.

8.2.2 Human Resource and Stress Management, Education and Training

Relevant to matters of employer motivation and learning strategies, the present thesis clearly demarcates the dimensions of emotion, mind and action constituting complex multidimensional constructs, i.e., polychronicity and Type A behavioural orientations. As inspired by research arising from the field of self-efficacy (Bandura, 1977a,b; 1982),

findings stemming from the present thesis are deemed highly relevant to matters relating to human resource and stress management, education and training. As revealed by the present thesis an application relevant to performance self-efficacy significantly impacts upon preferred levels of (mind-based) polychronicity in a positive way. This is hugely relevant to managers.

In fact, both constructs of preferred polychronicity and self-efficacy bear positive influences upon indices of successful performance; be it for academics (Taylor *et al.,* 1984), salespersons (Sadri, 1996), or sales and marketing managers. And in terms of implications for managers operating in high velocity/ hypercompetitive markets striving for accuracy, i.e., e-commerce and Internet sites (Rubin, 2001) self-efficacy and polychronicity potentially constitute key mechanisms for coping effectively.

Why should managers and providers of learning services and products be concerned about these relations across emotion, mind and action pertaining to self-efficacy and personality when defining a satisfied customer of global advertising and marketing strategies? In terms of attaining desirable ends of performance, the present research shows self-efficacy bears a positive influence in predicting variability in life satisfaction across both the British and Greek samples, though differential relations manifested in the presence of achievement strivings and perceived control of time.

The Greeks benefited by combining achievement strivings with self-efficacy to bring about greater levels of satisfaction. In contrast the British engendered greater levels of life satisfaction by combining self-efficacy with greater levels of perceived control of time. This is an important arena of research bearing a number of implications upon satisfaction, which further relates to evaluations of self-concept as revealed by studies investigating the role of 'image' and 'identification' within consumer behaviour (Moutinho & Goode, 1995).

In terms of human resource and stress management (HRSM), Type A behavioural orientations have been examined by the present thesis to elucidate upon the contributory roles of culture, personality and the mechanisms of coping. Also, the contributory forces pertaining to speed and accuracy outcomes are revealed by the current thesis as culturally and technologically inspired.

Specifically, those of a high-tech orientation (i.e., the British) attained the highest levels of speed and accuracy, compared to those high in 'emotion polychronicity' (i.e., the Greeks). The predictive roles of 'mind polychronicity' (preferred temporal orientations) and 'action polychronicity' (Type A Behavioural patterns) were also tested for, yet failed to offer results as significant as those differentiated according to matters of culture.

In terms of introducing accurately defined measures of 'action polychronicity', 'Activity level', as found by the present investigation is not equivalent across cultures. Specifically, across cultures apparently more Mediterranean, if not P-time in orientation (i.e., Greece and Spain) (see also Sutil *et al.,* 1998), activity level is synonymous with engendering a more positive behaviourally related orientation.

This finding, however, was not supported by the British sample, to indicate that certain cultures (high in emotion polychronicity) are more favourably situated to undertake matters such as 'activity level' (action polychronicity), as a way of orienting oneself towards opportunities of work, as opposed to the obstacles of stress. Importantly, one culture's impression of 'activity level' may manifest as 'role overload' for another, thus cultural deviations need to be identified.

Furthermore, contrary to research efforts arising from the States, which posits a positive relationship from 'achievement strivings' to desired outcomes of performance (Spence *et al.,* 1987, 1989), achievement strivings is a construct, which cannot be regarded as comparable across culture- specifically across analyses whereby respondents British in nationality are involved. In effect, it appears that achievement strivings is more synonymous with an orientation towards stress-related outcomes. In fact, it is the 'P-time' (high emotion polychronicity) Greeks that claim a positive link from matters of achievement strivings to performance outcomes deemed desirable, i.e., life satisfaction.

Accordingly, teachings that apply research findings and managerial implications pertaining to empirical endeavour originating from the States, may be acting too hastily to assume all findings pertinent to the Americans are also pertinent to the British.

In terms of education and training a number of results pertaining to both desirable (i.e., improved levels of accuracy) and undesirable outcomes of performance (i.e., role ambiguity) are offered by the present thesis, and are relevant to the context of global schools of thought (i.e., universities). Some of the variables examined as part of preliminary-level analyses appear to be culturally equivalent (i.e., self-efficacy) (Sadri, 1996), whereas others are not (i.e., perceived control of time, achievement strivings and impatience/ irritability).

An important implication for managers in terms of predicting levels of satisfaction vis-à-vis education and training concerns the need to employ differential tactics to account for relationships that are culturally fashioned. For example, in terms of the high-speed, high-accuracy, 'high-tech' British sample, it appears that a sense of self-efficacy concomitant with a 'perceived control of time' are important for predictions of life satisfaction. In contrast, the Greeks see little value in possessing a 'perceived control of time' to bring about life satisfaction, and are inclined towards matter of achievement strivings to engender satisfaction.

Thus, for the Greeks respondents characterised by significantly greater levels of perceived control of time as compared to the British, life satisfaction is more of a consequence of achievement strivings and self-efficacy. In contrast, achievement strivings for the British sample does not lead to any significant increases in life satisfaction. Subsequently, achievement strivings does not seem to constitute a viable personality trait suitable for applications in pursuit of matters pertaining to education and training in terms of the British culture, yet appears promising for applications involving the Greek culture.

8.2.3 The Management of Time and the Timeless Consumer

At present the prevailing time management ethic across learning environments and business is heavily 'etic' in approach. It is also highly influenced by a monochronic bias characterised by timed examinations, deadlines, scheduling, and prioritisation. This is in spite of the fact that most members of a global school of thought need to juggle competing responsibilities, attend multiple courses, and address several demands at once. Essentially, the context of a global school of thought is where oil and water combine – *both* monochronic and polychronic approaches to activity-to-time management are in

operation. A parallel is found with increasingly high-tech societies also operating a dual approach towards managing activities to time; this is a characteristic feature of the British society.

Primarily, such a finding implies that a change is in order in terms of prevailing time management mentalities and training programmes created to foster increased levels of productivity, i.e., speed, accuracy, and satisfaction. Despite culture's management of time, traditional time management gurus have promoted the value of managing time, and new age offerings have done much to account for the polychronic alternatives to managing activities to time.

Nevertheless, in view of the predominantly 'either-or' mentality that characterises the mono/polychronicity continuum the present thesis displays the efficacy of using more refined conceptualisations that incorporate the value of the dual MC/PC approach. For the vast majority of managers, you are either monochronic or polychronic. Some even say you are neutral. A practical application of the current research is to acknowledge and account for the dual MC/PC approach and understand its relevance within high-tech societies.

Revamped time management mentalities not only need to account for the differentiating role of culture, but also mechanisms of coping that may be either consciously or unconsciously administered. Specifically, a multidimensional perspective of key performance-related coping mechanisms, self-efficacy, polychronicity and the bidimensional Type A behavioural pattern, has been conveyed to explain variability relevant to time-related matters of efficiency and effectiveness (i.e., speed and accuracy) apparent not only in global learning environments (university-level schools of thought), but any organisation competing in a global environment that provides a product or service.

In terms of 'Managing Time' a number of initiatives aim to equate the value of time with that of money, or proclaim to be able to 'save' you time. As an example of consumers' managing time for television, interactive services enabled via providers such as Skyplus offer innovative 'time-travelling technologies' that allow users to pause live TV, as well

rewind and fast forward. And for those that suffer from high levels of interruption, distraction as well as polychronic tendencies, this is a great service to own.

Though many may espouse to 'manage time', in view of the subjective aspects of temporal reality, 'Time' is actually of the 'Mind'. And the key characteristic that constitutes its inherent value is its dilation/ subjective manipulation, which is variable according to one's culture, consciousness (mind state) and task complexity. It is of interest to see which areas of industry have incurred phenomenal growth, and if the experience of time dilation could be proposed as a viable contributor of success?

Successful enterprises creating 'Timeless Consumers' via the dilation of time subjectively experienced, offers a deeply personal way to escape the confines of yearning for the future and mourning for the past. Consequently, the 'time-less' moment of 'now' is argued to engage the consumer like no other.

Music arguably plays a key role in losing all track of time afforded by the subjective dilation of time that takes place in the mind, and which is actually built upon many systems of timing that are synchronically *tuned in.* In fact, there is no greater service to market, no greater service sought after than the ability to alter the experience of time, and ultimately in the consumer's mind. Thus, to reiterate, 'Time' *is* of the 'Mind', and therefore subject to dilation.

For example, "Domestic games platforms continue to develop at a ferocious pace and today's games are clearly broadening in terms of how and where they can be played. Currently the market offers a wide variety of platforms, which include home entertainment systems (such as those of Nintendo, Sega, Sony, and Microsoft, together with PCs and interactive television via set-top boxes – STBs; arcade machines (found in amusement arcades); family entertainment centres – FECs; mobile gaming systems (such as Gameboy and the use of mobile phones); online/network gaming systems; and virtual reality (VR) systems" (Ip, 2003: 4).

The experience 'timelessness' and time loss can occur when engaged in virtual worlds, i.e., playing video games (Woods & Griffiths, 2007; Woods, Griffiths & Parke, 2007) and engaging in online social systems (i.e., Facebook), characterised by multiplicative

tools and applications. As a consequence the consumer loses all track of time, and this may also be manifesting in the workplace to further act as a potential source of time and task conflict.

Technologies such as the medium of TV, in-home entertainment systems and the craze for interactive entertainment including Sony's Playstation and other related game development initiatives (Ip, 2003) are arguably becoming so popular due to the induced states they give to the consumer. Specifically, the consumer transcends the oft harsh and lonely reality of confining space and time, and it appears that the rise of the high-tech society is on a par with the 'high-tech consumer's need for a 'time-less' experience.

Similar effects are experienced in 'Las Vegas' land of casinos'. There are no windows; there are no clocks; and no opportunity to plan where else you should be, as no indication of the outside world is conveyed. The consumer 'loses all track of time,' and nine times out of ten, their money as well.

Another group of 'timeless' consumers are children, living in the moment of 'now', without cause or effect, though this arguably changes as children near puberty. Hitherto, strategies in terms of positioning, advertising and communication need to be carefully contemplated and deliberated upon to convey the 'Time', if not 'Timelessness' best understood by a specifically targeted children's market. Furthermore, can the 'Timeless' child teach us adults a thing or two? Also of interest is how 'Time' develops into a product of the 'Mind'?

With regard to consumer strategies and preferences, research concerning the subjective experience and dilation of time vis-à-vis 'activity-to-time' patterns, i.e., polychronicity can be practically applied to matters of brand evaluation (i.e., monochronically-oriented loyalties and/ or polychronic brand-switching behaviours), search activity (i.e., sequential and/ or synchronic search behaviours), sales (i.e., one-stop and/ or multi-stop shopping preferences), advertising (i.e., unidimensional and/ or multidimensional strategies), online promotional websites (i.e., providing sites of differing levels of complexity) (Ruiz & Reynolds, 2007), as well as preferences for servicescape (i.e., simplicity versus complexity); see the following section.

8.2.4 Servicescape

Differential relations attained across culture for objective measures of speed and accuracy reveal how the position and speed of entities around the globe may concur with Einstein's (1921) theory of relativity and space-time. A main implication relates to the role of space and time as differentiated according to geography and culture, as well as task complexity. Seeing as results from the present study arguably relate to environmental differences arising from aspects of culture and context, the role of servicescape in positioning a product/ service for successful rates of adoption is highly important to managers and researchers alike.

For example, in addition to factors of lighting and music, activity engagement and the resulting changes in subjectively experienced time are shown to be of significant consequence by the present thesis. The relationship between increasing cognitive activity and the subjective experience of time is further differentiated by culture, adding weight to the Einstein's relativity of 'experienced' time and 'geographic' space in very real and observable ways. Yet what about the actual physical dimensions of space? In terms of space, specifically ceiling height, the literature has revealed findings pertaining to its use upon differing types of processing, conceptualisations (Meyers-Levy & Zhu, 2007), and experiences of time (DeLong, 1981; Hall, 1989). Specifically, a consumer's experience of psychological well-being is dependent upon space; that is, ceiling height (Business Pundit, 2007; Meyers-Levy & Zhu, 2007).

BusinessPundit (2007) reports on how Google executives whilst in the workplace divide their time 70/20/10 across three different spatial environments. The Google executives adhere to these temporal ratios by spending 70%, 20% and 10% of their total time at work across three different rooms. With reference to Meyers-Levy & Zhu (2007), Business Pundit (2007) questions whether the three different rooms Google executives allocate their time across also accounts for the relative role of 'ceiling height' upon psychological well-being? In other words, it is asked if whether the three rooms Google executives divide the time across, also differ in terms of ceiling height to foster enhanced experiences of psychological well-being.

In terms of present thesis findings relating to geographic space (culture), objective clock time and the subjective experience of time, how is the subjective experience of time

affected by spending different temporal ratios across different spatial environments? Arguably, deemed to be a matter of much relevance, 'ceiling height' is a newly discovered dimension of space and servicescape identified as relevant to consumer behaviour and marketing in general. In particular, understanding the role of space and time upon human processing and activity is useful for gaining insights into the ways that maximise not only productivity, but also engendering a unique and 'New Consumer Experience of Time' by accounting for space in matters relating to servicescape (i.e., ceiling height).

Affecting the consumer's subjective experience of time by creating a 'timeless' environment is positioned by the present thesis as a 'competitive edge' for any budding business. To provide a space that enables the consumer to lose track of time is on a par with high levels of cognitive involvement, and proposed as a new barometer of success. Surely, if 'time flies' for the consumer, then the consumer must be having fun.

As revealed by the results stemming from the present thesis, the objective perspective of time is significantly altered by an individual's subjective, more personal experience of time's passage. Hitherto, serving as an important managerial implication, a trade-off is argued to exist, 'Time' or 'Task' (Thomas & Weaver, 1975). Accordingly the experience of time's passage (i.e., clock-watching versus losing all track of time) serves to denote levels of task/product/service involvement, and is argued to also impact upon levels of customer satisfaction, if not dis-satisfaction, discussed further in the following section.

8.2.5 Customer (Dis)Satisfaction/ Loyalty

In terms of managerial implications previous consumer-related research into the construct of polychronicity has examined its role during the stages of decision, purchase, consumption, and waste management (Kaufman *et al.,* 1991a). In terms of linear processing preferences vis-à-vis synchronic patterns of processing, cognitions and behaviours i.e., multi-tasking and task-switching have featured as key themes.

Yet, arguably the experience of time whilst engaged in activity is also a potential measure of satisfaction. Particularly, in terms of the relationship found across tasks of increasing cognitive involvement and the subjective passage/ dilation of time, this thesis

proposes that the 'dilation of time' is culturally differentiated. Thus, the experience of time's subjective passage vis-à-vis activities-to-time-management offers an innovative tool to attract and retain satisfied customers. As marked by the rising popularity for the moment of 'now' via new lifestyles of meditation, tai chi resorts and yoga in the west this popularity is potentially linked to dilations of time. Hitherto, the new measure of marketing success may simply be a matter of erasing time. Thus, a main managerial implication proposed by this thesis puts forth the stance that the subjective passage of time is a useful a barometer to gauge satisfaction, as well provide indications of those more time urgent and stressed.

Also, in light of the links across impatience/irritability with that of a positive orientation towards work, can one be sure that what *looks* like a 'dissatisfied', irritated customer, is maybe merely a customer from a country where more passionate displays of oneself are the norm? Oft people might get upset in reaction to others emotions, which may often relate to differences in culture, relevant to business-to-business marketing as well as business to consumer marketing. It seems that despite the fact similarities in behavioural patterns may seemingly merge diverse groups of people, i.e., the P-time Greeks, and the American Type A, emotions and thoughts as a source of motivation may not.

8.2.5 Service Delivery and Waiting Time

In relation to matter of service delivery and waiting times expectations arguably constitute differential effects upon satisfaction, brand loyalty and brand-switching behaviours. Expectations were assessed for cultural variability and the high-speed, high-accuracy British respondents were characterised by significantly greater levels of expectation than the Greeks. To present a practical application, expectations of service are also in accord with waiting time.

For example, at most fast-food chains an immediate, low cost, transaction is sought after; time and matters of consumer convenience are most at stake. In contrast, and related to the 'waiting price of quality' Mercedes Benz will make you wait 12 weeks for a vehicle. Hitherto, the view of acceptable 'waiting time' is highly dependent upon the quality of the product/service, yet with respect to present findings, may be also culture. And with respect to the passage of time, it seems the value of quality is no longer 'price' per say, i.e., the 1970's concept of quality and high price relationship.

With the advent of high-tech information technologies, i.e., the Internet, prices are also now transparent; it is much easier to conduct price comparisons across a many number of available sources of supply. This is 'buyer bargaining power'. All the same, there is always a 'price to pay'; just in this day and age the price is 'time'. For example, Playstation 3 changed its launch date many times. By the time the product hit the stores, folks were being held at gunpoint, purely for a new games console. This is the 'darker side of marketing'.

8.2.6 Event Time

The present thesis has examined how different cultures may be P-time, oriented towards the event, and/ or M-time, oriented towards the clock. Event time is distinct from clock-time, yet connected to offer significant managerial implications with regards to wholesaler buying behaviours. Specifically, significant events, i.e., the Olympics, Wimbledon, or the World Cup constitute key points in time. For example, Panasonic increases its stocks of TVs around the time of major sporting events and significant days of celebration as people do not tolerate the idea of waiting for a TV to be delivered at these times of year. In this sense, 'Time' really is money, depending how well you make time for important events.

In absence of an external timing device, the subjective estimation of event time-specifically tasks of increasing cognitive complexity, is shown by present research findings to be subject to cultural variability. In terms of practical implications pertaining to strategists and planners of marketing campaigns, significant cultural differences result in terms of how accurately 'event time' is estimated by Greek and British respondents.

With lesser levels of perceived control of time as compared to the Greek respondents, the British sample is significantly more inaccurate at estimating the clock-time passage of time for a simple, non-taxing cognitive task. This bears a huge impact upon how accurately members of different cultures may be able to reckon reliable project estimation times that incorporate the need to subjectively reckon estimates of event time that are objective indicators of 'expected' clock-time. Once again, culture has been to show to play a differential role upon expectations, which too may plausibly relate to effective time estimations.

As a point of interest, as a number of time-related behaviours are culturally fashioned and learned, one consumer market that may be more oriented towards the event rather than the clock is the children's market. Specifically, market-oriented efforts geared towards children, are argued to benefit from adopting 'event time' terminology. For instance, time may be better understood in terms of the clock or in terms of an event. For example, a duration period of a 'long weekend' or 72 hours means nothing to children under the ages of say, nine, however, three 'sleeps' does.

In addition, based on the present research findings, the drivers of personality (i.e., perceived control of time), culture (i.e., clock-oriented versus event-oriented) and technology (i.e., high-tech versus low-tech) serve to question traditional conceptualisations of time management. Accordingly, the need to incorporate more culture-specific, 'emic' approaches employed towards managing activities to time is called for.

In particular, despite the chiefly western take on 'Time', 'Time' is not only tangibly measured according to the clock as ordinarily conceived. Time is also tangibly measured according to the event; that is, *how long* an event takes to complete. Though Palmer & Schoorman (1999) argue event-time is not tangible like clock-time is, it is still 'real' but 'real' according to how long an event lasts of its own accord (as with the four seasons of winter, spring, summer and autumn) as opposed to artificial timing sensibilities, i.e., the clock.

In this respect, event time is actually more tangible (real) than clock time, and by being engrossed in the event more opportunity for deeper social interaction and involvement is afforded. One is not driven by start and finish time scheduling mentalities espoused by the clock, thus, individuals may be afforded a better position, mentally, emotionally and behaviourally, to handle unforeseen interruption and change. This deviation across clock time and event time is an important point to consider, particularly in view of the relations found across increases in task complexity over a set amount of time, and the subsequent decline in subjective time estimation as task complexity increased. This further relates to significant cultural- and psychometric intelligence-related differences.

8.2.7 Salespeople and Personal Selling

Performance-related indicators for salespeople are ordinarily set according to time. A good time to buy therefore is at the end of the month. Often sales people are more willing to sell at cost to attain a bonus. Also, as gleaned from the present thesis, time can create conflict, and this is the retail employee's biggest stressor; time conflict (Arndt *et al.,* 2006; Singh, 2000). An important variable identified from the thesis, as well as research into personal selling and sales management is 'self-efficacy'; the power of belief in oneself. Its most relevant application relates to matters of human resource and stress management, education and training.

There is no better way to get the best out of society than to give them the 'I-can-do-it' complex constituted of emotion, mind and action. Accordingly, in terms of practical application it may be appropriate to address these differential dimensions of 'coping' separately, as well as combine the elements into one overarching model best built into training programmes. This is self-actualisation, when you know you can do anything you put your mind to. Similarly, these suggestions are readily applicable to the realms of education, as well as inter-cultural negotiations.

8.2.9 Inter-Cultural Negotiations

As identified by the present thesis, high-tech societies incorporate both P-time and M-time technologies, but whether the people of these societies even know what a P-time technology is at question. Also, in view of the fact that 'oil and water' ('M-time and P-time') do not mix, troubles pertaining to context-related aspects of communication may be incurred by such high-tech societies, as well as in terms of how these high-tech societies fare in terms of inter-cultural negotiations. Of importance is the way different societies differentially express emotion, mind and action as well as traits of personality. This is not universal; it is differentially perceived and condoned. It has been made apparent that societies and individuals may in fact be both monochronic and polychronic. Reasons for why involve matters relating to 'Culture's Management of Time', and may not even be consciously managed or at best, acknowledged.

The examination of Type A Behavioural orientations (action polychronicity) vis-à-vis preferred strategies for managing activity-to-time (mind polychronicity) across culture (emotion polychronicity) however has allowed for more accurate and refined culturally

applicable interpretations to be drawn. In particular, via the use of speed and accuracy measures as objective barometers of performance, dimensions of 'mind polychronicity' (preferred temporal orientations), 'emotion polychronicity' (M-time and/ or P-time cultures) and 'action polychronicity' are clearly demarcated and have been shown to manifest differential effects (Research Objective I). For the purposes of comparative and theoretical research the findings offered by the thesis at hand suitably address a significant gap in the literature, as well as prior conceptual oversights. In terms of the 'emotion-mind-action-complex' practical implications of the framework centre upon a necessary complex basic to all humans, which is subject to individual and cultural variability.

Incongruence versus more harmonious levels of congruence across EMAC has been demonstrated by the present thesis in terms of relations across preferred polychronicity and role overload. Specifically, P-time Greeks are more suitably positioned due to socio-cultural orientations towards many-at-a-time to alleviate the experience of role overload. This is a state of congruence not afforded by the British respondents. Also of interest, females are significantly more prone to the experience of role overload, as are achievement strivers, the impatient and irritable, older respondents and those with high expectancies of grade. Provided is a profile of how variability in role overload can be explained, and is incredibly useful for disentangling the relations that exist in terms of either congruence or incongruence across the different dimensions that constitute polychronicity.

8.2.10 Research Design

To assist in managerial-level decision-making a refined level of interpretation is greatly afforded via theoretically driven conceptualisation and empiricism. And by addressing the need to clarify conceptual and theoretical frameworks across constructs currently misunderstood, the main triad of dimensions at play is conveyed: emotion, mind and action. Specifically, the triad as an interwoven complex represents a more accurate framework to arrive at more informed decisions, by identifying the key domains of influence, as well as the ways they seemingly interrelate. As a practical application of research, a precise specification of the dimension(s) under investigation can improve upon the validity and reliability of empirical endeavour, as well as provide increased conceptual clarity (Research Objective I and II).

An important research implication relates to the elimination of clock-time markers, accommodated by one's design of research. As done so by the present study, an engaging, time-less moment was created to get the most out of the respondents by simply asking for all watches and clocks to be removed from sight. Thus, attention is tuned in to the 'Task' and not the 'Time' (Thomas & Weaver, 1975).

To bring a close to the managerial implications the main applications derived from the present thesis pertain to those that incorporate the dual monochronic and polychronic approach into future designs of research to elucidate upon high-tech societies, as well as the 'emotion-mind-action-complex' to reveal more intricate mechanisms of coping, i.e., polychronicity and Type A behaviours. In terms of the subjective experience of time it is argued that the this particular perspective of time may also be of some consequence in elucidating upon matters of brand loyalty, customer relations management, stockpiling behaviours and frequency purchase rates; all topics suitable for future research. In conclusion, by applying the 'Emotion-Mind-Action Complex' more refined and reliable reports of variability across, emotion, mind and activity can be identified.

8.3 Research Limitations and Recommendations

In terms of the limitations to empirical research encountered by the present effort, one particular limitation concerns 'time' and the fact that only a cross-sectional design of research could feasibly be pursued. Thus although a longitudinal design of comparative research would have been preferred and is duly recommended, this was not an available line of attack due to restrictions of time. Consequently, as the present study employed a cross-sectional design of research no causal inferences can be made from traits of culture, personality, socio-demography and coping mechanisms, such as mind polychronicity to that of actual observable behaviours, i.e., speed and accuracy, as well Type A behavioural orientations to work.

Another research limitation pertains to the fact that scores relating to traits of personality were solely obtained via the use of self-reports. Accordingly, 'multi-trait multi-method' approaches are recommended to address any sources of bias that may result from the use of self-report measures (i.e., social desirability).

Another research limitation of the present empirical study concerns the sole use of student samples to investigate the relationships pertaining to personal and cultural mechanisms of coping, performance and stress. Some may view the use of student samples as a limitation; particularly in view of the relevance the aforementioned outcomes have in terms of workforce efficiency (i.e., orientations towards work or orientations towards coronary-prone behavioural patterns).

Despite the limited scope of investigation undertaken by the present endeavour does not permit generalisation, the research conducted still proffers encouraging results. In view of the context under study, that is, 'Global Schools of Thought', students are representative of the most desired choice of sampling frame. Also, by ensuring a homogenous sample, students have suitably addressed the needs pertinent to the present comparative and theoretical research effort, by limiting the effect of extraneous variables. Therefore, having now developed upon theory pertaining to relations not previously investigated, one is in a better position to recommend additional sampling frames that are still nevertheless, conceptually and theoretically validated.

In support of student samples, in terms of building theory and refining conceptual efforts, findings obtained by Völckner & Sattler's (2007: 159) study of generalizability and existing brand extensions "demonstrate that the differences between college students and non-student subjects are rather small in terms of the significance and relative importance of success factors."

Another limitation concerns the procedure employed to obtain subjective time estimates (STE). This was not entirely replicated to fall in line with previous efforts, particularly as 'filled time' (a passage of time filled with activity) is not equivalent to 'empty time' (a passage of time empty of activity)- an approach the present thesis has aimed to improve upon. Thus, in a vein akin to 'verbal reproduction' subjects were required to reproduce in written form a subjective estimate of time's passage cognitively and individually estimated.

Consequently, adaptations made to reproduction methods pertaining to STE research need to be validated via additional empirical research efforts, and thus a call is made for more research in this field. All the same, the present adaptation was made in order to

improve upon methodology currently re-estimating passages of 'filled time' with a passage of time that is 'empty'. And as such durations are not equivalent such re-estimation methods fall short of being entirely appropriate.

Another limitation pertains to the fact students were sampled in groups and according to the size of the class sampled across global schools in thought, in both Britain and Greece. Though aimed to replicate conditions students are familiar with (i.e., timed examinations) to procure accuracy and speed measures, Fink & Neubauer (2001) tested respondents in isolation. This tact employed by Fink & Neubauer (2001) could not be pursued by the present endeavour, yet every effort was made to ensure only individual responses were obtained by spacing respondents apart from one and another and preventing any attempts of collaboration and cross-communication.

Another limiting factor is that only two samples were employed for comparative research efforts. To effectively draw far-reaching levels of applicability more than two countries are recommended for future empirical efforts of investigation.

Another possible research limitation concerns the fact that more complex levels of structural equation modeling have not been undertaken by the present thesis. However, in defence of the statistical testing undertaken by the present research endeavour without a defensible theory linking constructs of influence and outcome, SEM approaches are insupportable and lack theoretical validity.

Another limitation concerns the fact that measures of general self-efficacy may not discriminate across academics of above-average ability (Scherbaum *et al.,* 2006). Consequently, it is recommended that samples, other than academics, be examined to test whether self-efficacy plays a similar role across non-student samples.

As a final limitation, a more appropriate scale measurement of life satisfaction for the research purposes at hand was not identified in time. This is the Temporal Satisfaction with Life Scale and suggested for future research. On the topic of future research efforts please see the following section.

8.4 Future Research

"The web of our life is of a mingled yarn,
Good and ill together."
William Shakespeare (1564-1616)
'All's Well That Ends Well'

In terms of future research a number of findings could not be conveyed by the present thesis due to the low Cronbach alpha reliability value pertaining to Type A Behavioural orientations to stress. The overall figure of reliability for the scale was less than .50, and thus not deemed high enough in value to be included in the main analyses of testing hypotheses (Pallant, 2001; Frei *et al.,* 1999). More work is needed on this subscale.

Also, due to a definite lack of space and time, certain results that pertain to the present data set have not been included in the present thesis. As a consequence, these results may need to be presented as a feature of future academically driven efforts, i.e., the predictive role of perceived control of time upon matters relating to stress across cultures.

Future research should assess whether the pattern of research-related findings presently gleaned actually generalise beyond university settings to environments that are characterised by specific, work-related indices of performance across different organisations, cultures and/ or contexts. In particular, the prevalence of the dual monochronic and polychronic approach is largely able to benefit from additional empirical efforts that examine the construct of polychronicity not only according to mind-based preferences, but also via expressions stemming from both emotion and action as well.

In view of the present theory-building focus concerning the present thesis a number of relations have been identified to allow for most complex structural equation modelling techniques, to validate, if not disconfirm the hypotheses introduced by the present endeavour; particularly as a number of hypotheses generated to address the research objectives raised by the thesis at hand were exploratory in nature.

Future research efforts may also aim to incorporate the role of space, by testing for its relations with that of the perception of time, and relevant measures of productivity. It seems that dividing one's time across differing locations, of differing spatial dimensions (i.e., ceiling height) may serve to heighten aspects of accuracy, as well as create a competitive edge. Also, in view of the dichotomy of thoughts and emotions across the left and right hemispheres of brain, future research may want to incorporate the role of left-handed versus right-handed people, and thus examine how the perception of time actually varies across such groupings.

Finally, where possible, future research should avoid sole reliance on self-reports measures of coping mechanisms and behavioural orientations to work. In fact, external reports (e.g., general practitioners) or physiological indicators of health in conjunction with objective measures of performance should be used.

8.5 Conclusions

> The empires of the future are the empires of the mind."
> *Winston Churchill (1871-1947)*

Accordingly, despite the fact there exists a vast amount of research on the duality of polychronicity in website orientations, retail shopping behaviour of women, organisational behaviour, control strategies (e.g., Ruiz & Reynolds, 2007; Zhang *et al.,* 2005) none refer to Hall's statement that certain cultures, i.e., those high-tech in orientation combine both polychronic and monochronic technologies.

What is more, in view of the role of context and the nature of task it also too simplistic a notion to assume ''Poly-Khronos Greece versus Clock-time Britain'. Specifically, in view of the finer complexities of polychronicity, i.e., emotion-mind-action, and the nature of context investigated- is it monochronic, polychronic, and more realistically for high-tech societies, both?

Nevertheless in support of assuming a 'Clock-time Britain' they attained superior levels of speed and accuracy in comparison to the Greeks. More apt, Britain is a high tech society incorporating both a P-time and M-time approach to time-to-activity

management, which is also synonymous with high speed and accuracy, yet at a cost. Such costs include greater levels of role ambiguity and role overload.

As a consequence, it seems that the combined role of a clock-time culture stemming from the days of the industrial revolution has created a culture steeped in a mechanistic, speed and accuracy driven approach to time. Also, let us not be quick to judge the supposed darker sides of our personality. Appearances can be deceptive, likewise with emotions, which are differentially managed and expressed according to culture.

Also, in view of such recent physicalist discoveries such as Einstein's relativity and quantum mechanics, it seems highly appropriate to employ a more accepting attitude to the process of 'addition'- an 'and this and that' kind of thinking and mental approach to problem solving. Unfortunately, it appears that the prevailing paradigm in contemporary Western research and thinking establishes more of an 'either-or' mentality in approaches to generate new ideas and strategic reasoning.

Consequently the tri-dimensional approach addresses these issues, and as demonstrated by the 'Emotion-Action-Action Complex', aids more refined conceptual study. Also, via the incorporation of the dual mono/polychronic approach to better understand the continuum of preferred temporal orientations more intricate styles of analysis can prevail.

In terms of the directing research efforts to the role of the 'subjective', Reanney (1995) explains how the ability to 'objectively' observe phenomena has come under much attack, and namely by Science itself. Quantum Mechanics has shown to the satisfaction of most physicists that the reality we observe is strangely altered by the act of observation. Consciousness though positioned as an 'objective' observer, may be better placed as a 'participant' in the workings of the world. Reanney states that people who insist on 'objective' statements are making an admission of ignorance regarding what physics say and is. Seemingly, even an 'objective' reality is now hinted at being deeply personal, steeped in the mind's eye of one's perception.

Finally, if marketers could alter and expand the experience of time, how much would that be worth to the consumer? And if the experiences of 'eternity' were available at the drop

of a hat, right here, right now as a 'retail offering' would the consumer 'bite'? Importantly, do contemporary consumers even have the time to be 'timeless'?

To bring a close to this thesis, it is argued that a definitive key to ensure a long a successful product life may actually lie with the experience of time associated with the product/ good/ service concerned. Time is of the 'Mind', and ultimately 'Time Management' depends upon the 'space' in one's 'Mind'. Subsequently, 'Time Dilation' is proposed as The 'New Consumer Experience', tied in with 'Consciousness', and something we can all supposedly 'tune in to'.

In investigating the 'Cultures of Time', one questions if 'Time' has a personality? If so, how many? On that note with special thanks to 'Godfather Time' and THOUGHT (The Holistic Origin Underlying God's Holy Truth), good luck to you all. Enjoy the time you create from your realities and relationship shared with 'Time'. Happy travelling! Last, but by no means least,

Time is the coin of your life. It is the only coin you have, and only you can determine how it will be spent. Be careful lest you let other people spend it for you."
Carl Sandburg (1878-1967)

The End.

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APPENDICES

Poly-Khronos Greece versus Clock-time Britain?

Frameworks to Examine of Culture's Management of Time

in Global Schools of Thought

By

Tajinder Kaur Biran

A thesis submitted in fulfilment of the requirements

for the degree of Doctor of Philosophy

School of Business & Economics

University of Wales Swansea

October 2007

Volume II

Appendix 1A

Research Objective (I): How can the constructs of polychronicity and Type A behavioural orientations be both conceptually and theoretically refined to clarify present-day confusions pertaining to their underlying multi-dimensionality?

Research Objective (II): The second major research objective driving this thesis is to test for relationships across self-efficacy and 'mind polychronicity' (preferred temporal orientation). Is this relationship culturally invariant within the context of global schools of thought?

Research Objective (III): What are the effects of perceived control of time upon preferred temporal orientation (mind polychronicity) and satisfaction across cultures?

Research Objective (IV): What are the predictors of a positive Type A behavioural orientation towards work? Conversely, what are the main predictors of stress-related outcomes such as role ambiguity?

Research Objective (V): What are the relationships across speed, impatience/ irritability, and achievement strivings, and how is this differentiated according to culture?

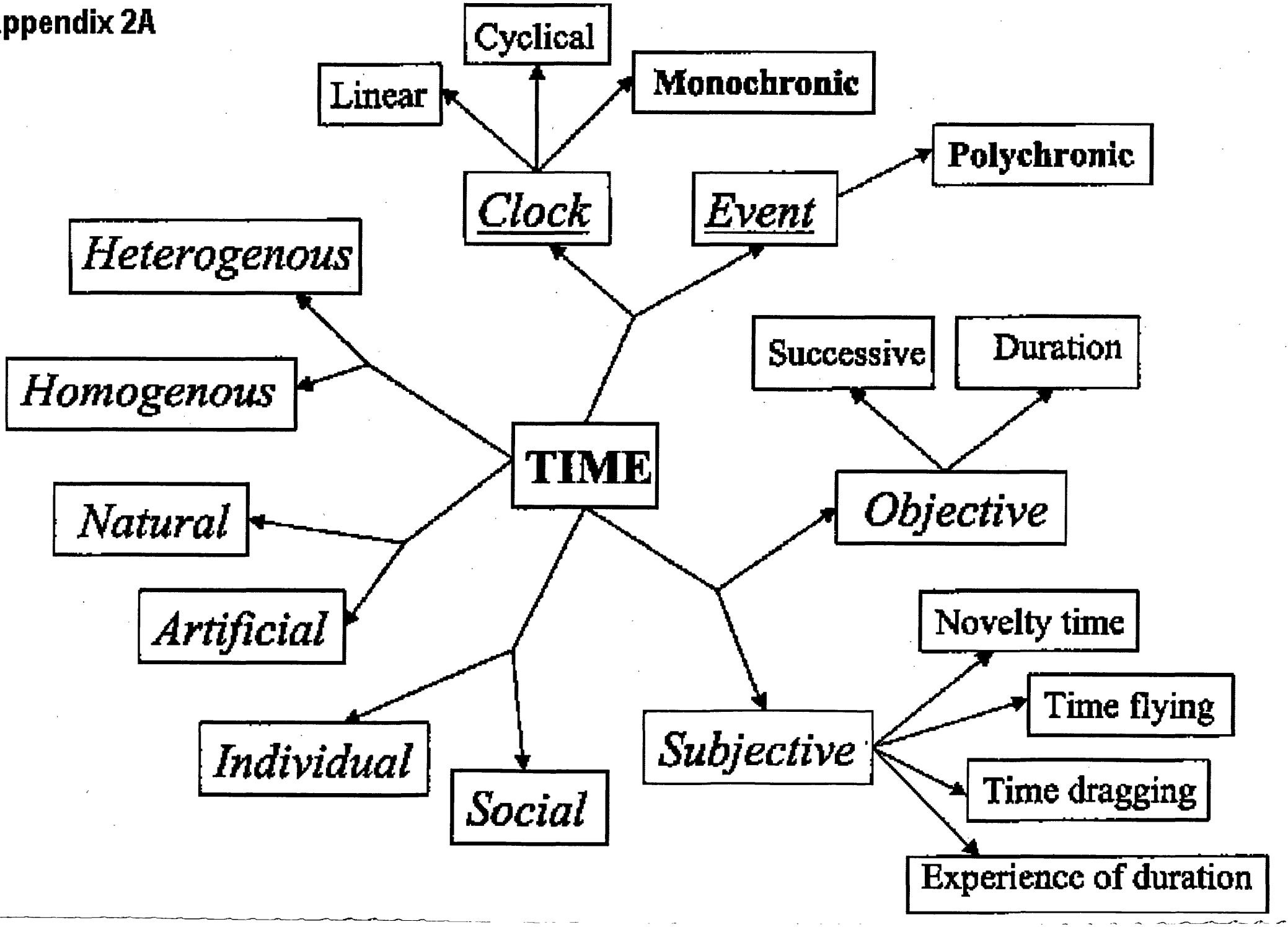
Research Objective (VI): What is the relationship across preferred temporal orientation and role overload; specifically, are cultures categorised as P-time i.e., the Greeks, particularly adept at handling role overload in view of socio-cultural tendencies towards 'many-at-a-time'?

Research Objective (VII): What is the specific interplay across mind polychronicity (i.e., preferred temporal orientation), speed and accuracy?

Research Objective (VIII): If the subjective experience of time changes across tasks of increasing cognitive challenge, is it also subject to cultural variability?

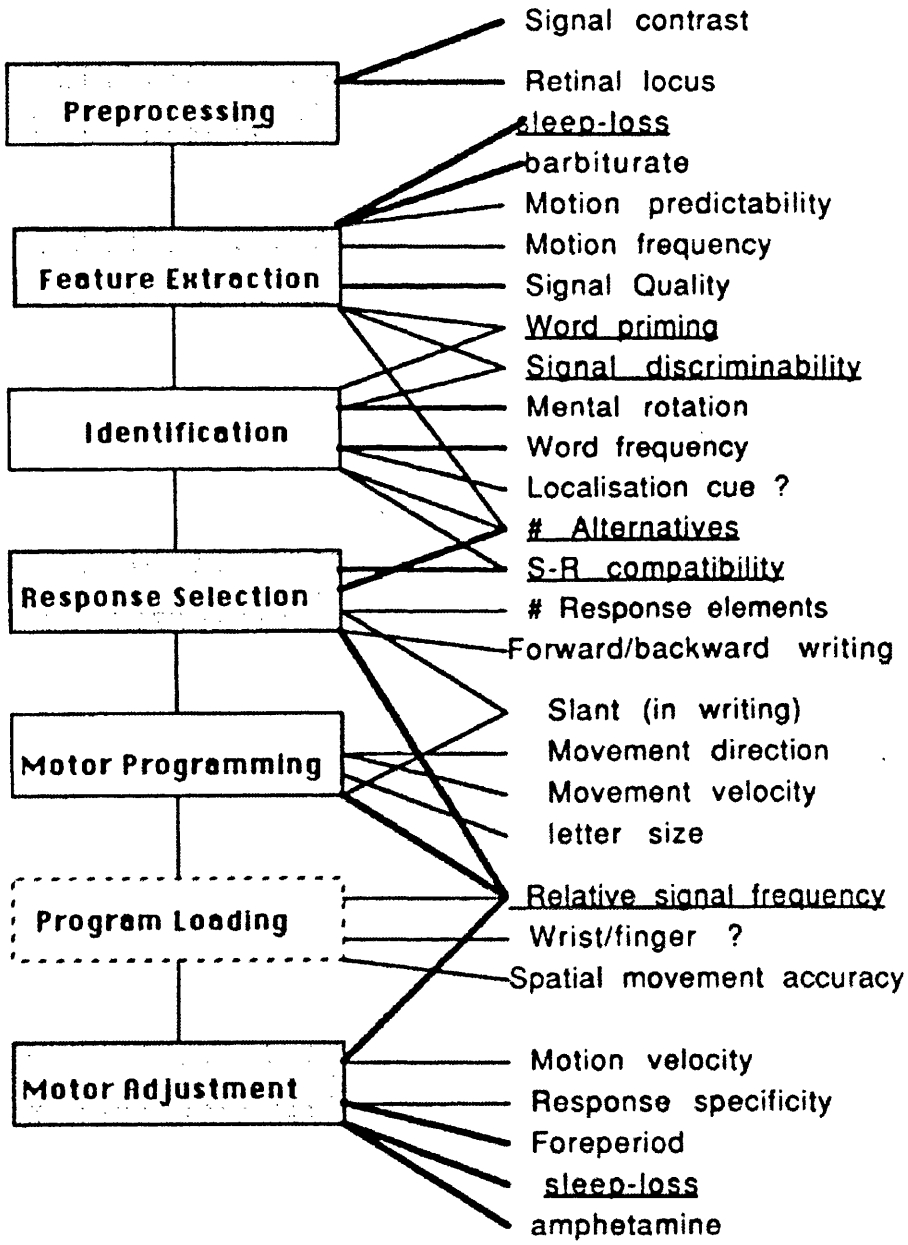
To expand upon the research objectives please see Chapter 1 for an introduction of relevant hypotheses that address each of the research objectives.

Appendix 2A


Cyclical
Linear
Monochronic
Clock
Event
Polychronic
Heterogenous
Homogenous
Successive
Duration
TIME
Natural
Objective
Artificial
Novelty time
Time flying
Individual
Social
Subjective
Time dragging
Experience of duration

Appendix 2B

"Additive Factors Stage Structure of Information Processing in Traditional Choice Reaction"



Source: Sanders (1990: 133)

Appendix 4.3A

Guide of Figures for Hypotheses

General Framework pertaining to 'Culture's Management of Time across Global Schools of Thought'.	Figure 4.3A
Hypotheses	
(Ho1) Different socio-cultural orientations manifest different behavioural response rates (accuracy and speed). In timed situations, the clock-oriented, high-tech cultures attain higher levels of accuracy and speed than event-oriented, low-tech cultures.	Figure 4.3B
(Ho1a) High-tech cultures are both monochronic and polychronic in terms of preferred (mind-based) temporal orientation.	Figure 4.3C
(Ho2) Different cultural and/ or specific temporal orientations (i.e., monochronic, polychronic or both) manifest differential expectations of achievement.	Figure 4.3D
(Ho3) Males are more monochronic than females, whereas females are more polychronic.	Figure 4.3E
(Ho3a) Men are more prone to the negative impacts of Type A and are more achievement strivings and impatient/ irritable than women, as are cultures of a highly developed western orientation steeped in advanced states of technology.	Figure 4.3F
(Ho4) Higher levels of psychometric intelligence and lower levels of role ambiguity engender greater levels of self-efficacy.	Figure 4.3G
(Ho5) Polychronics show greater signs of self-efficacy compared to Monochronics.	Figure 4.3H
(Ho6) Cultures high in perceived control of time incorporate more monochronic tendencies in the approach to task-to-time management.	Figure 4.3I
(Ho6a) Technology, culture and personality affect satisfaction. For high-tech, clock-oriented cultures, self-efficacy and perceived control of time are significant predictors. For low-tech, event-oriented cultures, self-efficacy and achievement strivings are significant predictors.	Figure 4.3J
(Ho7) Cultures high in emotion polychronicity (P-time) are more positively oriented towards work than cultures low in emotion polychronicity (M-time). Greater levels of achievement strivings and lower levels of impatience/ irritability are also argued to manifest.	Figure 4.3K
(Ho8) Role ambiguity is more characteristic of high-tech cultures than nations more socially/ P-time oriented. Lower levels of achievement strivings, self-efficacy and life satisfaction are also argued to manifest.	Figure 4.3L
(Ho9) Speed is argued to correlate more so with the II (impatience/ irritability) than with AS (achievement strivings), and in a negative direction.	Figure 4.3M
(Ho10) A negative relationship is hypothesised to exist between preferred polychronic time use and role overload, and especially for cultures more socially/ P-time oriented than those more individualistic.	Figure 4.3N
(Ho11) Preferred polychronic time use (IPV) and speed will be	Figure 4.3O

negatively correlated, i.e. high polychronic time use relates with faster reaction time speeds.	
(Ho12) Preferred polychronic time use (IPV) and accuracy of response are positively related	Figure 4.3P
(Ho13) As the complexity of cognitive challenges increase, the subjective experience of the passage of time decreases, and is further differentiated by culture.	Figure 4.3Q
(Ho13a) Monochronics will be more adept than polychronics in providing accurate subjective estimates of an objective passage of time whilst performing a simple, non-taxing activity.	Figure 4.3R

Figure 4.3A: Framework to Examine Culture's Management of Time Across Global Schools of Thought.

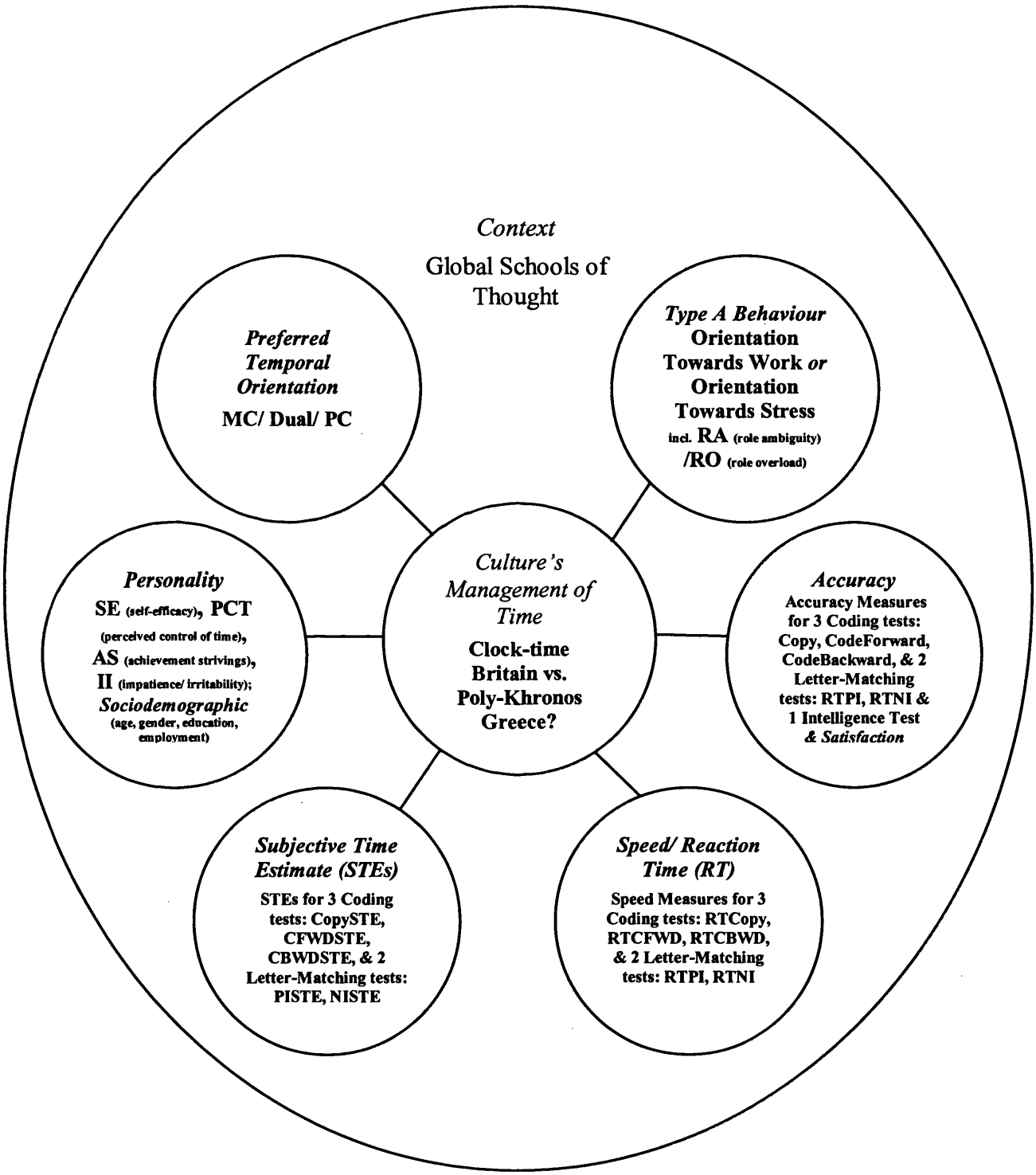


Figure 4.3B: (Ho1) Different socio-cultural orientations manifest different behavioural response rates (accuracy and speed). In timed situations, the clock-oriented, high-tech cultures attain higher levels of accuracy and speed than event-oriented, low-tech cultures.

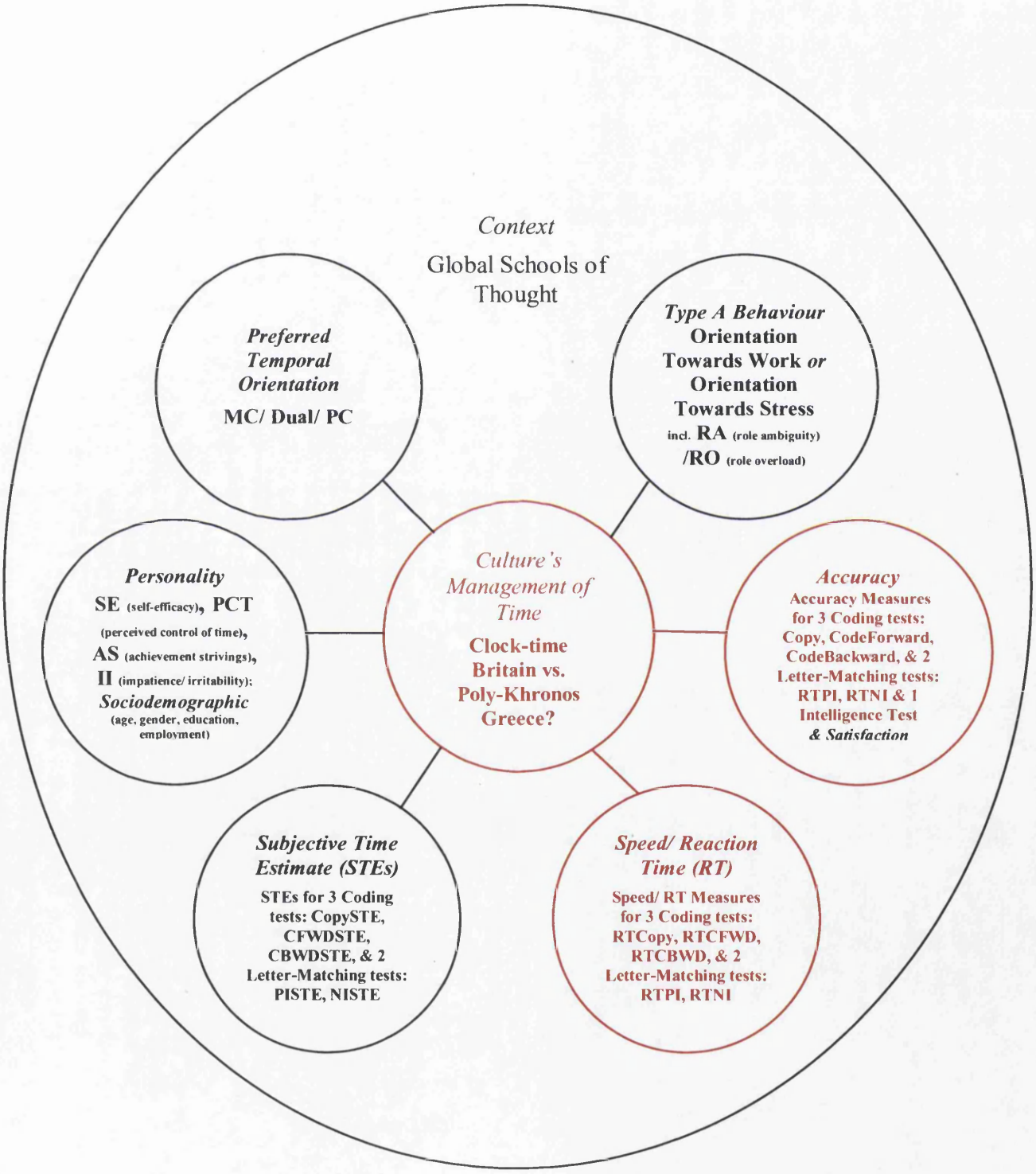


Figure 4.3C: (Ho1a) High-tech cultures are both monochronic and polychronic in terms of preferred (mind-based) temporal orientation.

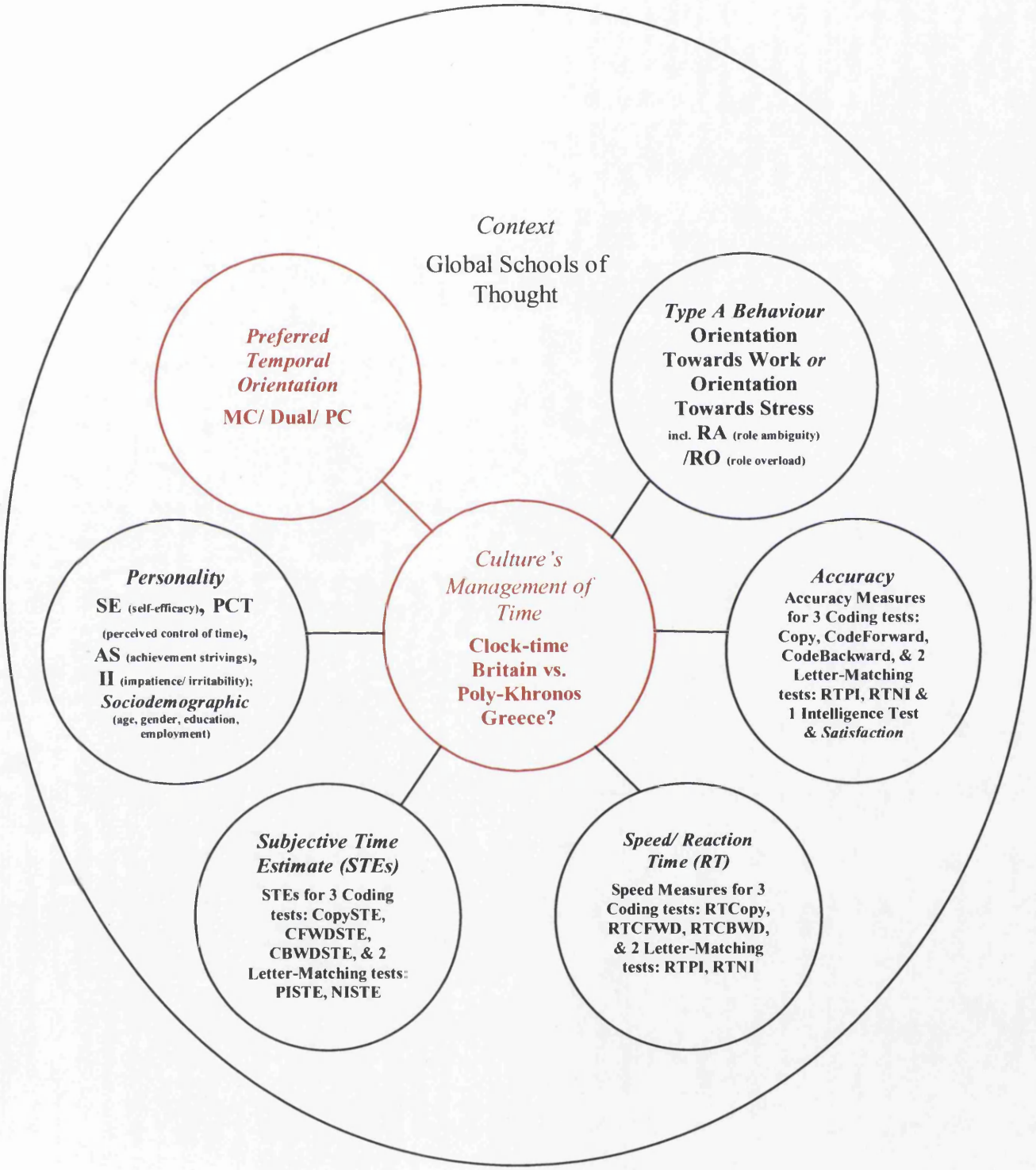


Figure 4.3D: (Ho2) Different cultural and/ or specific temporal orientations (i.e., monochronic, polychronic or both) manifest differential expectations of achievement.

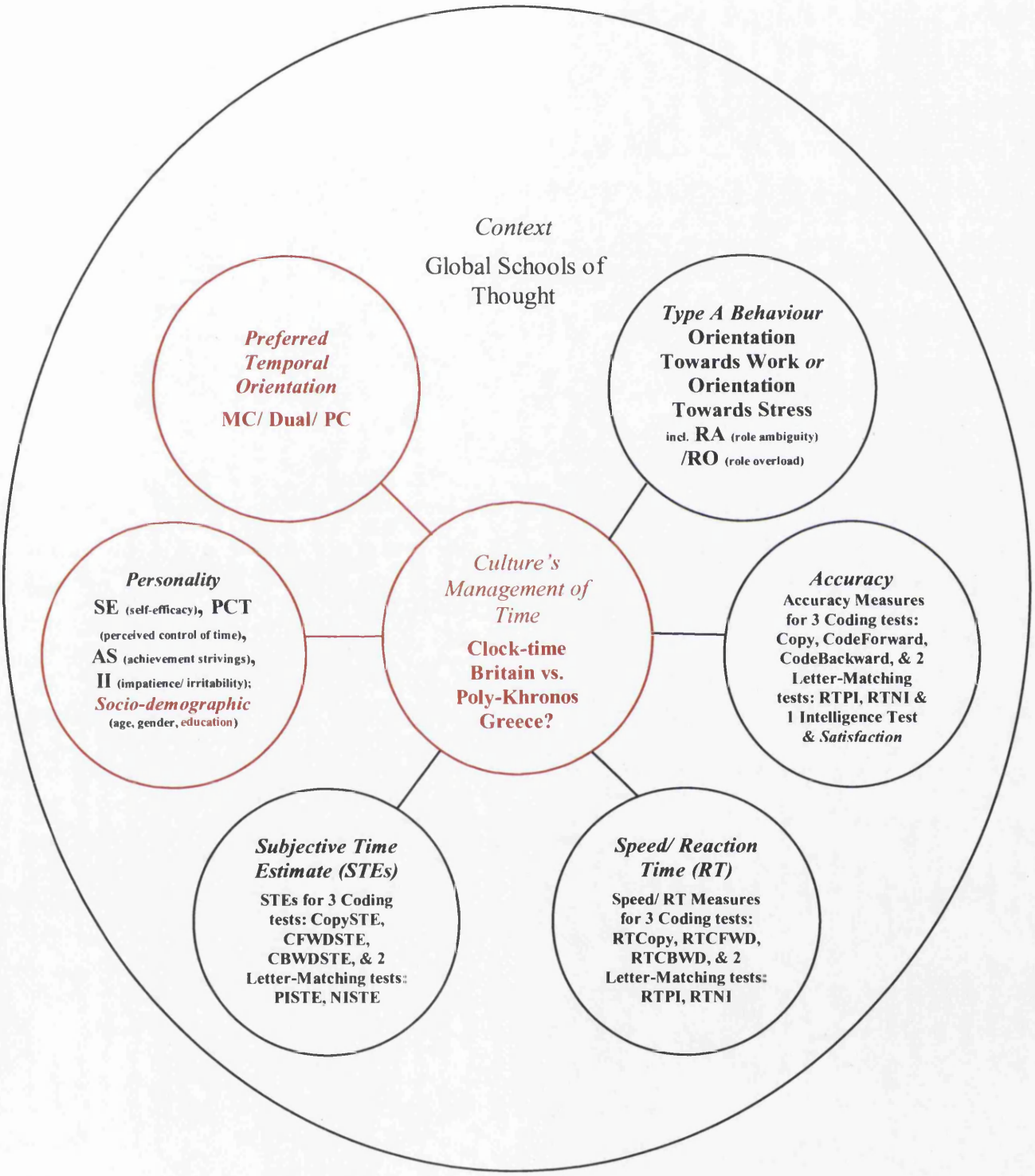


Figure 4.3E: (Ho3) Males are more monochronic than females, whereas females are more polychronic.

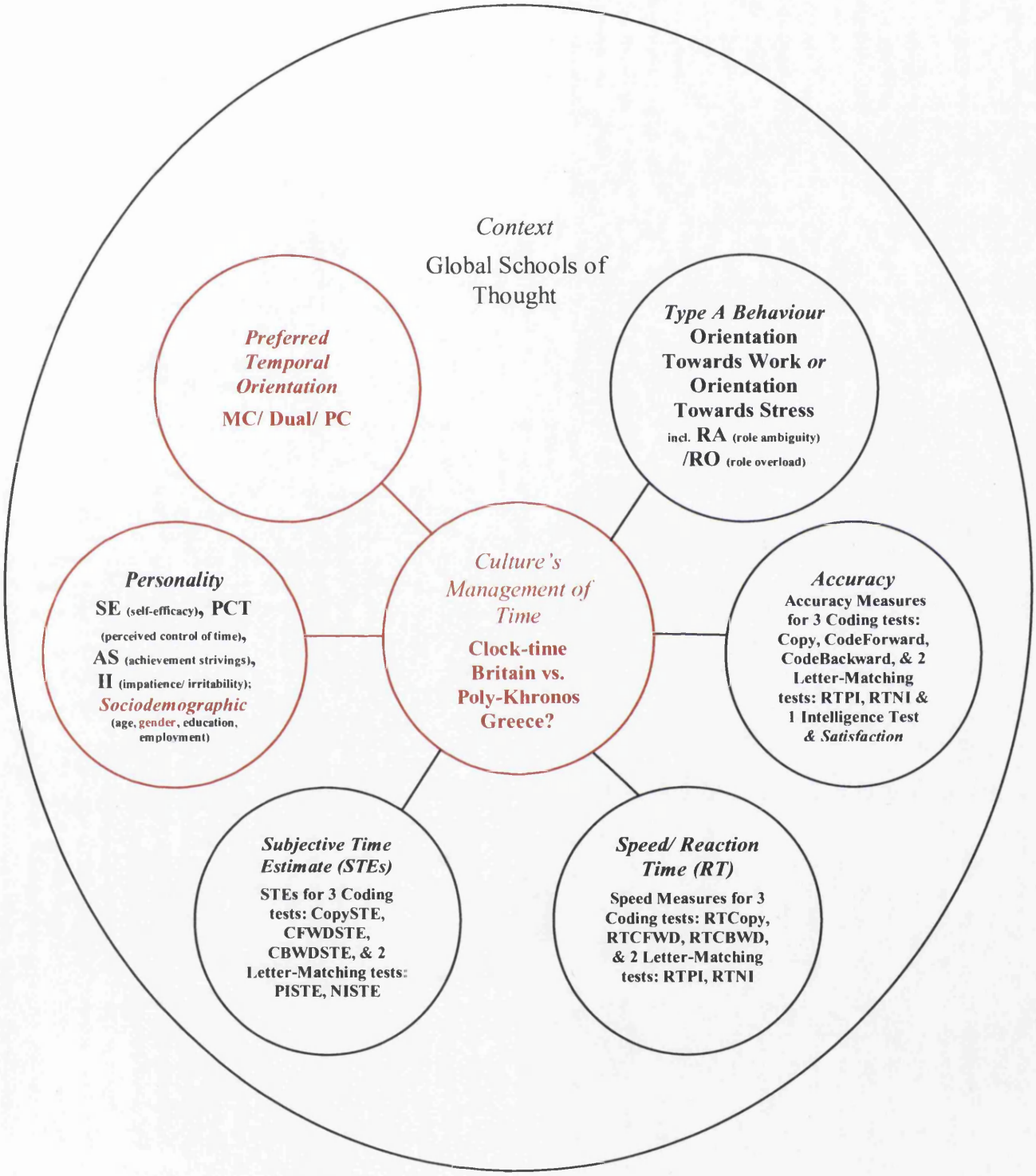


Figure 4.3F: (Ho3a) Men are more achievement strivings and impatient/ irritable than women, as are cultures of a highly developed western orientation steeped in advanced states of technology.

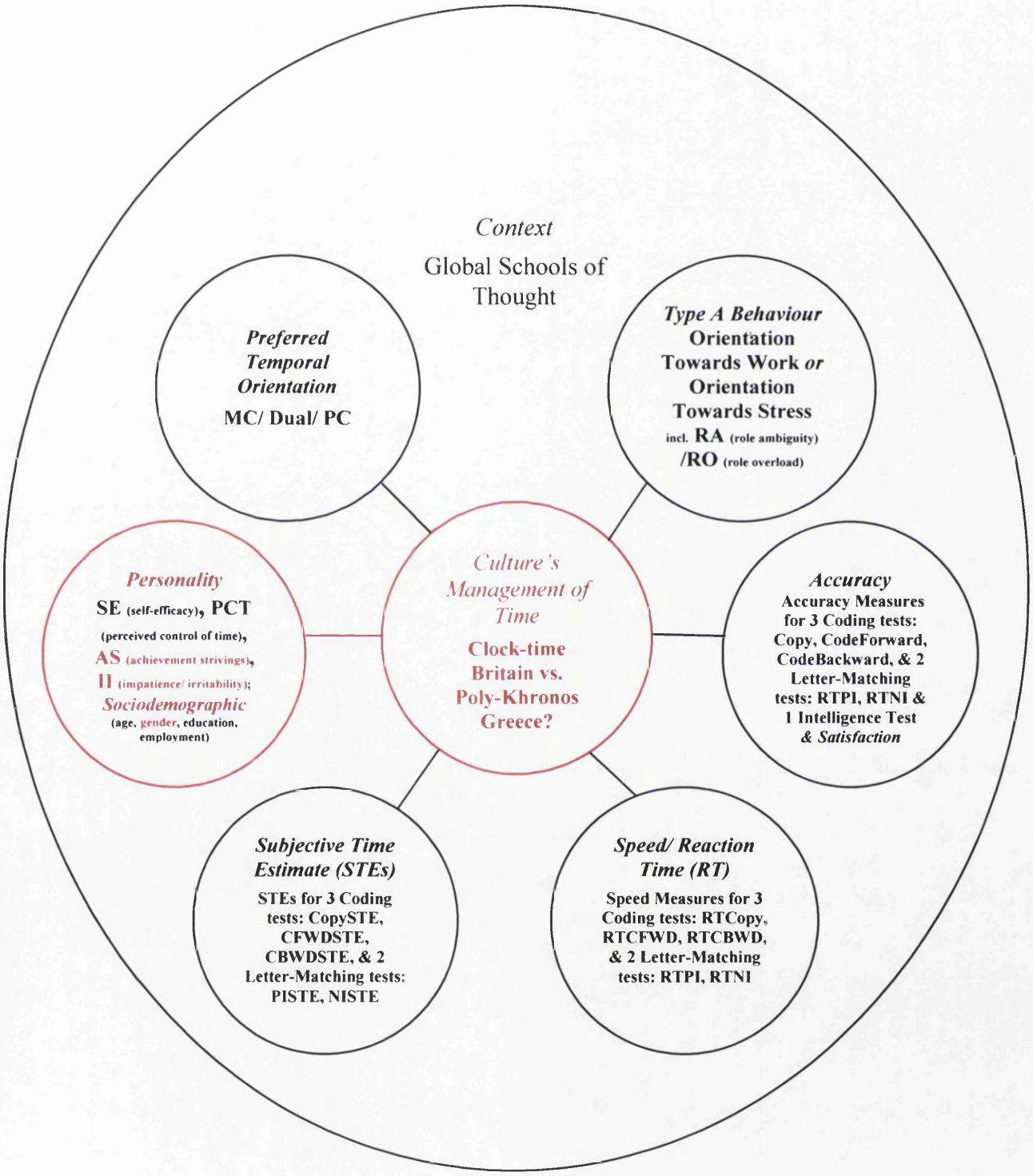


Figure 4.3G: (Ho4) Higher levels of psychometric intelligence and lower levels of role ambiguity engender greater levels of self-efficacy.

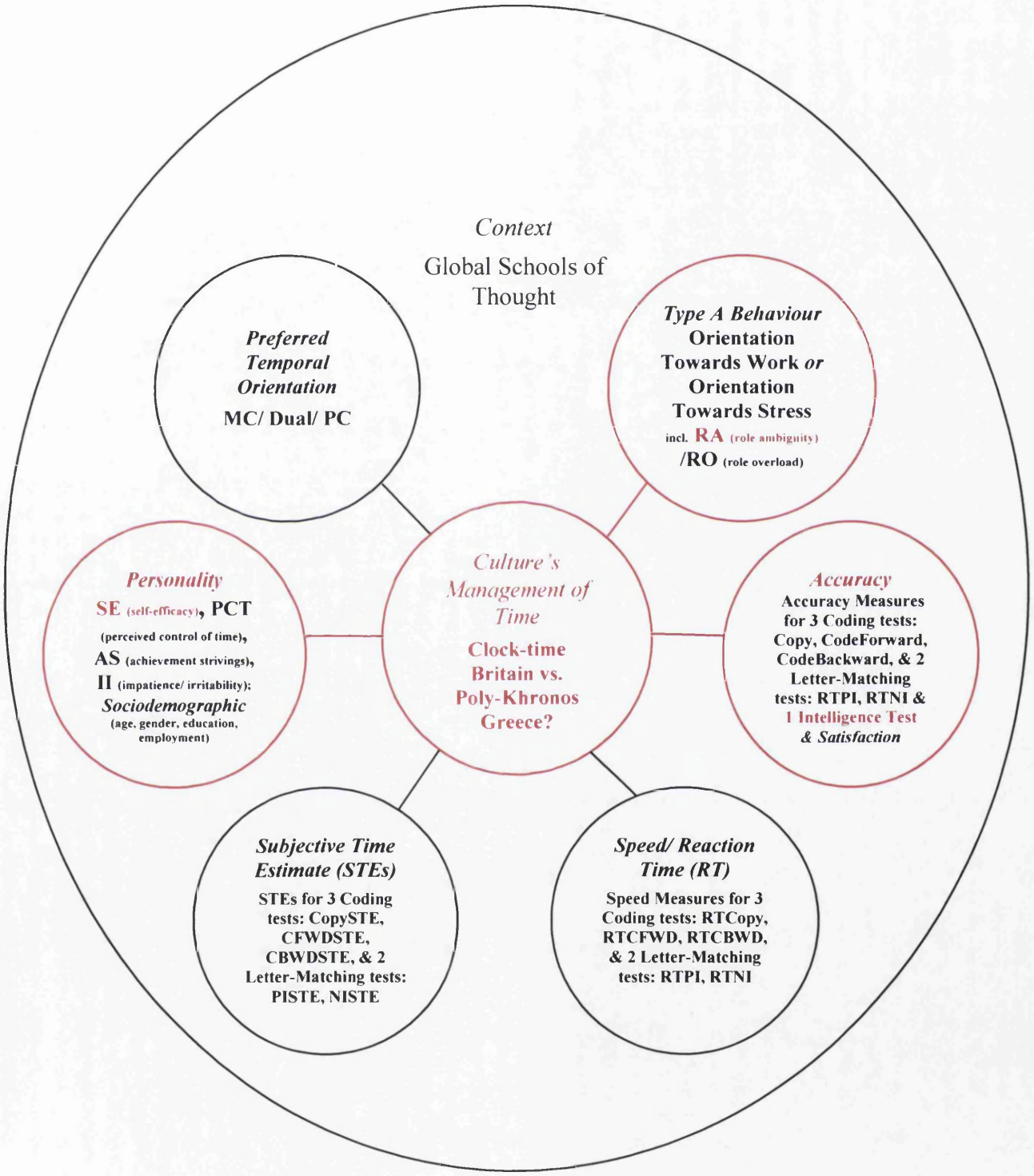


Figure 4.3H: (Ho5) Polychronics show greater signs of self-efficacy compared to Monochronics.

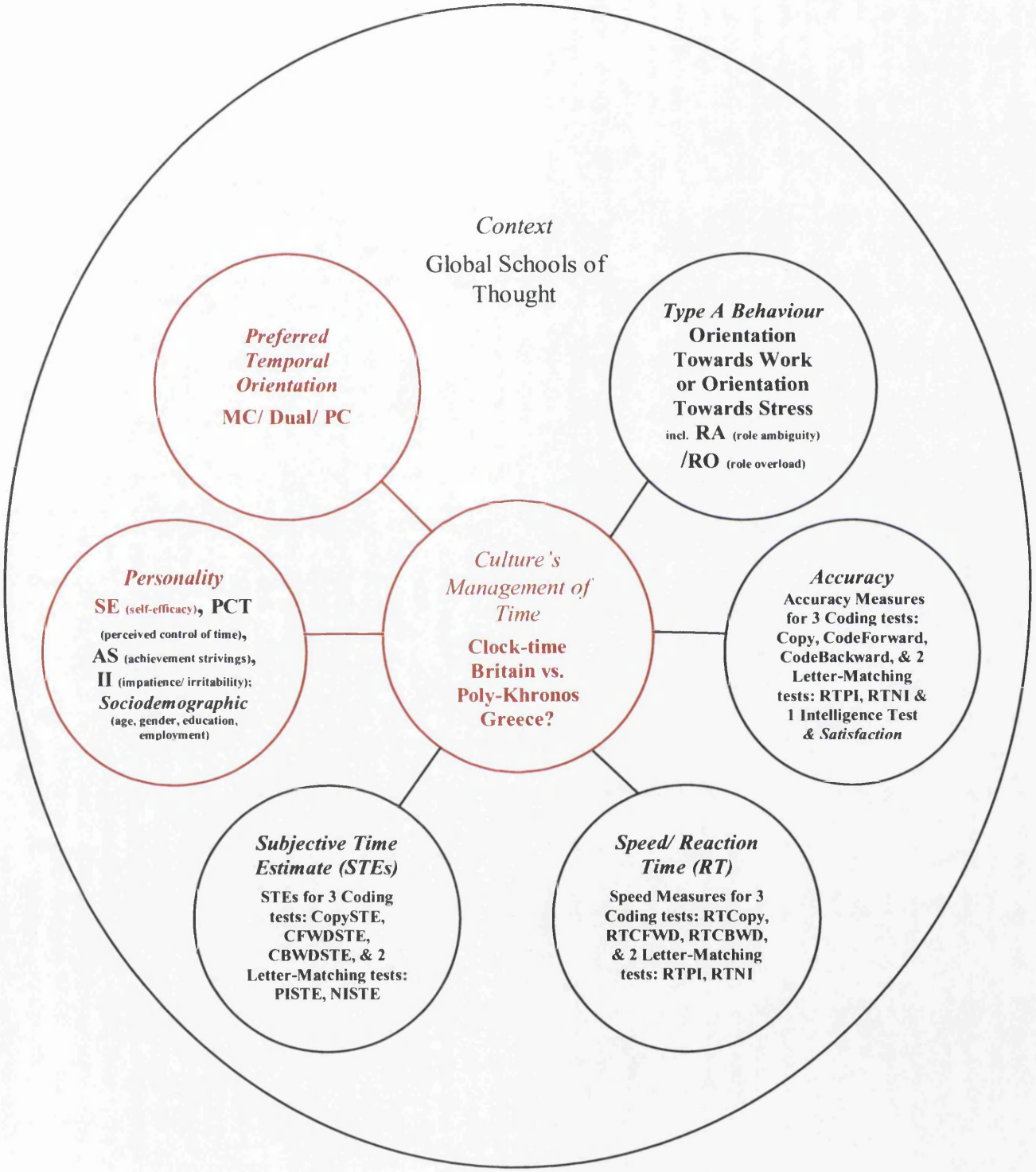


Figure 4.3I: (Ho6) Cultures high in perceived control of time incorporate more monochronic tendencies in the approach to task-to-time management.

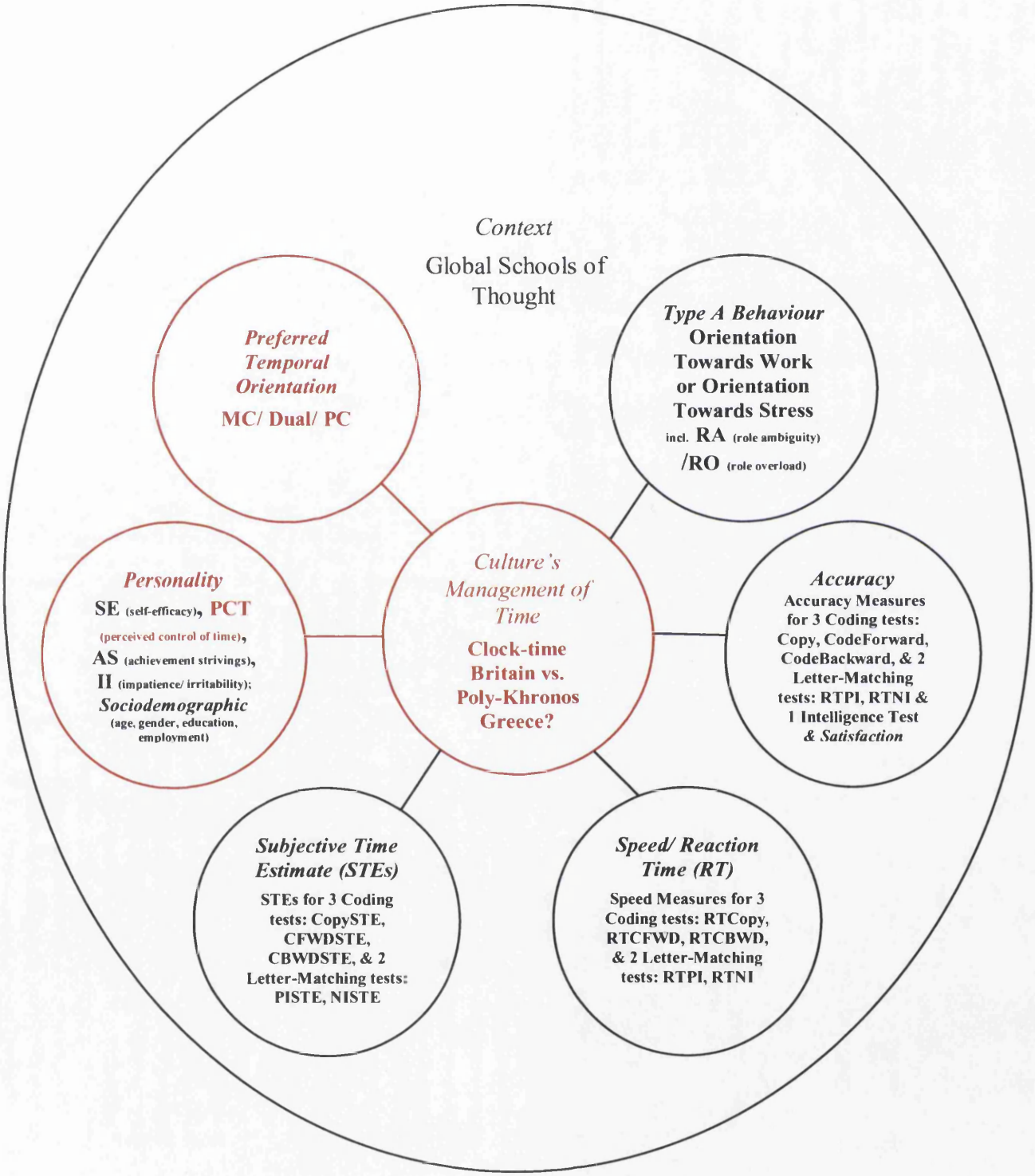


Figure 4.3J: (Ho6a) Technology, culture and personality affect satisfaction. For high-tech, clock-oriented cultures self-efficacy and perceived control of time are significant predictors. For low-tech event-oriented cultures, self-efficacy and achievement strivings are significant predictors.

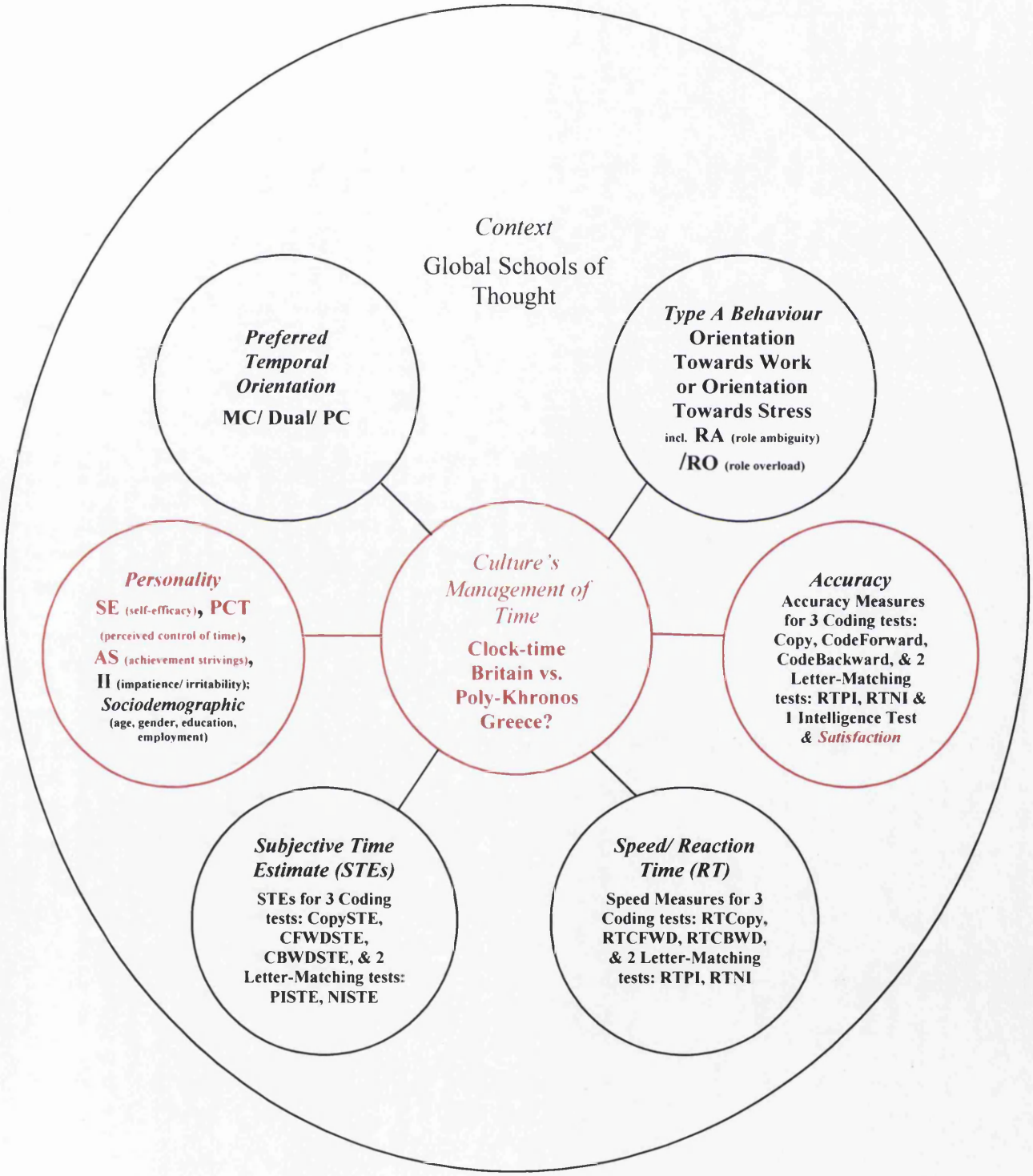


Figure 4.3K: (Ho7) Cultures high in emotion polychronicity (P-time) are more positively oriented towards work than cultures low in emotion polychronicity (M-time). Greater levels of achievement strivings and lower levels of impatience/ irritability are also argued to manifest.

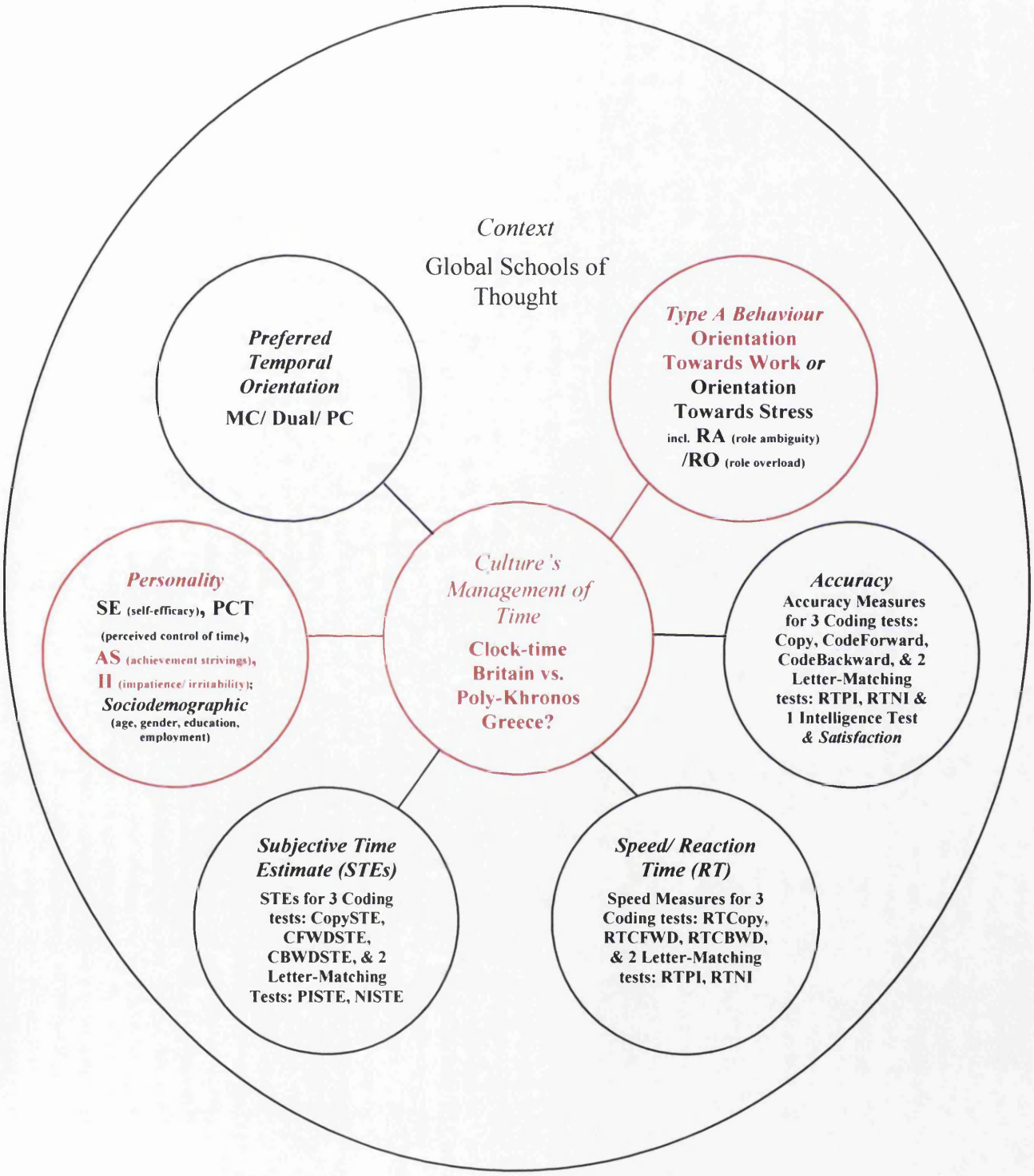


Figure 4.3L: (Ho8) Role ambiguity is more characteristic of high-tech cultures than nations more socially/ P-time oriented. Lower levels of achievement strivings, self-efficacy and life satisfaction are also argued to manifest.

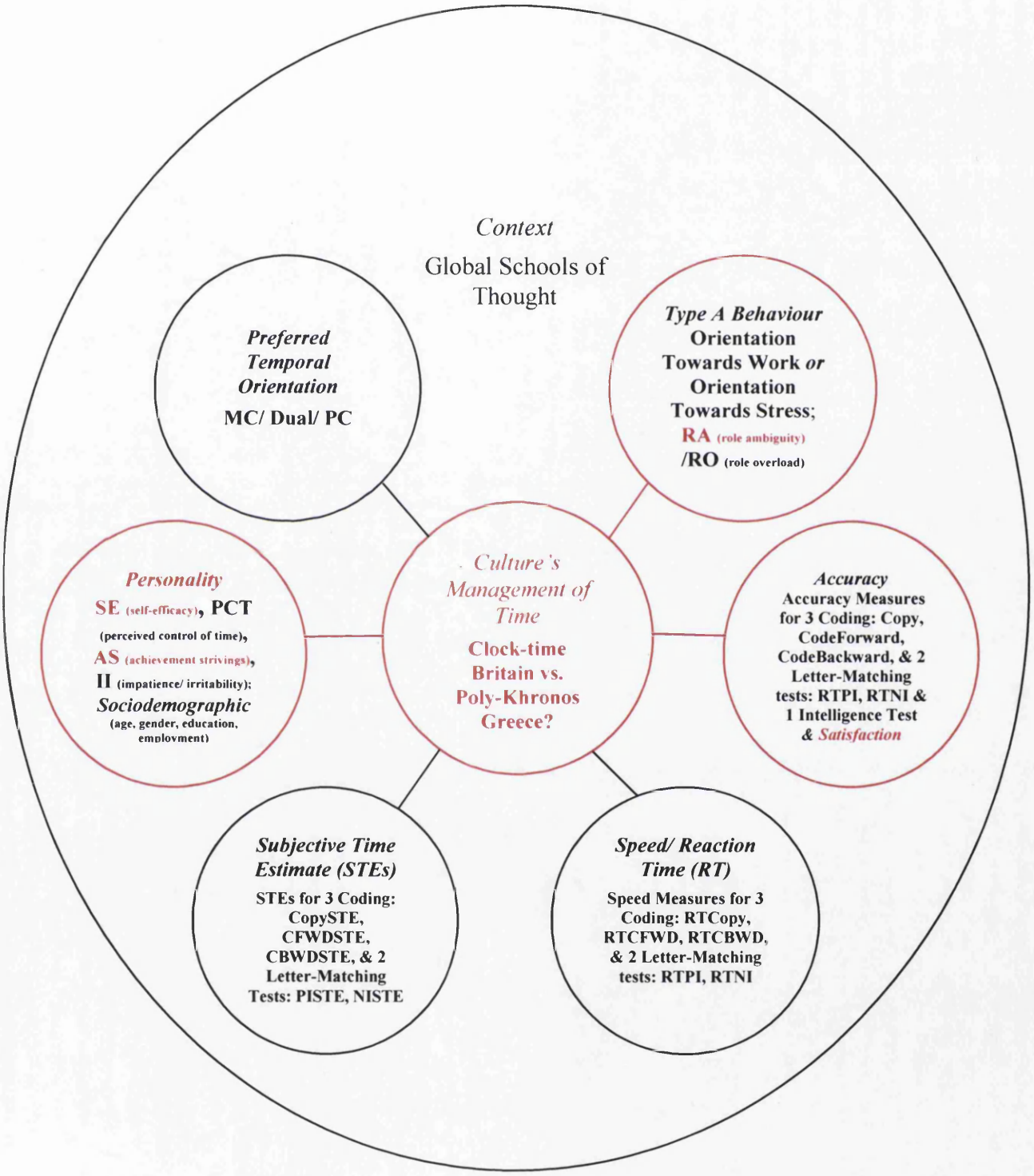


Figure 4.3M: (Ho9) Speed correlates more so with the II (impatience/ irritability) than with AS (achievement strivings), and in a negative direction.

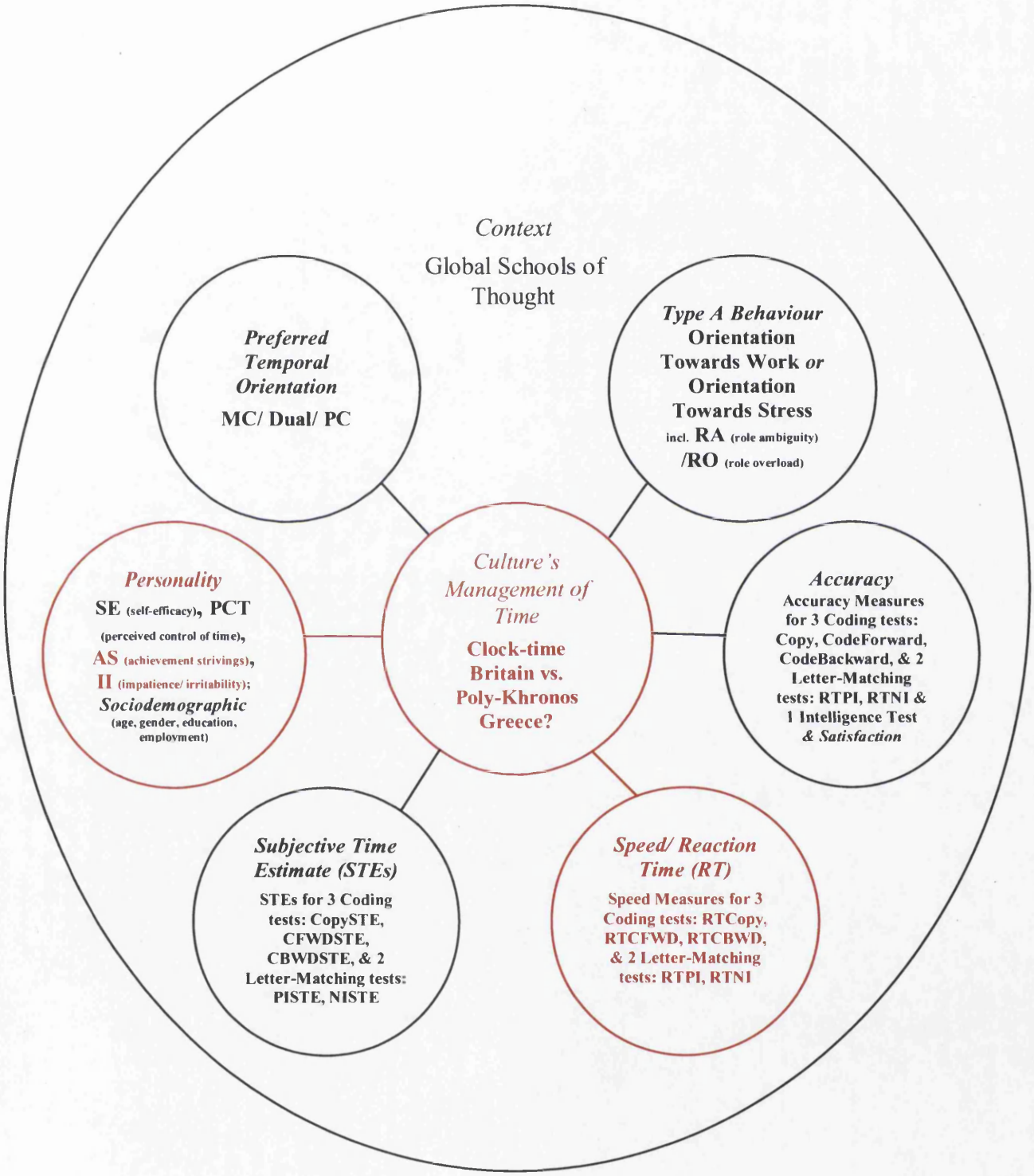


Figure 4.3N: (Ho10) A negative relationship is hypothesised to exist between preferred polychronic time use and role overload, and especially for cultures more socially/ P-time oriented than those more individualistic.

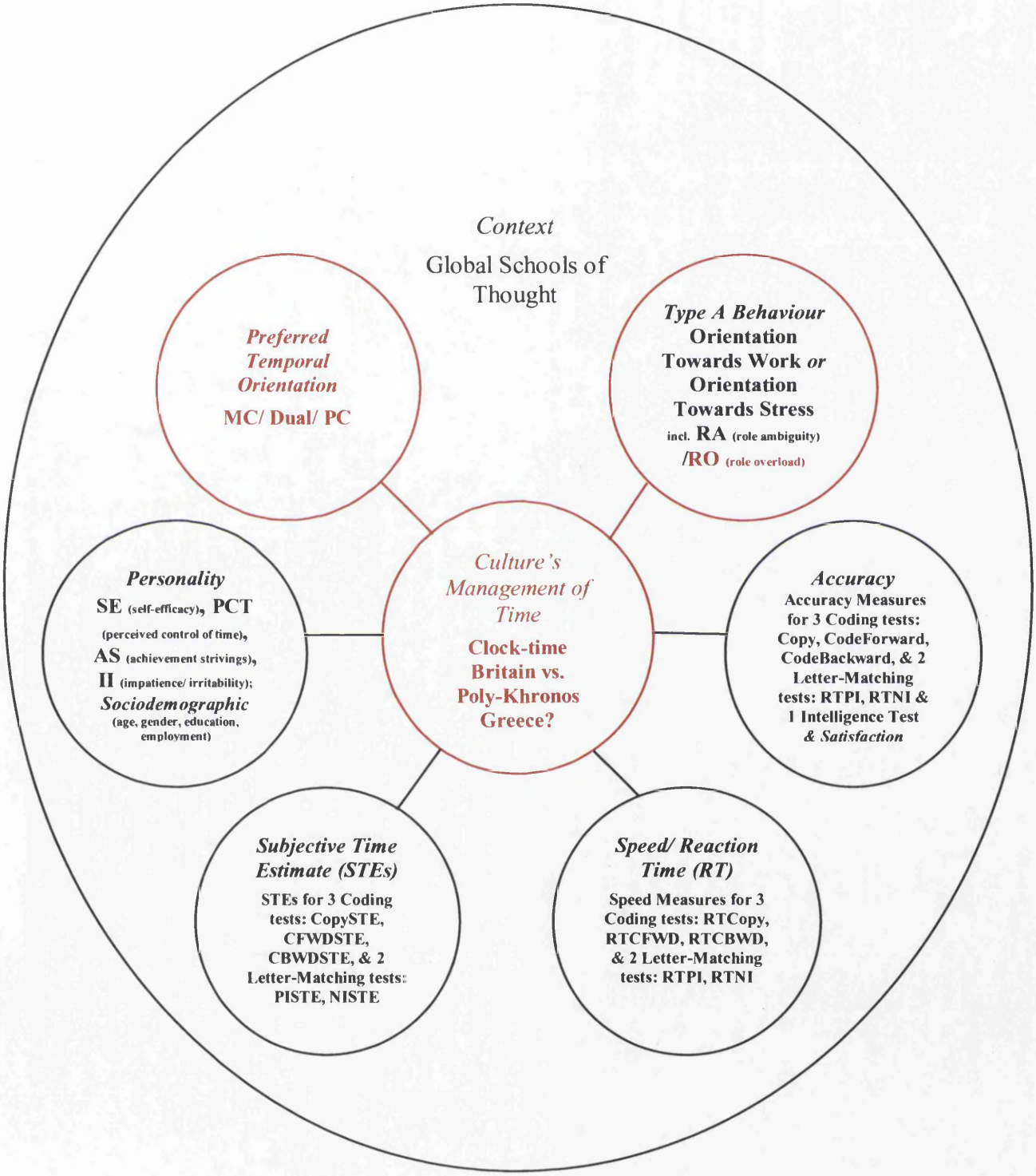


Figure 4.3O: (Ho11) Preferred polychronic time use (IPV) and speed will be negatively correlated, i.e., high polychronic time use relates with faster reaction time speeds.

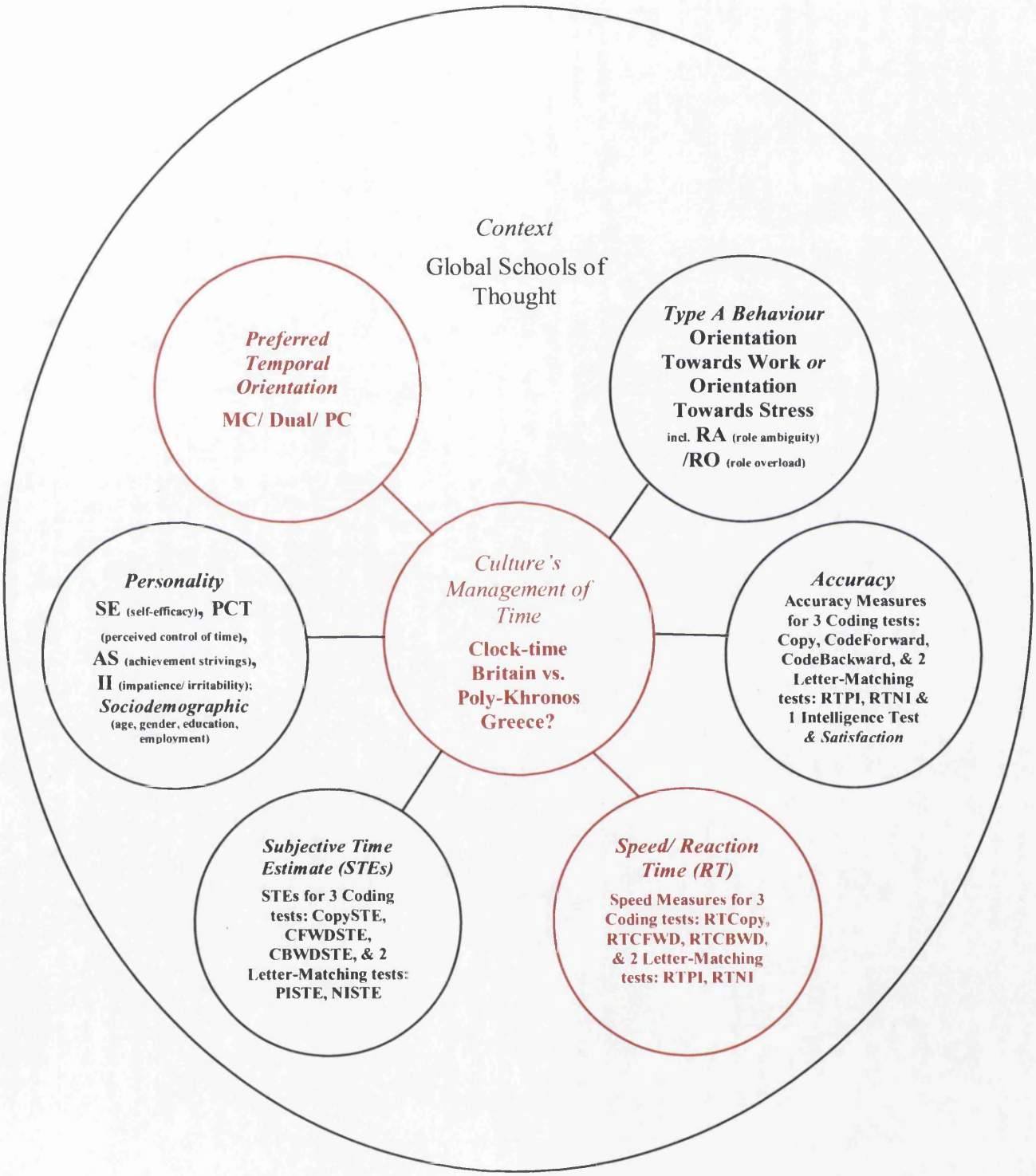


Figure 4.3P: (Ho12) Preferred polychronic time use (IPV) and accuracy of response are positively related.

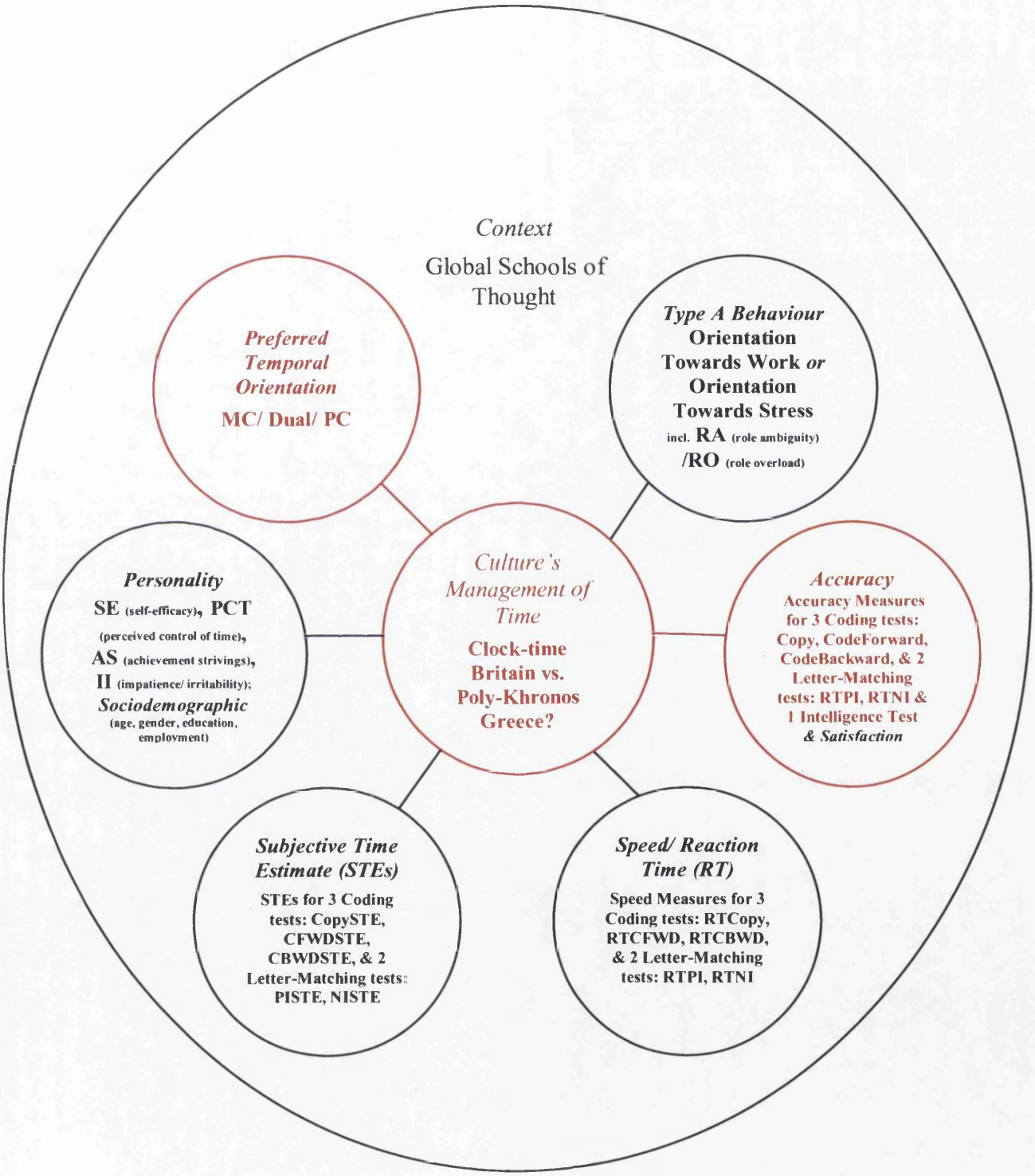


Figure 4.3Q: (Ho13) As the complexity of cognitive challenges increase, the subjective experience of the passage of time decreases, and is further differentiated by culture.

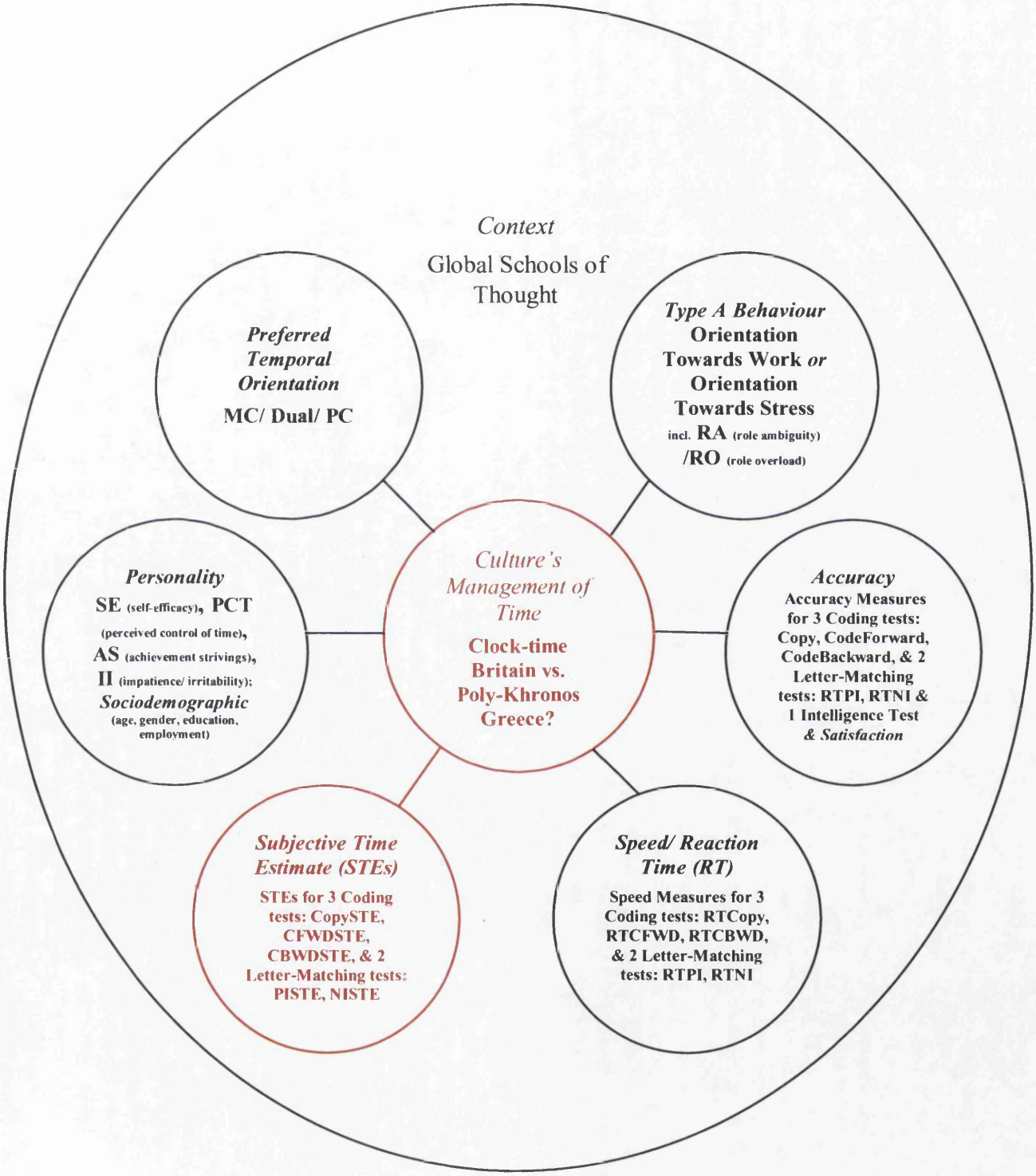
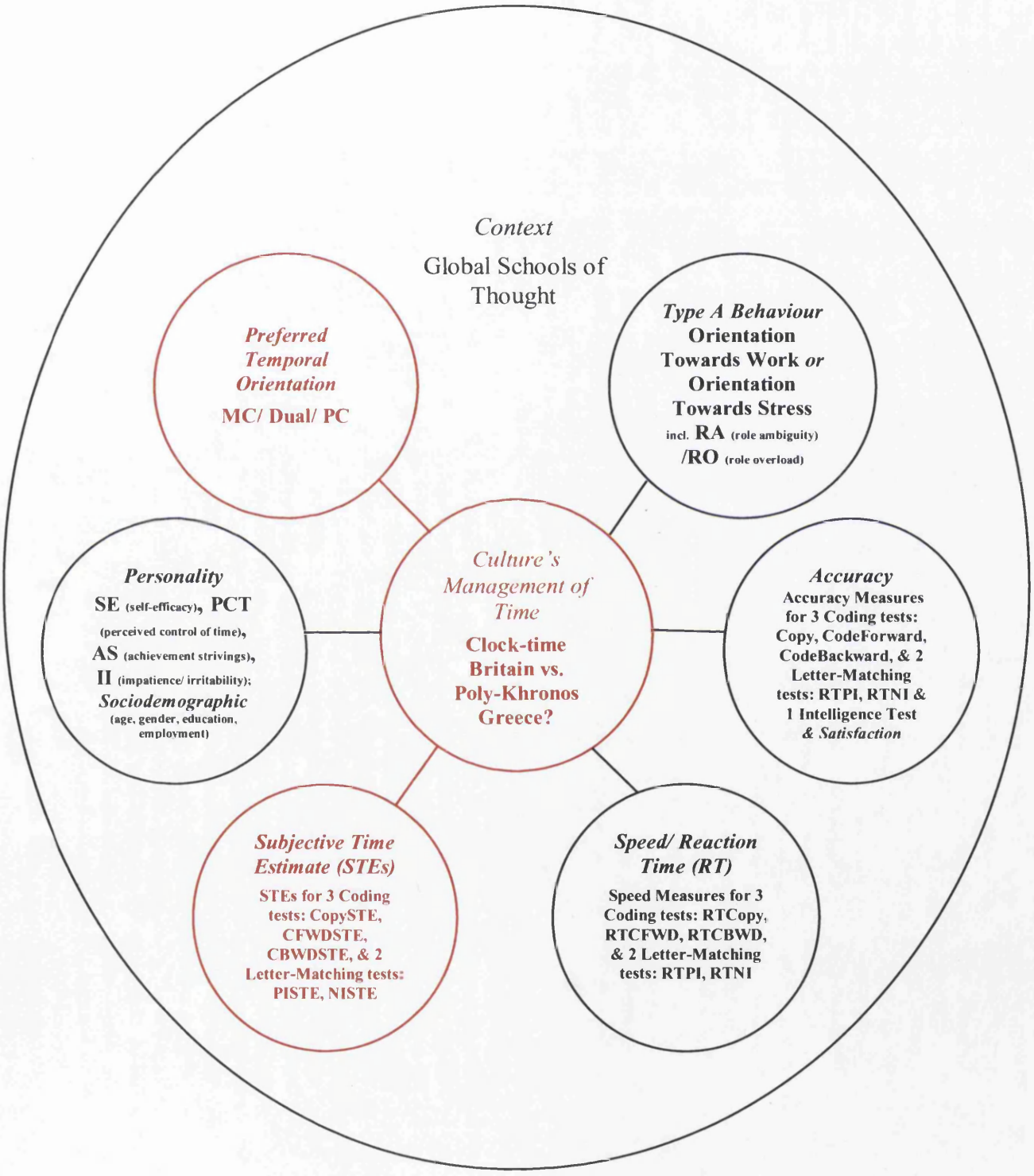


Figure 4.3R: (Ho13a) Monochronics will be more adept than polychronics in providing accurate subjective estimates of an objective passage of time whilst performing a simple, non-taxing activity.



Appendix 5.1A

Questionnaires –English and Greek Versions

Student ID [Identification] Number: _____

School of Business & Economics
Marketing Research

Introduction

The marketing research department of Swansea University's School of Business & Economics is conducting research into cross-cultural behaviours and preferred patterns of time use, and greatly values your participation in this area of study. Above all, your details will be regarded as highly confidential to ensure your identity remains anonymous. To complete the following survey, please give a response to all items of query.

Circle or enter the appropriate response.

[AS1] How much does college "stir you into action?"
much less than others 1 2 3 4 5 *much more than others*

[AS2] Nowadays, do you consider yourself to be?
very hard-driving 1 2 3 4 5 *very relaxed and easy going*

[AS3] How would your best friends or others who know you well rate your general level of activity?
too slow 1 2 3 4 5 *very active; should slow down*

[AS4] How seriously do you take your academic studies?
much more than most 1 2 3 4 5 *much less than most*

[AS5] How often do you set deadlines or quotas for yourself in courses or other activities?
very often 1 2 3 4 5 *almost never*

[AS6] Compared with other students, the amount of effort I put forth is...
more much 1 2 3 4 5 *much less*

[AS7] Compared with other students, I approach life in general
much more seriously 1 2 3 4 5 *much less seriously*

[II1] When a person is talking and takes too long to come to the point, how often do you feel like hurrying the person along?
very frequently 1 2 3 4 5 *almost never*

[II2] Typically, how easily do you get irritated?
extremely easily 1 2 3 4 5 *not at all easily*

[II3] Do you tend to do most things in a hurry?
definitely true 1 2 3 4 5 *not at all true*

[II4] How is your "temper" these days?
very hard to control 1 2 3 4 5 *I seldom get angry*

[II5] When you have to wait in line such as at a restaurant, the movies, or the post office, how do you usually feel?
accept calmly 1 2 3 4 5 *feel very impatient and refuse to stay long*

Mark with an X the option that applies to you.	1 very false	2	3	4	5	6	7 very true
[RA1] I feel certain about how much authority I have							
[RA2] Clear, planned goals & objectives for my studies							
[RA3] I know that I have divided my time properly							
[RA4] I know what my responsibilities are							
[RA5] I know exactly what is expected of me							
[RA6] Explanation is clear of what has to be done							

Mark with an X the option that applies to you.	not at all true	hardly true	moderately true	exactly true
[SE1] I can always manage to solve difficult problems if I try hard enough				
[SE2] If someone opposes me, I can find the means and ways to get what I want				
[SE3] It is easy for me to stick to my aims and accomplish my goals				
[SE4] I am confident that I could deal efficiently with unexpected events				
[SE5] Thanks to my resourcefulness, I know how to handle unforeseen situations				
[SE6] I can solve most problems if I invest the necessary effort				
[SE7] I can remain calm when facing difficulties because I can rely on my coping abilities				
[SE8] When I am confronted with a problem, I can usually find several solutions				
[SE9] If I am in trouble, I can usually think of a solution				
[SE10] I can usually handle whatever comes my way				

[AB1] Do you feel pressurised by circumstances...?
❑ not at all ❑ a little ❑ a normal amount ❑ quite a lot ❑ a lot

[AB2] Is your level of activity...?
❑ very high ❑ high ❑ normal ❑ low ❑ very low

[AB3] Do you like everything you do to be perfect...?
❑ not at all ❑ a little ❑ a normal amount ❑ quite a lot ❑ a lot

[AB4] Is your desire to go as far as you can in your academic studies or in your relationships with others...?
❑ very high ❑ high ❑ normal ❑ low ❑ very low

[AB5] Is your desire to do things better than other people...?
❑ very low ❑ low ❑ normal ❑ high ❑ very high

[AB6] Is your sensation of being in a hurry or short of time...?
❑ very low ❑ low ❑ normal ❑ high ❑ very high

[AB7] Is your preoccupation with your studies or the tasks you have to do...?
❑ very high ❑ high ❑ normal ❑ low ❑ very low

[AB8] Is your difficulty to talk about your feelings...?
❑ very high ❑ high ❑ normal ❑ low ❑ very low

Mark with an X the option that applies to you.	seldom true	occasionally true	true about as often as not	frequently true	very often true
[PCT1] I underestimate the time that it will take to accomplish tasks					
[PCT2] I feel in control of my time					
[PCT3] I must spend a lot of time on unimportant tasks					
[PCT4] I find it difficult to keep a schedule because others take me away from my tasks					
[PCT5] I find myself procrastinating on tasks that I don't like but that must be done					

Mark with an X the option that applies to you.

	strongly disagree	disagree	slightly disagree	neither agree nor disagree	slightly agree	agree	strongly agree
[PC1] I like to juggle several activities at the same time							
[PC2] I would rather complete an entire project every day than complete parts of several projects							
[PC3] I believe people should try to do many things at once							
[PC4] When I study by myself, I usually study on one project at a time							
[PC5] I prefer to do one thing at a time							
[PC6] I believe people do their best academic work when they have many tasks to complete							
[PC7] I believe it is best to complete one task before beginning another							
[PC8] I believe it is best for people to be given several tasks and assignments to perform							
[PC9] I seldom like to work on more than a single task or assignment at the same time							
[PC10] I would rather complete parts of several projects every day than complete an entire project							
[RO1] I am given enough time to do what is expected of me for my studies							
[RO2] It often seems like I have too many tasks for one person to do							
[RO3] The performance standards for my studies are too high							
[RO4] I feel that I just don't have time to take an occasional break							
[LS1] In most ways my life is close to my ideal							
[LS2] The conditions of my life are excellent							
[LS3] I am satisfied with my life							
[LS4] So far I have gotten the important things I want in life							
[LS5] If I could live my life over, I would change almost nothing							

Circle or enter the appropriate response.

[R1] Respondent Surname [Family Name]: _____

[R2] Respondent Date of Birth: _____ (dd/mm/yy)

[R3] Location of Respondent: 1 = United Kingdom 2 = Greece

[R4] Respondent Sex: 1 = Male 2 = Female

[R5] Faculty of Respondent: 1 = Arts/Social/Health 2 = Science 3 = Engineers 4 = Business, Economics, Law

[R6] Year of Respondent: 1 = First Year 2 = 2nd Year 3 = 3rd Year 4 = other _____ (please specify)

[R7] Age of Respondent: _____ years [R8] Nationality of Respondent: _____

[R9] Expected Grade Classification for Degree [or equivalent so far]: 1 = 1st 2 = 2:1 3 = 2:2 4 = 3rd 5 = Pass 6 = Fail

[R10] Whilst you are studying at university do you also work to earn an income? 1 = Yes 2 = No

Thank you for your time and participation.

Αριθμός Μητρώου Φοιτητή:_____

ΣΧΟΛΗ ΔΙΟΙΚΗΣΗΣ ΤΩΝ ΕΠΙΧΕΙΡΗΣΕΩΝ ΚΑΙ ΟΙΚΟΝΟΜΙΚΩΝ ΣΠΟΥΔΩΝ
ΕΡΕΥΝΑ ΜΑΡΚΕΤΙΝΓΚ

Εισαγωγή

Το τμήμα Μάρκετινγκ της Σχολής Διοίκησης των Επιχειρήσεων και Οικονομικών Σπουδών του Πανεπιστημίου του Σουάνσι διενεργεί μια έρευνα στους δια-πολιτισμικούς τρόπους συμπεριφοράς και στην προτίμηση τρόπων χρησιμοποίησης του χρόνου, και εκτιμά ιδιαίτερα την συνεργασία σας σε αυτήν την μελέτη. Πάνω από όλα, τα στοιχεία σας θα θεωρηθούν πολύ εμπιστευτικά και οι απαντήσεις σας θα παραμείνουν ανώνυμες. Για να συμπληρώσετε την παρακάτω έρευνα, σας παρακαλούμε να απαντήσετε σε όλες της ερωτήσεις.

Κυκλώστε την κατάλληλη απάντηση.

[AS1] Πόσο πολύ σας δραστηριοποιεί το Πανεπιστήμιο σαν άτομο;
Πολύ λιγότερο απ' οτιδήποτε άλλο 1 2 3 4 5 Πολύ περισσότερο απ΄ οτιδήποτε άλλο

[AS2] Σήμερα, θεωρείτε τον εαυτό σας ότι είναι
Πολύ εργατικός 1 2 3 4 5 Πολύ άνετος και χαλαρός

[AS3] Πώς θα περιέγραφαν οι καλύτεροί σου φίλοι, ή άλλοι που σας ξέρουνε καλά, το επίπεδο της δραστηριότητά σας;
Υπερβολικά αργός 1 2 3 4 5 Πολύ δραστήριος. Να δουλεύει λιγότερο

[AS4] Πόσο σοβαρά παίρνετε τις σπουδές σας στο Πανεπιστήμιο;
Πολύ περισσότερο απ΄ ότι οι άλλοι 1 2 3 4 5 Πολύ λιγότερο απ΄ ότι οι άλλοι

[AS5] Πόσο συχνά βάζετε χρονοδιαγράμματα και στόχους στις δραστηριότητές σας;
Πολύ συχνά 1 2 3 4 5 Σχεδόν ποτέ

[AS6] Συγκρινόμενος με τους συμφοιτητές μου, η προσπάθεια που εγώ καταβάλω είναι
Πολύ περισσότερη 1 2 3 4 5 Πολύ λιγότερη

[AS7] Σε σύγκριση με τους συμφοιτητές μου, εγώ γενικά αντιμετωπίζω την ζωή
Πολύ πιο σοβαρά 1 2 3 4 5 Λιγότερο σοβαρά

[II1] Όταν κάποιος φλυαρεί και αργεί να φθάσει στο θέμα, πόσο συχνά αισθάνεστε την ανάγκη να του ζητήσετε να συντομεύει;
Πολύ συχνά 1 2 3 4 5 Σχεδόν ποτέ

[II2] Συνήθως, πόσο εύκολα εκνευρίζεστε;
Πάρα πολύ εύκολα 1 2 3 4 5 Καθόλου εύκολα

[II3] Είναι αλήθεια ότι εσείς συνήθως κάνετε πράγματα με βιασύνη;
Είναι πάντα αλήθεια 1 2 3 4 5 Ποτέ δεν είναι αλήθεια

[II4] Πόσο οξύθυμος είστε τις τελευταίες μέρες;
Δύσκολα συγκρατώ τον εαυτό μου 1 2 3 4 5 Σπάνια νευριάζω

[II5] Όταν πρέπει να περιμένετε σε σειρά προτεραιότητας, όπως για παράδειγμα στο εστιατόριο, στην τράπεζα ή στο ταχυδρομείο, πως αισθάνεστε;
Το δέχομαι ήρεμα 1 2 3 4 5 Χάνω την υπομονή μου και αρνούμαι να περιμένω πολύ ώρα

Κυκλώστε μόνο μια από τις εναλλακτικές απαντήσεις που θεωρείτε ότι ταιριάζει σε εσάς.

	Πολύ λάθος						Πολύ σωστό
[RA1] Νοιώθω σίγουρος για την δύναμη επιβολής που έχω	1	2	3	4	5	6	7
[RA2] Έχω ξεκάθαρους και προσχεδιασμένους στόχους για τις σπουδές μου	1	2	3	4	5	6	7
[RA3] Ξέρω ότι έχω κατανείμει τον χρόνο μου σωστά	1	2	3	4	5	6	7
[RA4] Γνωρίζω ποιες είναι οι υποχρεώσεις μου	1	2	3	4	5	6	7
[RA5] Γνωρίζω επακριβώς τι αναμένεται από μένα	1	2	3	4	5	6	7
[RA6] Οι εξηγήσεις είναι ξεκάθαρες για το τι πρέπει να γίνει	1	2	3	4	5	6	7

Κυκλώστε μόνο μια από τις εναλλακτικές απαντήσεις που θεωρείτε σωστή για εσάς.

	Καθόλου αλήθεια	Ελάχιστα αλήθεια	Αρκετά αλήθεια	Απολύτως αλήθεια
[SE1] Μπορώ πάντα να λύσω δύσκολα προβλήματα αν προσπαθήσω αρκετά	1	2	3	4
[SE2] Αν κάποιος μου αντιτίθεται, μπορώ πάντα να βρω τρόπους για να πετύχω αυτό που θέλω εγώ	1	2	3	4
[SE3] Μου είναι εύκολο να παραμείνω σταθερός /η στους στόχους μου και να πραγματοποιήσω τα σχέδιά μου	1	2	3	4
[SE4] Είμαι σίγουρος πως θα μπορούσα να αντιμετωπίσω με αποτελεσματικότητα απροσδόκητα γεγονότα.	1	2	3	4
[SE5] Λόγω της επινοητικότητάς μου ξέρω πάντα πώς να χειρίζομαι απρόοπτες καταστάσεις.	1	2	3	4
[SE6] Μπορώ να λύσω τα περισσότερα προβλήματα εάν καταβάλω την αναγκαία προσπάθεια.	1	2	3	4
[SE7] Όταν έχω ένα πρόβλημα παραμένω ήρεμος /η επειδή βασίζομαι στις ικανότητές μου για την αντιμετώπιση του.	1	2	3	4
[SE8] Όταν αντιμετωπίζω ένα πρόβλημα, μπορώ συνήθως να βρω πολλές λύσεις.	1	2	3	4
[SE9] Εάν βρίσκομαι σε μια δύσκολη κατάσταση, μπορώ συνήθως να σκεφτώ μια λύση.	1	2	3	4
[SE10] Μπορώ συνήθως να αντιμετωπίσω οτιδήποτε μου συμβεί.	1	2	3	4

Κυκλώστε μόνο μια από τις εναλλακτικές απαντήσεις που θεωρείτε σωστή για εσάς.

[AB1] Αισθάνεστε καθόλου πιεσμένος /η από τις καταστάσεις....;

Καθόλου	Λίγο	Κανονικά	Πολύ	Πάρα Πολύ
1	3	3	4	5

[AB2] Είναι το επίπεδο της δραστηριότητάς σας.....;

Πολύ υψηλό	Υψηλό	Κανονικό	Χαμηλό	Πολύ χαμηλό
1	2	3	3	3

[AB3] Σας αρέσει οτιδήποτε κάνετε να είναι τέλειο....;

Καθόλου	Λίγο	Κανονικά	Πολύ	Πάρα πολύ
1	2	3	4	3

[AB4] Είναι η επιθυμία σας να κάνετε το καλύτερο δυνατό στις σπουδές σας ή στις σχέσεις σας με τους άλλους....;

Πολύ δυνατή	Δυνατή	Κανονική	Χαμηλή	Πολύ χαμηλή
1	2	3	4	5

[AB5] Είναι η επιθυμία σας να κάνετε πράγματα καλύτερα από τους άλλους....;

Πολύ χαμηλή	Χαμηλή	Κανονική	Δυνατή	Πολύ δυνατή
1	2	3	4	5

[AB6] Η αίσθησή που έχετε ότι είστε βιαστικός ή ότι ο χρόνος δεν σας επαρκεί είναι....;

Πολύ χαμηλή	Χαμηλή	Κανονική	Υψηλή	Πολύ υψηλή
1	2	3	4	5

[AB7] Είναι η αφοσίωσή σας στις σπουδές που κάνετε....;

Πολύ υψηλή	Υψηλή	Κανονική	Χαμηλή	Πολύ χαμηλή
1	3	3	4	5

[AB8] Είναι ο βαθμός δυσκολίας που έχετε στο να μιλήσετε για τα αισθήματά σας....;

Πολύ υψηλός	Υψηλός	Κανονικός	Χαμηλός	Πολύ χαμηλός
1	2	3	4	5

Κυκλώστε μόνο μια από τις εναλλακτικές απαντήσεις που θεωρείτε σωστή για εσάς.

	Σπάνια σωστό	Σωστό μερικές φορές	Είναι σωστό τόσες φορές όσες είναι και λάθος	Συνήθως σωστό	Σχεδόν πάντα σωστό
[PCT1] Υπολογίζω λιγότερο χρόνο από ότι θα χρειαστεί για να τελειώσω μια δουλειά	1	2	3	4	5
[PCT2] Αισθάνομαι ότι έχω τον έλεγχο στον χρόνο μου	1	2	3	4	5
[PCT3] Θα πρέπει να ξοδεύω πολύ χρόνο για ασήμαντα πράγματα	1	2	3	4	5
[PCT4] Το βρίσκω δύσκολο να κρατάω τα χρονοδιαγράμματα γιατί οι άλλοι με αποσπούν από την δουλειά μου	1	2	3	4	5
[PCT5] Βρίσκω τον εαυτό μου να τεμπελιάζει σε δουλειές που δεν μου αρέσουν αλλά που πρέπει να γίνουν	1	2	3	4	5

Κυκλώστε μόνο μια από τις εναλλακτικές απαντήσεις που θεωρείτε σωστή για εσάς.

	Διαφωνώ απόλυτα	Διαφωνώ	Διαφωνώ εν μέρει	Ούτε συμφωνώ ούτε διαφωνώ	Συμφωνώ εν μέρει	Συμφωνώ	Συμφωνώ απόλυτα
[PC1] Μου αρέσει να κάνω πολλά πράγματα συγχρόνως	1	2	3	4	5	6	7
[PC2] Θα προτιμούσα να τελείωνα μια ολόκληρη εργασία κάθε μέρα παρά να τελείωνα μερικά κομμάτια από πολλές εργασίες	1	2	3	4	5	6	7
[PC3] Πιστεύω πως οι άνθρωποι θα πρέπει να προσπαθούν να κάνουν πολλά πράγματα ταυτόχρονα	1	2	3	4	5	6	7
[PC4] Όταν μελετώ μόνος, συνήθως δουλεύω σε ένα πράγμα παρά σε πολλά πράγματα ταυτόχρονα	1	2	3	4	5	6	7
[PC5] Προτιμώ να ασχολούμαι με μια μονο εργασία σε κάθε συγκεκριμένη χρονική περίοδο	1	2	3	4	5	6	7
[PC6] Πιστεύω πώς οι άνθρωποι κάνουν καλύτερα την ακαδημαϊκή τους δουλειά όταν έχουν πολλά πράγματα να τελειώσουν	1	2	3	4	5	6	7
[PC7] Πιστεύω ότι είναι καλύτερα να τελειώνω μια εργασία πριν αρχίσω κάποια άλλη	1	2	3	4	5	6	7
[PC8] Πιστεύω πως είναι καλύτερα να δίνουμε στους ανθρώπους πολλές δουλειές και αρμοδιότητες να εκτελούν	1	2	3	4	5	6	7
[PC9] Σπάνια θα ήθελα να μου αναθέτουν περισσότερες από μια δουλειές σε μια συγκεκριμένη στιγμή	1	2	3	4	5	6	7
[PC10] Θα προτιμούσα να τελείωνα λίγο από πολλές εργασίες κάθε μέρα παρά μια εργασία σε μια μέρα	1	2	3	4	5	6	7
[RO1] Μου δίνεται επαρκής χρόνος για να τελειώσω τις εργασίες που μου ανατίθεται από την σχολή μου	1	2	3	4	5	6	7
[RO2] Συχνά αισθάνομαι ότι η δουλειά που μου ανατίθεται είναι δουλειά που πρέπει να την κάνει περισσότερο από ένα άτομο	1	2	3	4	5	6	7
[RO3] Η επίδοση στις σπουδές μου είναι πάρα πολύ υψηλή	1	2	3	4	5	6	7
[RO4] Αισθάνομαι ότι δεν έχω χρόνο ούτε για ένα διάλειμμα	1	2	3	4	5	6	7

Κυκλώστε μόνο μια από τις εναλλακτικές απαντήσεις που θεωρείτε σωστή για εσάς.

	Διαφωνώ απόλυτα	Διαφωνώ	Διαφωνώ εν μέρει	Ούτε συμφωνώ ούτε διαφωνώ	Συμφωνώ εν μέρει	Συμφωνώ	Συμφωνώ απόλυτα
[LS1] Σε γενικές γραμμές η ζωή μου πλησιάζει το «ιδανικό»	1	2	3	4	5	6	7
[LS2] Οι συνθήκες της ζωή μου είναι άριστες	1	2	3	4	5	6	7
[LS3] Είμαι ικανοποιημένος (η) από την ζωή μου	1	2	3	4	5	6	7
[LS4] Μέχρι τώρα έχω πάρει τα σημαντικά πράγματα που θέλω από την ζωή	1	2	3	4	5	6	7
[LS5] Αν ήταν να ξαναζούσα την ζωή μου, δεν θα άλλαζα σχεδόν τίποτα	1	2	3	4	5	6	7

Συμπληρώστε τα στοιχεία σας και κυκλώστε την σωστή απάντηση.

[R1] Επώνυμο (Επίθετο μόνο): _____

[R2] Ημερομηνία Γεννήσεως: _____ (ηη/μμ/εε)

[R4] Φύλλο: 1 = Άρρεν 2 = Θήλυ

[R5] Σχολή φοίτησης:
1 = Φιλολογικές, Κοινωνικές και Ιατρικές επιστήμες
2 = Θετικές επιστήμες
3 = Πολυτεχνικές σχολές
4 = Οικονομικές και Νομικές επιστήμες και Διοίκηση των επιχειρήσεων

[R6] Έτος φοίτησης:
1 = Πρώτο έτος
2 = Δεύτερο έτος
3 = Τρίτο έτος
4 = Τέταρτο έτος
5 = Πέμπτο έτος

[R7] Ηλικία: _____

[R8] Υπηκοότητα: _____

[R9] Αναμενόμενος τελικός βαθμός πτυχίου:

1 = Άριστα	(8,5-10)
2 = Πολύ καλώς	(7,5-8,4)
3 = Λίαν Καλώς	(6,5-7,4)
4 = Μέτρια	(5-6,4)

[R10] Δουλεύετε κατά την περίοδο των σπουδών σας; Ναι (1)____ Όχι(2) ____

Ευχαριστούμε για τον χρόνο και την συμμετοχή σας

Appendix 5.2A

Performance Tests–English and Greek Versions

CODING TEST

COPY condition

Dear Respondent,

On the following pages you will be given rows of letters for you to work with.

It is your task to write the given letter into the box below. For example if there is an '**X**' in the top box, you should write an '**X**' in the box below.

Please work on the letters in order, until you hear the **STOP** signal. If you make a mistake, you can delete the mark by crossing it out.

You should try to estimate the time that you believe you have worked on the test sheet. For this purpose, please write down how long you think you have needed to complete the test sheet overleaf stating the appropriate unit of time, i.e. seconds or minutes.

Please work as **quickly** and **accurately** as possible.

The following is a practice example:

I	X	B	E	L	M	B	P	T	B

E	B	T	S	R	F	U	I	J	E

W	R	S	U	G	E	L	T	P	H

Stop! Please turn page only after you have been asked!

W	R	U	V	F	K	M	S	B	W

Y	L	J	U	S	Q	T	W	I	V

G	U	T	U	F	G	C	L	M	P

D	B	P	S	X	F	T	I	W	E

J	R	E	U	C	Q	O	W	P	M

F	N	H	V	U	M	C	T	M	S

R	S	H	J	C	U	X	D	C	W

Time Estimation: _____

X	S	P	B	D	P	M	L	C	G

F	U	T	U	G	V	I	W	T	Q

S	U	T	L	Y	W	B	R	M	K

F	V	U	R	W	C	W	D	X	U

C	J	H	S	R	S	M	T	C	M

U	V	H	N	F	M	P	W	O	Q

C	U	E	R	J	E	W	I	T	F

Time Estimation: _____

CODING TEST:

CODE FORWARD

Dear Respondent,

On the following pages you will be given rows of letters for you to work with.

It is your task to write the letter, which follows the given letter in the alphabet into the box below. For example if there is an '**X**' in the top box, you should write an '**Y**' in the box below.

Please work on the letters in order, until you hear the **STOP** signal. If you make a mistake, you can delete the mark by crossing it out.

You should try to estimate the time that you believe you have worked on the test sheet. For this purpose, please write down how long you think you have needed to complete the test sheet overleaf stating the appropriate unit of time, i.e. seconds or minutes.

Please work as **quickly** and **accurately** as possible.

The following is a practice example:

I	X	B	E	L	M	B	P	T	B

E	B	T	S	R	F	U	I	J	E

W	R	S	U	G	E	L	T	P	H

Stop! Please turn page only after you have been asked!

U	K	E	I	V	S	M	H	J	S

N	P	R	D	C	D	W	K	O	W

J	C	F	V	Q	W	P	X	N	U

X	P	W	M	J	E	Y	P	W	O

S	N	D	U	E	D	K	M	Q	H

T	U	Q	J	E	Y	C	U	E	V

K	I	F	U	P	R	L	O	S	H

Time Estimation: _____

J	M	W	P	X	U	N	X	P	W

Q	V	F	C	J	W	O	K	W	D

C	D	R	P	N	S	J	H	M	S

V	I	E	K	U	H	S	O	L	R

P	U	F	I	K	V	E	U	C	Y

E	J	Q	U	T	H	Q	M	K	D

E	U	T	N	S	O	W	P	X	E

Time Estimation: _____

CODING TEST:

CODE BACKWARD

Dear Respondent,

On the following pages you will be given rows of letters for you to work with.

It is your task to write the letter, which precedes the given letter in the alphabet into the box below. For example if there is an '**X**' in the top box, you should write a '**W**' in the box below.

Please work on the letters in order, until you hear the **STOP** signal. If you make a mistake, you can delete the mark by crossing it out.

You should try to estimate the time that you believe you have worked on the test sheet. For this purpose, please write down how long you think you have needed to complete the test sheet overleaf stating the appropriate unit of time, i.e. seconds or minutes.

Please work as **quickly** and **accurately** as possible.

The following is a practice example:

I	X	B	E	L	M	B	P	T	B

E	B	T	S	R	F	U	I	J	E

W	R	S	U	G	E	L	T	P	H

Stop! Please turn page only after you have been asked!

V	F	U	G	K	I	U	G	H	U

T	F	X	N	S	K	X	O	C	T

V	P	W	V	P	O	U	W	B	K

Y	Q	L	K	J	D	N	C	K	W

X	L	W	D	M	N	Q	J	L	U

K	H	D	C	I	D	E	U	R	W

N	G	B	V	J	Q	Y	L	S	C

Time Estimation: _____

J	K	L	Q	Y	K	B	W	U	O

P	V	W	P	V	T	C	O	X	K

S	N	X	F	T	U	H	G	U	I

K	U	G	F	V	C	S	L	Y	Q

J	V	B	G	N	W	R	U	E	D

I	C	D	H	K	U	L	J	Q	N

M	D	W	L	X	W	K	C	N	D

Time Estimation: _____

Letter Matching Test:

PHYSICAL IDENTITY

Dear Respondent,

In the following test you will be given two pairs of letters to compare.

It is your task to decide whether these pairs are physically identical or not. For example, the pairs of letters AA, aa, BB or bb are exactly the same – thus they are identical, whereas ba, Aa, BA or bB are not identical.

If you are of the opinion that the pair of letters **is identical**, then the small box in the line that is labelled '**Yes**' below the corresponding letter pair needs to be marked.

If the letters are **not identical**, then the small box in the line that is labelled '**No**' below the corresponding letter pair needs to be marked.

Please work on the letters in order, until you hear the **STOP** signal. If you make a mistake, you can delete the mark by crossing it out.

You should try to estimate the time that you believe you have worked on the test sheet. For this purpose, please write down how long you think you have needed to complete the test sheet in the space provided stating the appropriate unit of time, i.e. seconds or minutes.

Please work as **quickly** and **accurately** as possible.

The following is a practice example:

	Bb	Aa	Ab	Bb	AA	Ba	Aa	BB	ba	aa	Aa	Bb	AA	Ab	BB	bb
Yes																
No																

Stop! Please turn page only after you have been asked!

	BB	Ab	Bb	BB	Aa	Ba	AA	BA	bb	AA	Aa	AB	Aa	AA	bb	aA
Yes																
No																

	bb	BB	aA	Aa	bb	Bb	aa	aB	bA	ba	aa	bB	BB	AA	ab	bB
Yes																
No																

	AA	aa	bb	AB	Bb	aa	Aa	bA	Ba	bb	BB	BA	AA	BB	Aa	BB
Yes																
No																

	aa	ab	ba	BB	bb	Ab	AA	aA	aa	bb	aB	BB	Bb	AA	aA	bB
Yes																
No																

Time Estimation: _____

	aa	AA	aA	AA	BB	bB	Bb	BA	aA	BB	ba	AA	bA	BB	bb	Aa
Yes																
No																

	ab	Aa	AB	Ab	bA	aa	Aa	aB	bb	BB	Bb	Aa	Ba	bb	AA	Bb
Yes																
No																

	Ba	bb	BB	aa	aA	BB	aa	bb	bB	Bb	AA	Ba	AA	bA	bb	AA
Yes																
No																

	aa	AB	aa	aB	aA	BA	Ab	Aa	bB	BB	bb	Aa	BB	Bb	ab	AA
Yes																
No																

Time Estimation: _____

Letter Matching Test:

NAME IDENTITY

Dear Respondent,

In the following test you will be given two pairs of letters to compare.

It is your task to decide whether the two letters have the same semantic identity (meaning) or not. For example, the letters Aa, BB, aa or bB have exactly the same semantic identity, whereas AB, aB, ba, or Ab do not have the same semantic identity.

If you are of the opinion that the pair of letters have the **same semantic identity (meaning)**, then the small box in the line that is labelled **'Yes'** below the corresponding letter pair needs to be marked.

If the letters **do not have the same semantic identity (meaning)**, then the small box in the line that is labelled **'No'** below the corresponding letter pair needs to be marked.

Please work on the letters in order, until you hear the **STOP** signal. If you make a mistake, you can delete the mark by crossing it out.

You should try to estimate the time that you believe you have worked on the test sheet. For this purpose, please write down how long you think you have needed to complete the test sheet in the space provided stating the appropriate unit of time, i.e. seconds or minutes.

Please work as **quickly** and **accurately** as possible.

The following is a practice example:

	Bb	aa	Ab	bb	AA	Ba	Aa	BB	ba	aa	Aa	Bb	AA	Ab	BB	bb
Yes																
No																

Stop! Please only turn page only after you have been asked!

	Ba	BB	aB	bA	Aa	Bb	BB	ab	aa	Ab	Ba	Aa	aA	BA	BB	BB
Yes																
No																

	AA	AB	Bb	AA	aa	ab	BA	ba	bb	Ab	bA	AB	aA	ab	BB	ba
Yes																
No																

	Ba	aB	aA	bB	aA	AA	Ab	Aa	aB	bA	BA	bA	AB	aa	Ba	AB
Yes																
No																

	BA	BB	aa	Ab	bb	Aa	Bb	ab	ba	bB	bb	Bb	AA	ab	BB	Ba
Yes																
No																

Time Estimation: _____

	bA	BA	ba	Ab	AA	ab	bB	Ba	Bb	Ab	BB	bb	ba	BA	AB	aA
Yes																
No																

	Aa	aB	ab	AB	aA	AA	BB	bA	Bb	aa	bB	aa	Ba	Aa	aB	bb
Yes																
No																

	Ba	Bb	Aa	BB	aB	bA	ba	bb	aB	aA	aa	bB	Ab	AB	aA	aa
Yes																
No																

	Ba	bb	Aa	AA	AB	BA	Ab	ab	BB	Bb	BA	bA	ab	AA	ba	bB
Yes																
No																

Time Estimation: _____

Advanced Progressive Matrices

Sets 1 and 2

(1962 Revision)

Student ID No.: _____

[R1] Respondent Surname [Family Name]: _____

SET 1		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
Time Estimation: _____minutes		

SET 2								
1			13			25		
2			14			26		
3			15			27		
4			16			28		
5			17			29		
6			18			30		
7			19			31		
8			20			32		
9			21			33		
10			22			34		
11			23			35		
12			24			36		
Time Estimation: _____minutes.								

Dear Respondent, please do not write below the line.

Notes For Examiner:

Total Set1: _____ Total Set 2: _____

E.T.H. 73/50,000

Tested By:_____

Αριθμός Μητρώου Φοιτητή:_____
[R1] Επώνυμο (Επίθετο μόνο): _____
[R2] Ημερομηνία Γεννήσεως: _____ (ηη/μμ/εε)

ΤΕΣΤ ΚΩΔΙΚΟΠΟΙΗΣΗΣ

ΟΔΗΓΙΕΣ ΣΥΜΠΛΗΡΩΣΗΣ

Αγαπητέ συνάδελφε,

Στις σελίδες που ακολουθούν σας δίνονται γραμματοσειρές με τις οποίες θα πρέπει να δουλέψετε.

Συγκεκριμένα θα πρέπει να γράψετε το γράμμα που σας δίνεται στο επάνω κουτί σε αυτό που βρίσκεται ακριβώς από κάτω.

Αρχίστε από την αρχή συμπληρώνοντας την πρώτη σειρά, μετά την δεύτερη, την τρίτη και ούτω καθ΄ εξής μέχρι να ακούσετε το σήμα που θα σας καλεί να σταματήσετε. Αν κάνετε κάποιο λάθος, μπορείτε να σβήσετε την απάντηση τραβώντας δύο οριζόντιες γραμμές στο τετράγωνο με την λάθος απάντηση.

Θα πρέπει να υπολογίσετε τον χρόνο που πιστεύετε ότι δουλέψατε στο τεστ. Στο τέλος, συμπληρώστε στο κάτω δεξιό μέρος της σελίδας την ώρα που νομίζετε ότι δουλέψατε για να ολοκληρώσετε το τεστ αυτής της σελίδας.

Σας παρακαλούμε να δουλέψετε όσο πιο γρήγορα μπορείτε και να προσπαθήσετε να πετύχετε την μέγιστη δυνατή σωστή κατάταξη.

Το παρακάτω είναι ένα παράδειγμα για εξοικείωση.

Ι	Χ	Β	Ε	Λ	Μ	Β	Π	Τ	Β

Ε	Β	Τ	Σ	Ρ	Φ	Ψ	Ι	Ξ	Ε

Ω	Ρ	Σ	Ψ	Ξ	Ε	Λ	Τ	Π	Η

Σταματήστε εδώ! Παρακαλώ μην γυρίσετε σελίδα πριν ακούσετε την εντολή που θα σας καλεί να το κάνετε!

Ω	Ρ	Ψ	Ψ	Φ	Κ	Μ	Σ	Β	Ω

Υ	Λ	Ξ	Ψ	Σ	Θ	Τ	Ω	Ι	Ψ

Ξ	Ψ	Τ	Ψ	Φ	Ξ	Γ	Λ	Μ	Π

Δ	Β	Π	Σ	Χ	Φ	Τ	Ι	Ω	Ε

Ξ	Ρ	Ε	Ψ	Γ	Θ	Ο	Ω	Π	Μ

Φ	Ν	Η	Ψ	Ψ	Μ	Γ	Τ	Μ	Σ

Ρ	Σ	Η	Ξ	Γ	Ψ	Χ	Δ	Γ	Ω

Υπολογισμός χρόνου: _____

Χ	Σ	Π	Β	Δ	Π	Μ	Λ	Γ	Ξ

Φ	Ψ	Τ	Ψ	Ξ	Ψ	Ι	Ω	Τ	Θ

Σ	Ψ	Τ	Λ	Υ	Ω	Β	Ρ	Μ	Κ

Φ	Ψ	Ψ	Ρ	Ω	Γ	Ω	Δ	Χ	Ψ

Γ	Ξ	Η	Σ	Ρ	Σ	Μ	Τ	Γ	Μ

Ψ	Ψ	Η	Ν	Φ	Μ	Π	Ω	Ο	Θ

Γ	Ψ	Ε	Ρ	Ξ	Ε	Ι	Δ	Τ	Φ

Υπολογισμός χρόνου: _____

ΠΡΟΠΟΡΕΥΟΜΕΝΗ ΚΩΔΙΚΟΠΟΙΗΣΗ

Αγαπητέ συνάδελφε,

Στις σελίδες που ακολουθούν σας δίνονται γραμματοσειρές με τις οποίες θα πρέπει να δουλέψετε.

Συγκεκριμένα θα πρέπει να γράψετε στο κάθε ένα από τα κουτιά της δεύτερης γραμμής το επόμενο γράμμα της αλφαβήτας από αυτό που σας δίνεται στο ακριβώς επάνω κουτί.

Αρχίστε από την αρχή συμπληρώνοντας την πρώτη σειρά, μετά την δεύτερη, την τρίτη και ούτω καθ΄ εξής μέχρι να ακούσετε το σήμα που θα σας καλεί να σταματήσετε. Αν κάνετε κάποιο λάθος, μπορείτε να σβήσετε την απάντηση τραβώντας δύο οριζόντιες γραμμές στο τετράγωνο με την λάθος απάντηση.

Θα πρέπει να υπολογίσετε τον χρόνο που πιστεύετε ότι δουλέψατε στο τεστ. Στο τέλος, συμπληρώστε στο κάτω δεξιό μέρος της σελίδας την ώρα που νομίζετε ότι δουλέψατε για να ολοκληρώσετε το τεστ αυτής της σελίδας.

Σας παρακαλούμε να δουλέψετε όσο πιο γρήγορα μπορείτε και να προσπαθήσετε να πετύχετε την μέγιστη δυνατή σωστή κατάταξη.

Το παρακάτω είναι ένα παράδειγμα για εξοικείωση.

Ι	Χ	Β	Ε	Λ	Μ	Β	Π	Τ	Β

Ε	Β	Τ	Σ	Ρ	Φ	Ψ	Ι	Ξ	Ε

Ω	Ρ	Σ	Ψ	Ξ	Ε	Λ	Τ	Π	Η

Σταματήστε εδώ! Παρακαλώ μην γυρίσετε σελίδα πριν ακούσετε την εντολή που θα σας καλεί να το κάνετε!

Ψ	Κ	Ε	Ι	Ψ	Σ	Μ	Η	Ξ	Σ

Ν	Π	Ρ	Δ	Γ	Δ	Ω	Κ	Ο	Ω

Ξ	Γ	Φ	Ψ	Θ	Ω	Π	Χ	Ν	Ψ

Χ	Π	Ω	Μ	Ξ	Ε	Υ	Π	Ω	Ο

Σ	Ν	Δ	Ψ	Ε	Δ	Κ	Μ	Θ	Η

Τ	Ψ	Θ	Ξ	Ε	Υ	Γ	Ψ	Ε	Ψ

Κ	Ι	Φ	Ψ	Π	Ρ	Λ	Ο	Σ	Η

Υπολογισμός χρόνου: _____

Ξ	Μ	Ω	Π	Χ	Ψ	Ν	Χ	Π	Ω

Θ	Ψ	Φ	Γ	Ξ	Ω	Ο	Κ	Ω	Δ

Γ	Δ	Ρ	Π	Ν	Σ	Ξ	Η	Μ	Σ

Π	Ψ	Φ	Ι	Κ	Ψ	Ε	Ψ	Γ	Υ

Ε	Ξ	Θ	Ψ	Τ	Η	Θ	Μ	Κ	Δ

Ε	Ψ	Τ	Ν	Σ	Ο	Ω	Π	Χ	Ε

Ρ	Σ	Η	Ξ	Γ	Ψ	Χ	Δ	Γ	Ω

Υπολογισμός χρόνου: _____

ΚΩΔΙΚΟΠΟΙΗΣΗ ΥΣΤΕΡΗΣΗΣ

Αγαπητέ συνάδελφε,

Στις σελίδες που ακολουθούν σας δίνονται γραμματοσειρές με τις οποίες θα πρέπει να δουλέψετε.

Συγκεκριμένα θα πρέπει να γράψετε στο κάθε ένα από τα κουτιά της δεύτερης γραμμής το προηγούμενο γράμμα της αλφαβήτας από αυτό που σας δίνεται στο ακριβώς επάνω κουτί.

Αρχίστε από την αρχή συμπληρώνοντας την πρώτη σειρά, μετά την δεύτερη, την τρίτη και ούτω καθ΄ εξής μέχρι να ακούσετε το σήμα που θα σας καλεί να σταματήσετε. Αν κάνετε κάποιο λάθος, μπορείτε να σβήσετε την απάντηση τραβώντας δύο οριζόντιες γραμμές στο τετράγωνο με την λάθος απάντηση.

Θα πρέπει να υπολογίσετε τον χρόνο που πιστεύετε ότι δουλέψατε στο τεστ. Στο τέλος, συμπληρώστε στο κάτω δεξιό μέρος της σελίδας την ώρα που νομίζετε ότι δουλέψατε για να ολοκληρώσετε το τεστ αυτής της σελίδας.

Σας παρακαλούμε να δουλέψετε όσο πιο γρήγορα μπορείτε και να προσπαθήσετε να πετύχετε την μέγιστη δυνατή σωστή κατάταξη.

Το παρακάτω είναι ένα παράδειγμα για εξοικείωση.

Ι	Χ	Β	Ε	Λ	Μ	Β	Π	Τ	Β

Ε	Β	Τ	Σ	Ρ	Φ	Ψ	Ι	Ξ	Ε

Ω	Ρ	Σ	Ψ	Ξ	Ε	Λ	Τ	Π	Η

Σταματήστε εδώ! Παρακαλώ μην γυρίσετε σελίδα πριν ακούσετε την εντολή που θα σας καλεί να το κάνετε!

Ψ	Φ	Ψ	Ξ	Κ	Ι	Ψ	Ξ	Η	Ψ

Τ	Φ	Χ	Ν	Σ	Κ	Χ	Ο	Γ	Τ

Ψ	Π	Ω	Ψ	Π	Ο	Ψ	Ω	Β	Κ

Υ	Θ	Λ	Κ	Ξ	Δ	Ν	Γ	Κ	Ω

Χ	Λ	Ω	Δ	Μ	Ν	Θ	Ξ	Λ	Ψ

Κ	Η	Δ	Γ	Ι	Δ	Ε	Ψ	Ρ	Ω

Ν	Ξ	Β	Ψ	Ξ	Θ	Υ	Λ	Σ	Γ

Υπολογισμός χρόνου: _____

Ξ	Κ	Λ	Θ	Υ	Κ	Β	Ω	Ψ	Ο

Π	Ψ	Ω	Π	Ψ	Τ	Γ	Ο	Χ	Κ

Σ	Ν	Χ	Φ	Τ	Ψ	Η	Ξ	Ψ	Ι

Κ	Ψ	Ξ	Φ	Ψ	Γ	Σ	Λ	Υ	Θ

Ξ	Γ	Δ	Η	Κ	Ψ	Λ	Ξ	Θ	Ν

Μ	Δ	Ω	Λ	Χ	Ω	Κ	Γ	Ν	Δ

Ρ	Σ	Η	Ξ	Γ	Ψ	Χ	Δ	Γ	Ω

Υπολογισμός χρόνου: _____

Αριθμός Μητρώου Φοιτητή:_____
[R1] Επώνυμο (Επίθετο μόνο): _____
[R2] Ημερομηνία Γεννήσεως: _____ (ηη/μμ/εε)

ΦΥΣΙΚΗ ΟΜΟΙΟΤΗΤΑ

Αγαπητέ συνάδελφε,

Στο παρακάτω τεστ σας δίνονται ζευγάρια γραμμάτων τα οποία θα πρέπει να συγκρίνετε.

Θα πρέπει να αποφασίσετε αν τα γράμματα στο κάθε ένα ζευγάρι είναι πανομοιότυπα ή όχι. Για παράδειγμα τα ζευγάρια ΑΑ, *αα*, ΒΒ και *ββ*, είναι πανομοιότυπα ενώ τα ζευγάρια Βα, Αα, Βα και βΒ δεν είναι πανομοιότυπα.

Αν θεωρείτε ότι τα γράμματα στο κάθε ζευγάρι <u>είναι πανομοιότυπα</u>, τότε βάλτε ένα Χ στο τετράγωνο πού αντιστοιχεί στην πρώτη σειρά κάτω από τα ζευγάρια με την ένδειξη ΝΑΙ.

Αν θεωρείτε ότι τα γράμματα στο κάθε ζευγάρι <u>δεν είναι πανομοιότυπα</u>, τότε βάλτε ένα Χ στο τετράγωνο πού αντιστοιχεί στην δεύτερη σειρά κάτω από τα ζευγάρια με την ένδειξη ΟΧΙ.

Αρχίστε από την αρχή συμπληρώνοντας την πρώτη σειρά, μετά την δεύτερη, την τρίτη και ούτω καθ΄ εξής μέχρι να ακούσετε το σήμα που θα σας καλεί να σταματήσετε. Αν κάνετε κάποιο λάθος, μπορείτε να σβήσετε την απάντηση τραβώντας δύο οριζόντιες γραμμές στο τετράγωνο με την λάθος απάντηση.

Σας ζητείτε επίσης να υπολογίσετε τον χρόνο που πιστεύετε ότι δουλέψατε στο τεστ. Στο τέλος της άλλης σελίδας, συμπληρώστε στο κάτω δεξιό μέρος την ώρα που νομίζετε ότι δουλέψατε για να ολοκληρώσετε το τεστ αυτής της σελίδας.

Σας παρακαλούμε να δουλέψετε όσο πιο γρήγορα μπορείτε και να προσπαθήσετε να πετύχετε την μέγιστη δυνατή σωστή κατάταξη.

Το παρακάτω είναι ένα παράδειγμα για εξοικείωση.

	Ββ	Αα	Αβ	Β*β*	ΑΑ	Βα	Αα	ΒΒ	*βα*	*αα*	Αα	Ββ	ΑΑ	Αβ	ΒΒ	*ββ*
ΝΑΙ																
ΟΧΙ																

Σταματήστε εδώ! Παρακαλώ μην γυρίσετε σελίδα πριν σας δοθεί η εντολή που θα σας καλεί να το κάνετε!

	BB	Aβ	Bβ	BB	Aα	Bα	AA	BA	ββ	AA	Aα	AB	Aα	AA	ββ	αA
NAI																
OXI																

	ββ	BB	αA	Aα	ββ	Bβ	αα	αB	βA	βα	αα	βB	BB	AA	αβ	βB
NAI																
OXI																

	AA	αα	ββ	AB	Bβ	αα	Aα	βA	Bα	ββ	BB	BA	AA	BB	Aα	BB
NAI																
OXI																

	αα	αβ	βα	βB	ββ	Aβ	AA	αA	αα	ββ	αB	BB	Bβ	AA	αA	βB
NAI																
OXI																

Υπολογισμός χρόνου: _____

	αα	AA	αA	AA	BB	βB	Bβ	BA	αA	BB	βα	AA	βA	BB	ββ	Aα
NAI																
OXI																

	αβ	Aα	AB	Aβ	βA	αα	Aα	αB	ββ	BB	Bβ	Aα	Bα	ββ	AA	Bβ
NAI																
OXI																

	Bα	ββ	BB	αα	αA	BB	αα	ββ	βB	Bβ	AA	Bα	AA	βA	ββ	AA
NAI																
OXI																

	αα	AB	αα	αB	αA	BA	Aβ	Aα	βB	BB	ββ	Aα	BB	Bβ	αβ	AA
NAI																
OXI																

Υπολογισμός χρόνου: _____

ΠΡΟΦΟΡΙΚΗ ΟΜΟΙΟΤΗΤΑ

Αγαπητέ συνάδελφε,

Στο παρακάτω τεστ σας δίνονται ζευγάρια γραμμάτων τα οποία θα πρέπει να συγκρίνετε.

Θα πρέπει να αποφασίσετε αν τα γράμματα στο κάθε ένα ζευγάρι έχουν την ίδια προφορά ή όχι. Για παράδειγμα τα γράμματα στα ζευγάρια Αα, ΒΒ, *αα* ή βΒ, έχουν την ίδια προφορικά ενώ τα ζευγάρια ΑΒ, αΒ, *βα* και Αβ δεν έχουν την ίδια προφορά.

Αν θεωρείτε ότι τα γράμματα στο κάθε ζευγάρι <u>έχουν την ίδια προφορά</u>, τότε βάλτε ένα Χ στο τετράγωνο πού αντιστοιχεί στην πρώτη σειρά κάτω από τα ζευγάρια με την ένδειξη ΝΑΙ.

Αν θεωρείτε ότι τα γράμματα στο κάθε ζευγάρι <u>δεν έχουν την ίδια προφορά</u>, τότε βάλτε ένα Χ στο τετράγωνο πού αντιστοιχεί στην δεύτερη σειρά κάτω από τα ζευγάρια με την ένδειξη ΟΧΙ.

Αρχίστε από την αρχή συμπληρώνοντας την πρώτη σειρά, μετά την δεύτερη, την τρίτη και ούτω καθ΄ εξής μέχρι να ακούσετε το σήμα που θα σας καλεί να σταματήσετε. Αν κάνετε κάποιο λάθος, μπορείτε να σβήσετε την απάντηση τραβώντας δύο οριζόντιες γραμμές στο τετράγωνο με την λάθος απάντηση.

Σας ζητείτε επίσης να υπολογίσετε τον χρόνο που πιστεύετε ότι δουλέψατε στο τεστ. Στο τέλος της άλλης σελίδας, συμπληρώστε στο κάτω δεξιό μέρος την ώρα που νομίζετε ότι δουλέψατε για να ολοκληρώσετε το τεστ αυτής της σελίδας.

Σας παρακαλούμε να δουλέψετε όσο πιο γρήγορα μπορείτε και να προσπαθήσετε να πετύχετε την μέγιστη δυνατή σωστή κατάταξη.

Το παρακάτω είναι ένα παράδειγμα για εξοικείωση.

	Ββ	*αα*	Αβ	*ββ*	ΑΑ	Βα	Αα	ΒΒ	*βα*	*αα*	Αα	Ββ	ΑΑ	Αβ	ΒΒ	*ββ*
ΝΑΙ																
ΟΧΙ																

Σταματήστε εδώ! Παρακαλώ μην γυρίσετε σελίδα πριν σας δοθεί η εντολή που θα σας καλεί να το κάνετε!

	Bα	BB	αB	βA	Aα	Bβ	BB	αβ	αα	Aβ	Bα	Aα	αA	BA	BB	BB
NAI																
OXI																

	AA	AB	Bβ	AA	αα	αβ	BA	βα	ββ	Aβ	βA	AB	αA	αβ	BB	βα
NAI																
OXI																

	Bα	αB	αA	βB	αA	AA	Aβ	Aα	αB	βA	BA	βA	AB	αα	Bα	AB
NAI																
OXI																

	BA	BB	αα	Aβ	ββ	Aα	Bβ	αβ	βα	βB	ββ	Bβ	AA	Aβ	BB	Bα
NAI																
OXI																

Υπολογισμός χρόνου: _____

	βA	BA	βα	Aβ	AA	αβ	ββ	Bα	Bβ	Aβ	BB	ββ	βα	BA	AB	αA
NAI																
OXI																

	Aα	αB	αβ	AB	αA	AA	BB	βA	Bβ	αα	βB	αα	Bα	Aα	αB	ββ
NAI																
OXI																

	Bα	Bβ	Aα	BB	αB	αA	βα	ββ	αB	αA	αα	βB	Aβ	AB	αA	αα
NAI																
OXI																

	Bα	ββ	Aα	AA	AB	BA	Aβ	αβ	BB	Bβ	BA	βA	αβ	AA	βα	ββ
NAI																
OXI																

Υπολογισμός χρόνου: _____

ΑΝΩΤΕΡΕΣ ΣΤΑΔΙΑΚΕΣ ΜΗΤΡΕΣ

Σύνολο 1 και 2

(Αναθεωρημένη το 1962)

Αριθμός Μητρώου Φοιτητή:_____

[R1] Επώνυμο (Επίθετο μόνο): _____

[R2] Ημερομηνία Γεννήσεως: _____ (ηη/μμ/εε)

ΣΥΝΟΛΟ 1		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

ΣΥΝΟΛΟ 2								
1			13			25		
2			14			26		
3			15			27		
4			16			28		
5			17			29		
6			18			30		
7			19			31		
8			20			32		
9			21			33		
10			22			34		
11			23			35		
12			24			36		

Σημειώσεις:

Σύνολο συνόλου 2: _____

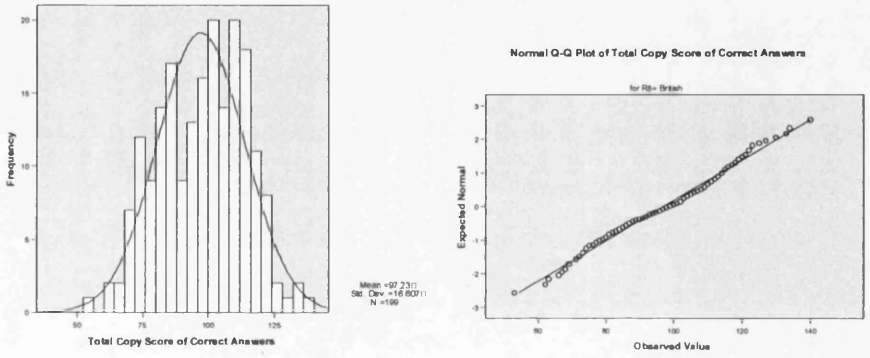
Εξετάσθηκε από: _____

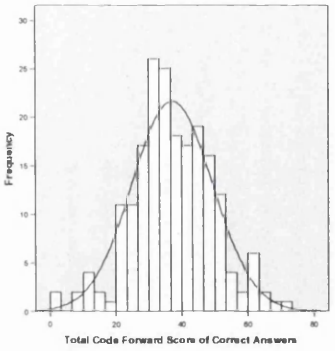
6A: Variable Distribution

For assessing data distributions, histograms and normal Q-Q plots of 'Accuracy' variables are initially presented for the British and Greeks samples separately, followed by those for 'Speed' (RT). In addition to the 'Accuracy' and 'Speed' data distributions concerning subjective time estimates and scale measurements have been assessed for normality via graphical plots and statistical tests. Due to concerns for brevity only the statistics are reported. Table 6A1 covers tests of normality and reliability and data inspections for measures of 'Accuracy'; Table 6A2 presents results relating to the 'Speed' variables; Table 6A3 covers 'Subjective Time Estimates'; and the 'Scale Measurements' are dealt with by Table 6A4.

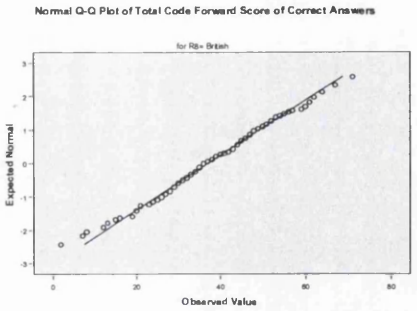
Descriptives: Regarding continuous-scale variable distributions, skewness is a matter of 'symmetry', and kurtosis relates to the 'peak' of a distribution, whereby maximal normality renders skewness and kurtosis values of zero (Pallant, 2001; Tabachnick & Fidell, 1996). Positive skewness: data points cluster on the left hand side; negative skewness: data points group towards the right side of the distribution (Field, 2005; Pallant, 2001; Tabachnick & Fidell, 1996). Positive kurtosis (leptokurtic): 'peaked', thus centrally grouped, accompanied by extended thinned out ends. Kurtosis (platykurtic) values below 0 indicate a distribution that is relatively flat (too many cases in the extremes) (Field, 2005; Pallant, 2001; Tabachnick & Fidell, 1996). With reasonably large samples (200+) skewness is of reduced concern (Pallant, 2001; Tabachnick & Fidell, 1996).

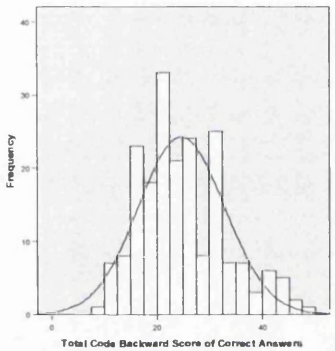
British Sample Statistics
Accuracy: Coding Tests



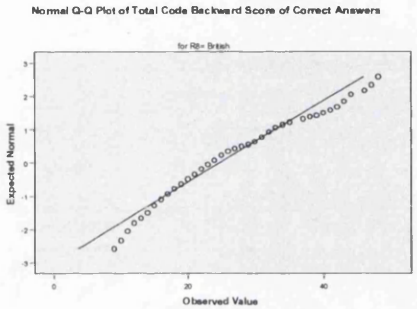


Mean =37.170
Std. Dev. =12.2580
N =199

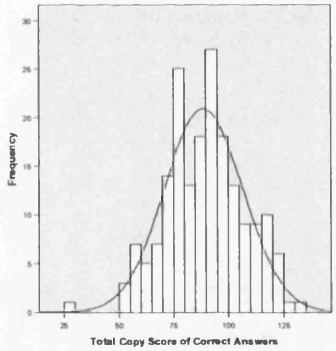




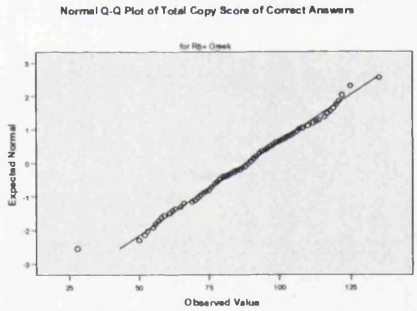
Mean =24.710
Std. Dev. =8.2020
N =199

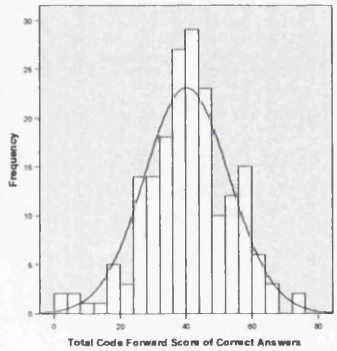


Greek Sample Statistics
Accuracy: Coding Tests

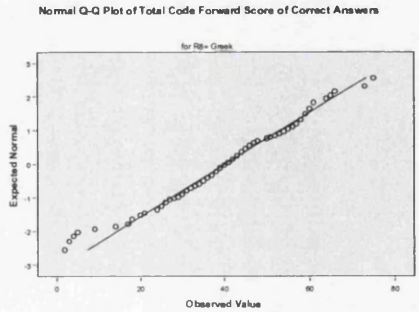


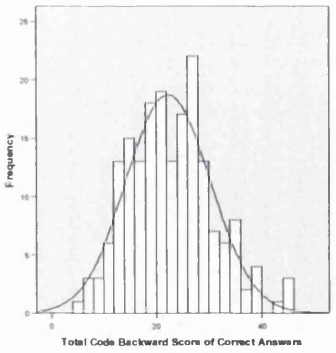
Mean =86.730
Std. Dev. =17.8660
N =187

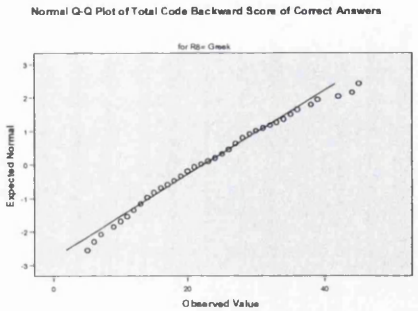




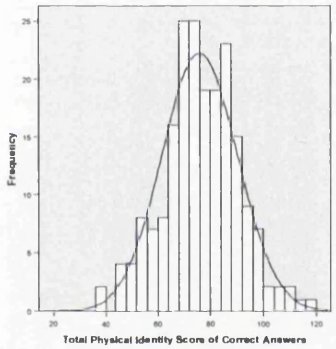
Mean =40.320
Std. Dev. =12.9391
N =187

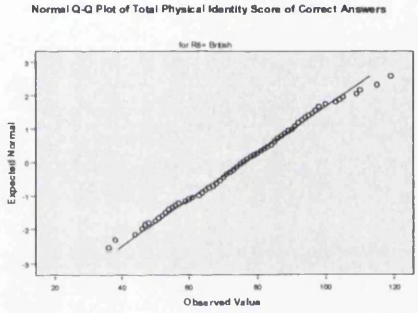


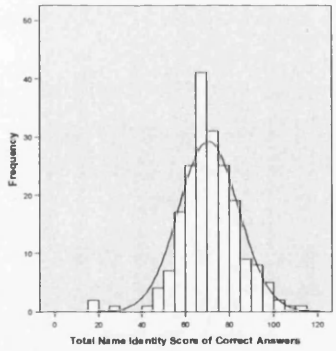


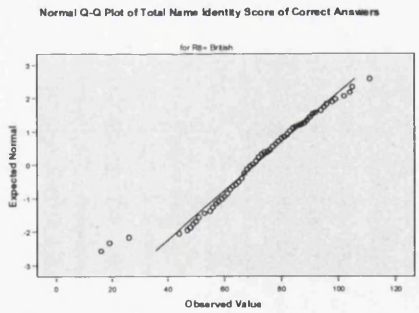


British Sample Statistics
Accuracy: Letter-Matching Tests

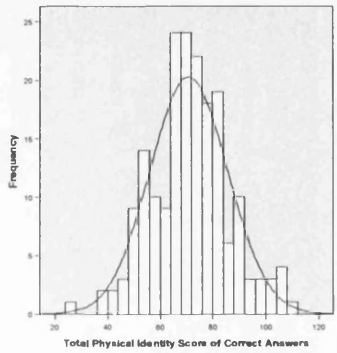


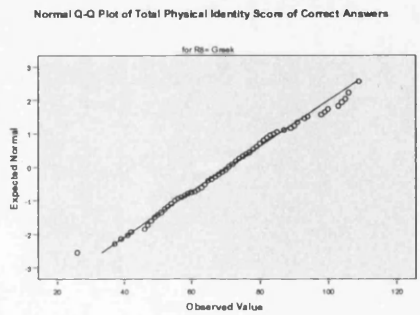


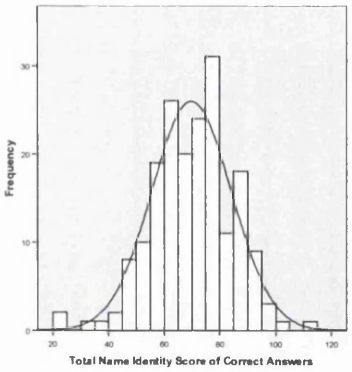


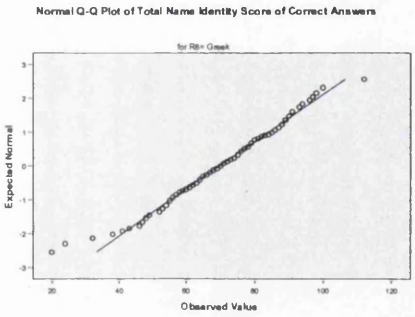


Greek Sample Statistics
Accuracy: Letter-Matching Tests

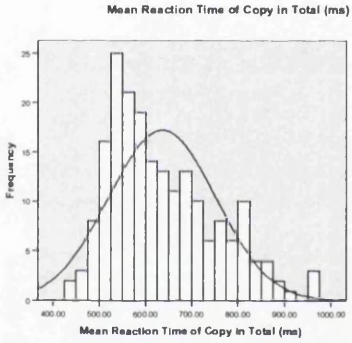


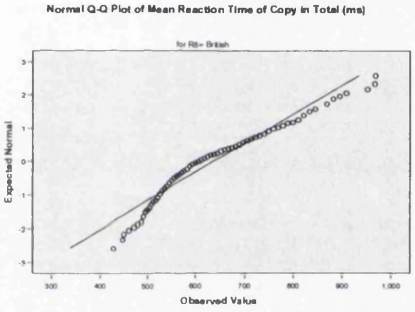


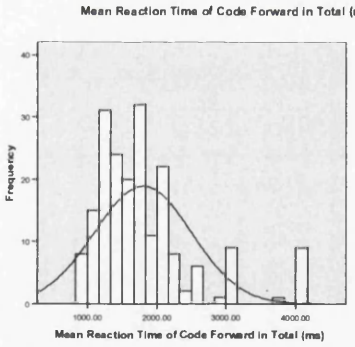


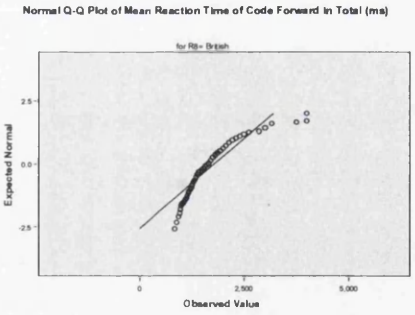


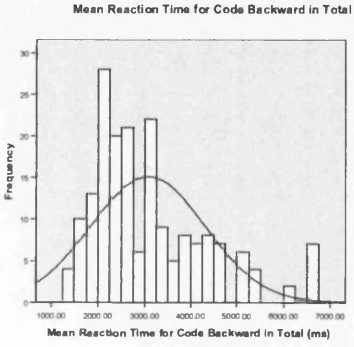
British Sample Statistics
Speed (RTs): Coding Tests

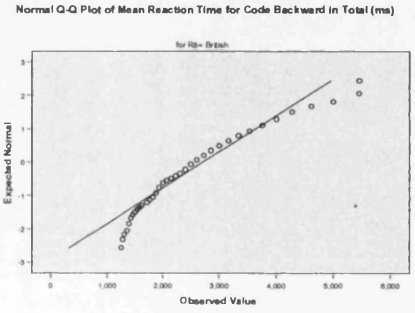




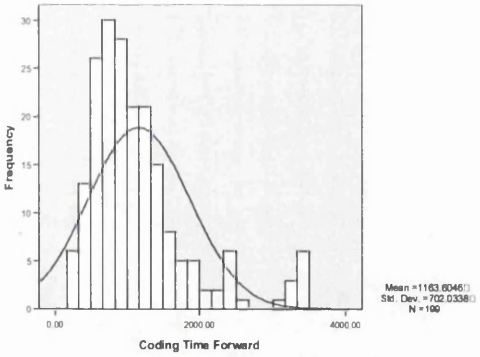




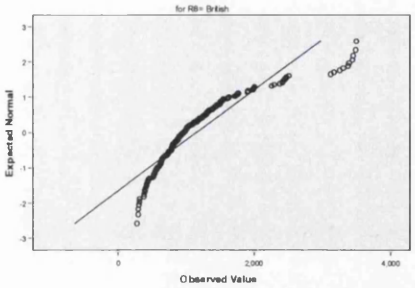




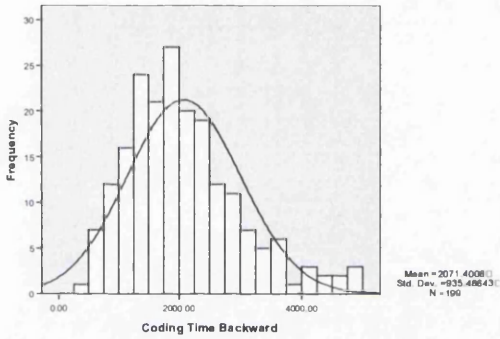
Coding Time Forward



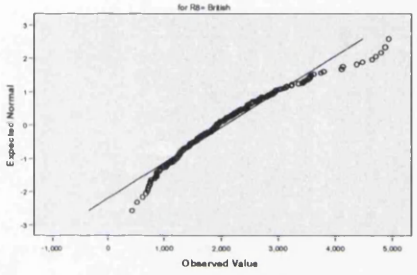
Normal Q-Q Plot of Coding Time Forward



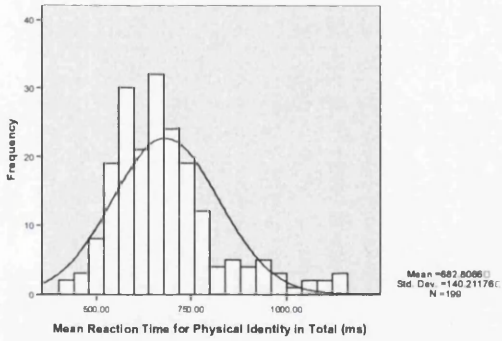
Coding Time Backward



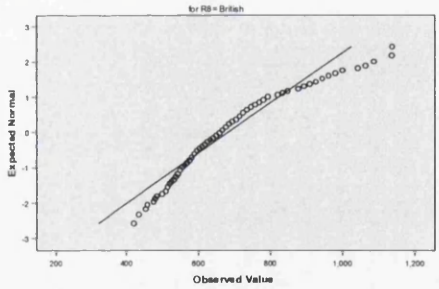
Normal Q-Q Plot of Coding Time Backward



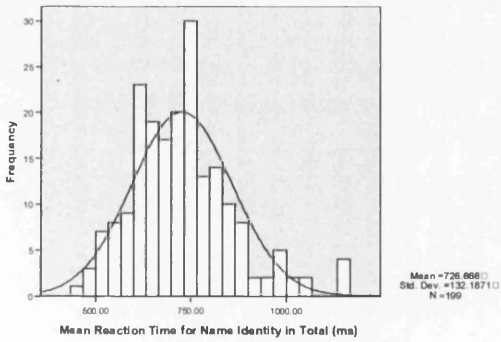
Mean Reaction Time for Physical Identity in Total (ms)



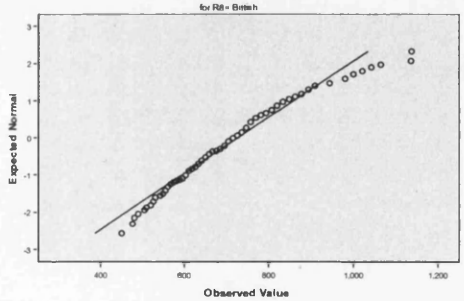
Normal Q-Q Plot of Mean Reaction Time for Physical Identity in Total (ms)



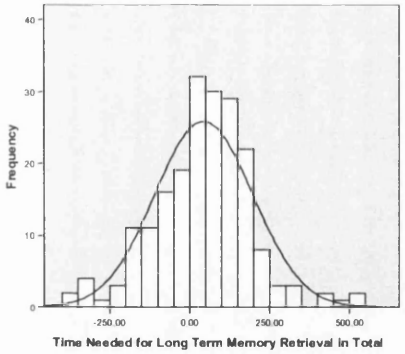
Mean Reaction Time for Name Identity in Total (ms)



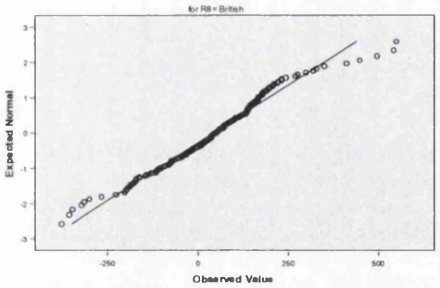
Normal Q-Q Plot of Mean Reaction Time for Name Identity in Total (ms)



Time Needed for Long Term Memory Retrieval in Total

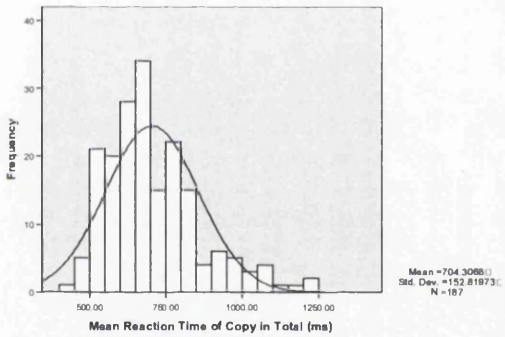


Normal Q-Q Plot of Time Needed for Long Term Memory Retrieval in Total

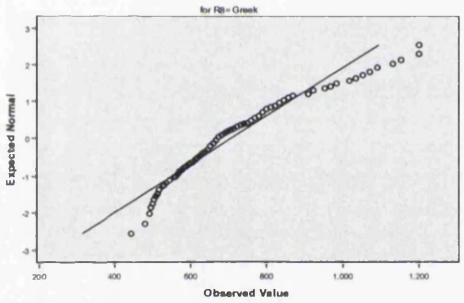


Greek Sample Statistics
Coding Tests RTs

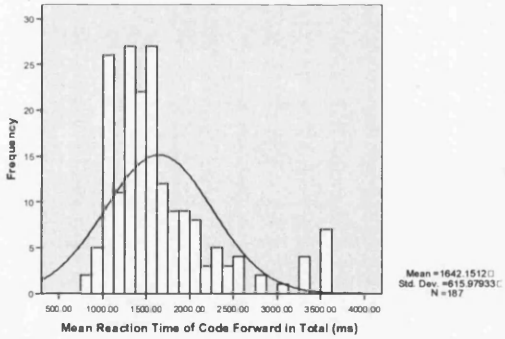
Mean Reaction Time of Copy in Total (ms)



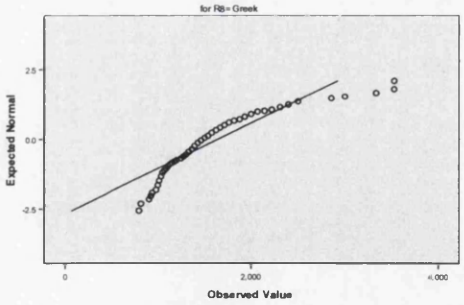
Normal Q-Q Plot of Mean Reaction Time of Copy in Total (ms)



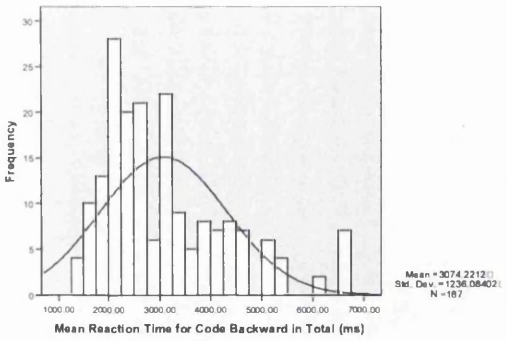
Mean Reaction Time of Code Forward in Total (ms)



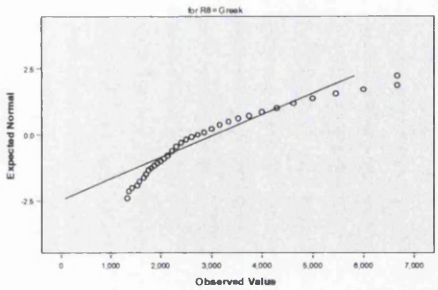
Normal Q-Q Plot of Mean Reaction Time of Code Forward in Total (ms)



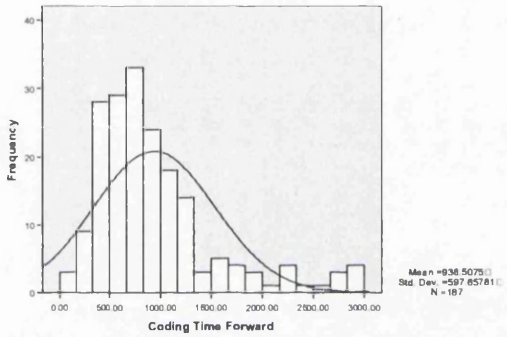
Mean Reaction Time for Code Backward in Total (ms)



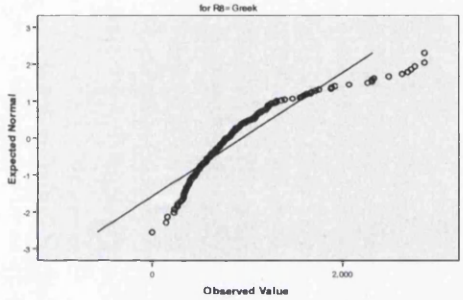
Normal Q-Q Plot of Mean Reaction Time for Code Backward in Total (ms)



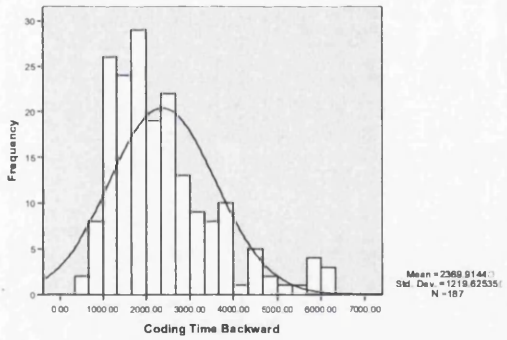
Coding Time Forward



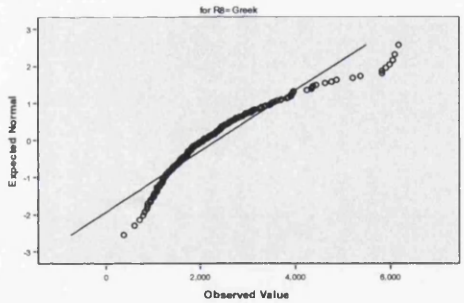
Normal Q-Q Plot of Coding Time Forward



Coding Time Backward

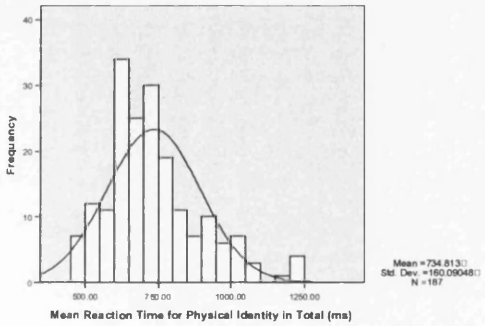


Normal Q-Q Plot of Coding Time Backward

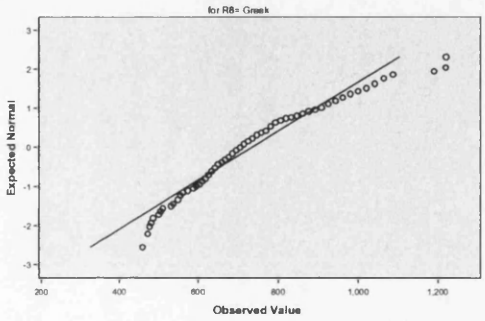


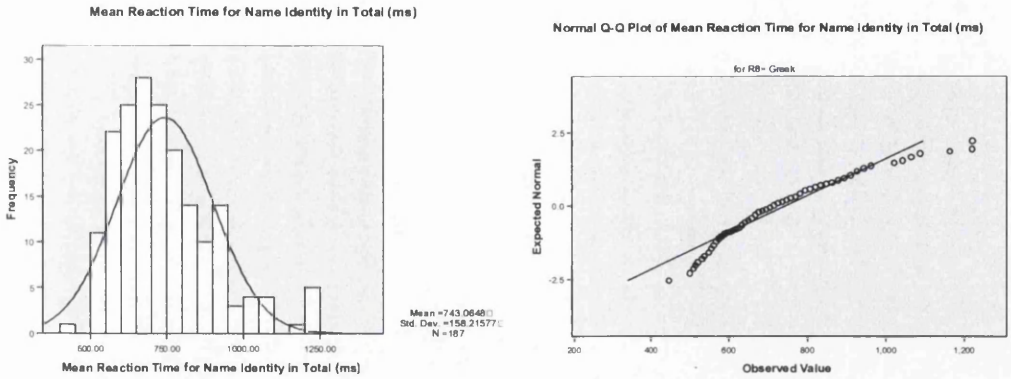
Greek Sample Letter-Matching Tests RTs

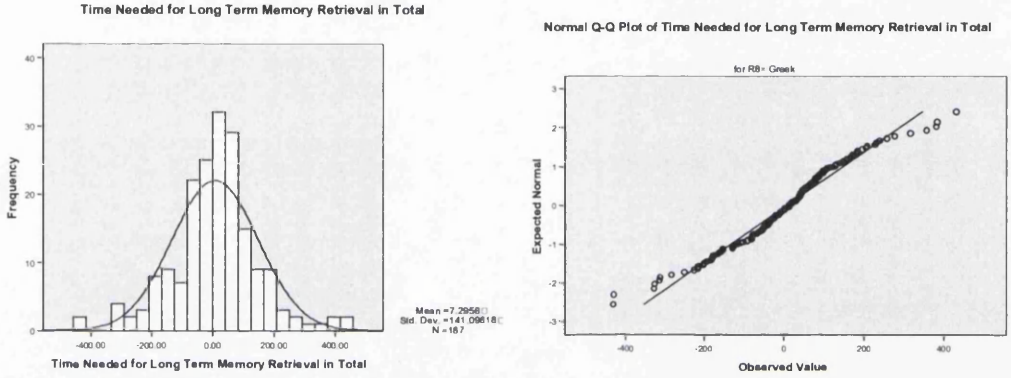
Mean Reaction Time for Physical Identity in Total (ms)



Normal Q-Q Plot of Mean Reaction Time for Physical Identity in Total (ms)







Thus, in terms of the coding and letter-matching tests (elementary cognitive tasks/ ECTS) assessments of normality reveal all accuracy variables across both the British and Greek samples are approximately normal in distribution. In contrast, the speed (RT) variables all deviate from normality, across both samples. Due to matters of conciseness, not all variable distributions are to be displayed. Graphical displays of the subjective time estimate data and scale variables... Assessments via graphical plots and statistical tests were used to determine normality; the results of which are presented below.

Table 6A1: Test of Normality- Accuracy Variables

Variable Label (Name)	Sample & (Size)	Reliability (Split -half)	Distribution		Normality		Inspection of Distributions & Normal Q-Q Plots	Results
			Skewness	Kurtosis	Statistic	Sig.		
Copy (Coding task)	British (199)	.554	-.120	.626	.075	.008	Approx. Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of normal distribution is accepted (ND).
	Greek (187)	.735	-.110	.011	.038	.200	Normal	
	Combined (386)	.653	-.155	-.235	.047	.040	Normal	
CFWD (Code Forward)	British (199)	.806	-.064	.300	.048	.200	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of normal distribution is accepted (ND).
	Greek (187)	.811	-.275	.522	.057	.200	Normal	
	Combined (386)	.779	-.150	.337	.041	.138	Normal	
CBWD (Code Backward)	British (199)	.758	.630	.003	.109	.000	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of normal distribution is accepted (ND).
	Greek (187)	.665	.372	-.040	.069	.032	Normal	
	Combined (386)	.703	.504	.056	.064	.001	Normal	
PI (Physical Identity)	British (199)	.656	-.023	.287	.043	.200	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of normal distribution is accepted (ND).
	Greek (187)	.716	.108	.208	.056	.200	Normal	
	Combined (386)	.691	.026	.172	.044	.073	Normal	
NI (Name Identity)	British (199)	.714	-.311	2.218	.069	.021	Approx. Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.714	-.286	.615	.042	.200	Normal	
	Combined (386)	.704	-.301	1.332	.045	.059	Normal	
RAPM (Psychometric Intelligence)	British (199)	na	-.356	-.239	.073	.011	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	na	-.487	-.503	.112	.000	Approx. Normal	
	Combined (386)	na	-.480	-.276	.085	.000	Approx. Normal	

Key: NS= Negative Skew; PS= Positive Skew; ND = Normal Distribution; LD = Leptokurtic (Peaked) Distribution; PD = Platykurtic (Flat) Distribution

"na": not applicable (cannot calculate Cronbach alpha for RAPM – this is not a scale variable)

Table 6A2: Test of Normality- Speed (Reaction Time) Variables:

Variable Label (Name)	Sample & Size (No.)	Reliability (Split-half)	Distribution		Normality		Inspection of Distributions & Normal Q-Q Plots	Description
			Skewness	Kurtosis	Statistic	Sig.		
RTCopy (Reaction Time Copy)	British (199)	.669	.729	-.156	.122	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/PD)
	Greek (187)	.727	1.006	.947	.110	.000	Non-Normal	
	Combined (386)	.710	1.048	1.255	.090	.000	Non-Normal	
RTCFWD (Reaction Time Code Forward)	British (199)	.814	1.611	2.630	.146	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD)
	Greek (187)	.804	1.589	2.366	.164	.000	Non-Normal	
	Combined (386)	.747	1.616	2.649	.154	.000	Non-Normal	
RTCBWD (Reaction Time Code Backward)	British (199)	.649	.920	.718	.099	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.667	1.188	1.050	.139	.000	Non-Normal	
	Combined (386)	.660	1.224	1.560	.124	.000	Non-Normal	
RTCTFwd (Reaction Time Coding Time Forward)	British (199)	.807	1.644	2.711	.138	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.789	1.592	2.428	.150	.000	Non-Normal	
	Combined (386)	.751	1.642	2.822	.137	.000	Non-Normal	
RTCTBwd (Reaction Time Coding Time Backward)	British (199)	.651	.875	.654	.083	.002	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.658	1.208	1.269	.113	.000	Non-Normal	
	Combined (386)	.653	1.198	1.613	.097	.000	Non-Normal	
RTPI (Reaction Time Physical Identity)	British (199)	.630	1.105	1.342	.110	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.681	.910	.795	.119	.000	Non-Normal	
	Combined (386)	.665	1.017	1.053	.110	.000	Non-Normal	
RTNI (Reaction Time Name Identity)	British (199)	.686	.758	.927	.096	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.743	.974	.884	.100	.000	Non-Normal	
	Combined (386)	.717	.924	1.066	.092	.000	Non-Normal	
NI_PI (Time Needed for Long Term Memory)	British (199)	.532	.087	1.206	.065	.042	Approx. Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.438	-.011	1.408	.078	.007	Approx. Normal	
	Combined (386)	.490	.076	1.272	.052	.013	Approx. Normal	
RTRAPM (Reaction Time Psychometric Intelligence)	British (199)	na	2.362	8.112	.169	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	na	2.543	8.806	.207	.000	Non-Normal	
	Combined (386)	na	2.777	11.307	.194	.000	Non-Normal	

Key: NS= Negative Skew; PS= Positive Skew; ND = Normal Distribution; LD = Leptokurtic (Peaked) Distribution; PD = Platykurtic (Flat) Distribution

Table 6A3: Test of Normality- Subjective Time Estimate (STE) Variables:

Variable Label (Name)	Sample & Size (No.)	Reliability (Split-Half)	Distribution		Normality		Inspection of Distributions & Normal Q-Q Plots	Description
			Skewness	Kurtosis	Statistic	Sig.		
CopySTE	British (199)	.764	1.145	1.480	.152	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.793	.860	.218	.127	.000	Non-Normal	
	Combined (386)	.779	1.034	1.108	.137	.000	Non-Normal	
CFWDSTE	British (199)	.791	.943	.737	.152	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.846	1.258	1.487	.157	.000	Non-Normal	
	Combined (386)	.816	1.084	1.020	.154	.000	Non-Normal	
CBWDSTE	British (199)	.751	.852	.558	.124	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.871	1.242	1.587	.130	.000	Non-Normal	
	Combined (386)	.811	1.034	1.009	.126	.000	Non-Normal	
PISTE	British (199)	.857	.936	.771	.138	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.882	1.050	.763	.140	.000	Non-Normal	
	Combined (386)	.869	.973	.709	.117	.000	Non-Normal	
NISTE	British (199)	.877	.979	.997	.122	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	.892	1.117	.991	.123	.000	Non-Normal	
	Combined (386)	.885	1.023	.909	.113	.000	Non-Normal	
RavenSTE	British (199)	na	.448	.093	.110	.000	Non-Normal	Upon inspection of all the graphical plots the null hypothesis of approximate normal distribution cannot be accepted (PS/LD).
	Greek (187)	na	1.151	3.652	.104	.000	Non-Normal	
	Combined (386)	na	.864	2.822	.105	.000	Non-Normal	

Key: NS= Negative Skew; PS= Positive Skew; ND = Normal Distribution; LD = Leptokurtic (Peaked) Distribution; PD = Platykurtic (Flat) Distribution

Table 6A4: Test of Reliability & Normality- Scale Measurement Variables:

Variable Label	Sample & Size (No.)	Reliability (Cronbach α)	Distribution		Normality		Inspection of Distributions & Normal Q-Q Plots	Description
			Skew	Kurtosis	Statistic	Sig.		
AS [Achievement Striving]	British (199)	.785	-.318	.131	.072	.013	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.752	.047	-.301	.065	.054	Normal	
	Combined (386)	.774	-.153	.058	.057	.004	Normal	
II [Impatience/ Irritability]	British (199)	.696	-.119	-.400	.062	.058	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.637	.106	-.399	.083	.003	Normal	
	Combined (386)	.665	-.007	-.370	.064	.001	Normal	
RA [Role Ambiguity]	British (199)	.788	.193	.032	.061	.068	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.769	.539	.654	.075	.011	Normal	
	Combined (386)	.786	.295	.138	.056	.005	Normal	
SE [Self-Efficacy]	British (199)	.788	-.048	.702	.093	.000	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.797	-.358	1.375	.071	.024	Normal	
	Combined (386)	.788	-.256	1.220	.075	.000	Normal	
TABf1 [Type A Factor 1/ +ve]	British (199)	.650	.130	.953	.173	.000	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.660	.629	1.140	.133	.000	Normal	
	Combined (386)	.680	.372	.380	.135	.000	Normal	
TABf2 [Type A Factor 1/ -ve]	British (199)	.426	.133	.774	.118	.000	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.354	-.142	.005	.133	.000	Normal	
	Combined (386)	.344	.096	.453	.105	.000	Normal	
PCT [Perceived Control of Time]	British (199)	.663	-.253	-.299	.081	.003	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.436	-.177	-.495	.110	.000	Normal	
	Combined (386)	.596	-.268	-.248	.075	.000	Normal	
PC [Polychronic Time Use]	British (199)	.783	.081	-.326	.071	.017	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.816	.291	-.189	.075	.012	Normal	
	Combined (386)	.797	.165	-.282	.047	.043	Normal	
RO [Role Overload] Delete item 3 (B4 GB=.703; Gr=.441)	British (199)	.711	-.061	-.207	.083	.002	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.523	.605	.130	.114	.000	Normal	
	Combined (386)	.583	.310	-.181	.078	.000	Normal	
LS [Life Satisfaction]	British (199)	.835	-.385	.104	.065	.038	Normal	Upon inspection of all the graphical plots it is reasonable to state that the null hypothesis of approximate normal distribution is accepted (ND).
	Greek (187)	.787	-.500	-.194	.109	.000	Normal	
	Combined (386)	.812	-.437	.-005	.074	.000	Normal	

Key: NS= Negative Skew; PS= Positive Skew; ND = Normal Distribution; LD = Leptokurtic (Peaked) Distribution; PD = Platykurtic (Flat) Distribution

Appendix 6B: Ho1 & Ho1a

Ho1: Different socio-cultural orientations manifest different behavioural response rates (accuracy and speed). In timed situations, clock-oriented, high-tech cultures attain higher levels of accuracy and speed than event-oriented, low-tech cultures.

Mreg1Ho1: Regression To Predict Accuracy (Copy Coding Task)

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Life Satisfaction Score, Total Polychronic Time Use Score, Respondent Sex, Total Type A Factor 1 Score, Age of Respondent (Years), Total Impatience Irritability Score, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score, Total Role Ambiguity Score, Nationality of Respondent[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Copy Score of Correct Answers

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.314[a]	.098	.069	17.098

a. Predictors: (Constant), Total Life Satisfaction Score, Total Polychronic Time Use Score, Respondent Sex, Total Type A Factor 1 Score, Age of Respondent (Years), Total Impatience Irritability Score, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score, Total Role Ambiguity Score, Nationality of Respondent

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11901.939	12	991.828	3.393	.000[a]
	Residual	109039.491	373	292.331		
	Total	120941.430	385			

a. Predictors: (Constant), Total Life Satisfaction Score, Total Polychronic Time Use Score, Respondent Sex, Total Type A Factor 1 Score, Age of Respondent (Years), Total Impatience Irritability Score, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score, Total Role Ambiguity Score, Nationality of Respondent

b. Dependent Variable: Total Copy Score of Correct Answers

Coefficients[a]

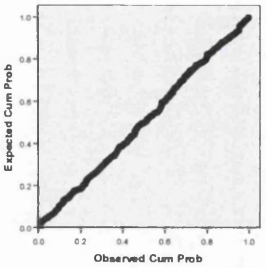
Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	91.630	17.301		5.296	.000
	Nationality of Respondent	-8.057	2.587	-.227	-3.114	.002
	Respondent Sex	4.307	1.841	.121	2.339	.020
	Age of Respondent (Years)	-.456	.321	-.072	-1.421	.156
	Expected Grade Classification/ Degree	-1.196	1.209	-.052	-.989	.323
	Total Achievement Striving Score	.014	.262	.004	.054	.957
	Total Impatience Irritability Score	.390	.254	.078	1.533	.126
	Total Role Ambiguity Score	.133	.212	.042	.627	.531
	Total Self Efficacy Score	.249	.267	.054	.934	.351
	Total Type A Factor 1 Score	-.131	.585	-.016	-.225	.822
	Total Perceived Control of Time Score	.104	.277	.022	.378	.706
	Total Polychronic Time Use Score	.106	.099	.054	1.071	.285
	Total Life Satisfaction Score	-.039	.169	-.012	-.230	.818

a. Dependent Variable: Total Copy Score of Correct Answers

Charts

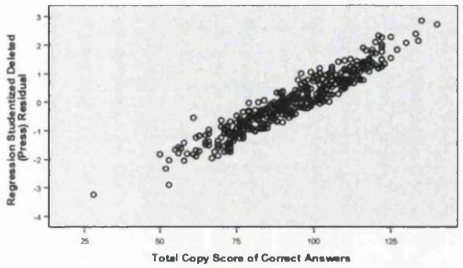
Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Total Copy Score of Correct Answers



Scatterplot

Dependent Variable: Total Copy Score of Correct Answers



Correlations

Correlations

			Nationality of Respondent	Respondent Sex	Total Copy Score of Correct Answers
Spearman's rho	Nationality of Respondent	Correlation Coefficient	1.000	.106*	-.231**
		Sig. (1-tailed)	.	.019	.000
		N	386	386	386
	Respondent Sex	Correlation Coefficient	.106*	1.000	.113*
		Sig. (1-tailed)	.019	.	.013
		N	386	386	386
	Total Copy Score of Correct Answers	Correlation Coefficient	-.231**	.113*	1.000
		Sig. (1-tailed)	.000	.013	.
		N	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Mreg2Ho1: Regression To Predict Accuracy (Psychometric Intelligence) (See also * below)

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Life Satisfaction Score, Total Polychronic Time Use Score, RAPM Incorrect Attempts, Subjective Time Estimate of Code Backward in Total (ms), Nationality of Respondent, Total Impatience Irritability Score, Total Perceived Control of Time Score[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Psychometric Intelligence

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.838[a]	.702	.697	3.922

a. Predictors: (Constant), Total Life Satisfaction Score, Total Polychronic Time Use Score, RAPM Incorrect Attempts, Subjective Time Estimate of Code Backward in Total (ms), Nationality of Respondent, Total Impatience Irritability Score, Total Perceived Control of Time Score

b. Dependent Variable: Psychometric Intelligence

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13703.509	7	1957.644	127.286	.000[a]
	Residual	5813.610	378	15.380		
	Total	19517.119	385			

a. Predictors: (Constant), Total Life Satisfaction Score, Total Polychronic Time Use Score, RAPM Incorrect Attempts, Subjective Time Estimate of Code Backward in Total (ms), Nationality of Respondent, Total Impatience Irritability Score, Total Perceived Control of Time Score

b. Dependent Variable: Psychometric Intelligence

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	34.456	1.746		19.738	.000
	Nationality of Respondent	-.878	.424	-.062	-2.071	.039
	Subjective Time Estimate of Code Backward in Total (ms)	5.65E-005	.000	.096	3.359	.001
	Total Perceived Control of Time Score	-.047	.059	-.024	-.798	.426
	RAPM Incorrect Attempts	-.320	.011	-.831	-29.038	.000
	Total Impatience Irritability Score	.091	.058	.045	1.572	.117
	Total Polychronic Time Use Score	.032	.022	.040	1.419	.157
	Total Life Satisfaction Score	.030	.037	.023	.815	.416

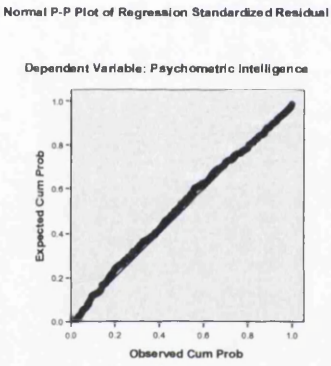
a. Dependent Variable: Psychometric Intelligence

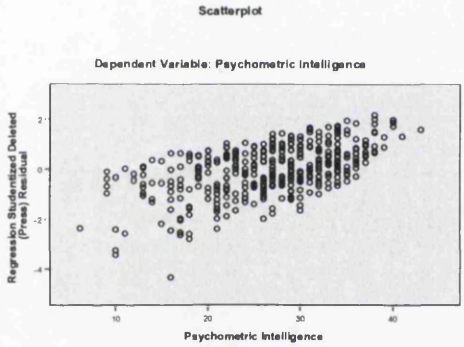
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	9.40	37.14	26.75	5.966	386
Std. Predicted Value	-2.907	1.742	.000	1.000	386
Standard Error of Predicted Value	.325	.959	.551	.123	386
Adjusted Predicted Value	9.42	37.17	26.75	5.961	386
Residual	-16.390	8.516	.000	3.886	386
Std. Residual	-4.179	2.171	.000	.991	386
Stud. Residual	-4.249	2.184	-.001	1.001	386
Deleted Residual	-16.940	8.612	-.004	3.968	386
Stud. Deleted Residual	-4.348	2.195	-.001	1.005	386
Mahal. Distance	1.654	22.007	6.982	3.658	386
Cook's Distance	.000	.076	.003	.006	386
Centered Leverage Value	.004	.057	.018	.010	386

a. Dependent Variable: Psychometric Intelligence

Charts





* Regression To Predict Accuracy (Psychometric Intelligence).

Expands upon Mreg2Ho1 to include 'action polychronicity' (Type A Behavioural Orientation to Work) and 'Achievement Strivings'– no additional predictors are added to the model.

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Type A Factor 1 Score, Total Achievement Striving Score, Total Polychronic Time Use Score, Subjective Time Estimate of Code Backward in Total (ms), RAPM Incorrect Attempts, Total Life Satisfaction Score, Total Impatience Irritability Score, Total Perceived Control of Time Score, Nationality of Respondent[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Psychometric Intelligence

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.839[a]	.703	.696	3.925

a. Predictors: (Constant), Total Type A Factor 1 Score, Total Achievement Striving Score, Total Polychronic Time Use Score, Subjective Time Estimate of Code Backward in Total (ms), RAPM Incorrect Attempts, Total Life Satisfaction Score, Total Impatience Irritability Score, Total Perceived Control of Time Score, Nationality of Respondent

b. Dependent Variable: Psychometric Intelligence

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13724.810	9	1524.979	98.992	.000[a]
	Residual	5792.309	376	15.405		
	Total	19517.119	385			

a. Predictors: (Constant), Total Type A Factor 1 Score, Total Achievement Striving Score, Total Polychronic Time Use Score, Subjective Time Estimate of Code Backward in Total (ms), RAPM Incorrect Attempts, Total Life Satisfaction Score, Total Impatience Irritability Score, Total Perceived Control of Time Score, Nationality of Respondent

b. Dependent Variable: Psychometric Intelligence

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	32.956	2.344		14.058	.000
	Nationality of Respondent	-1.301	.570	-.091	-2.280	.023
	Subjective Time Estimate of Code Backward in Total (ms)	5.66E-005	.000	.096	3.355	.001
	Total Perceived Control of Time Score	-.041	.064	-.021	-.638	.524
	RAPM Incorrect Attempts	-.319	.011	-.827	-28.717	.000
	Total Impatience Irritability Score	.086	.059	.043	1.461	.145
	Total Polychronic Time Use Score	.033	.022	.042	1.474	.141
	Total Achievement Striving Score	-.003	.052	-.002	-.058	.954
	Total Life Satisfaction Score	.034	.037	.027	.925	.355
	Total Type A Factor 1 Score	.150	.132	.044	1.138	.256

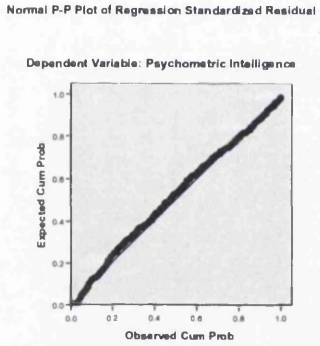
a. Dependent Variable: Psychometric Intelligence

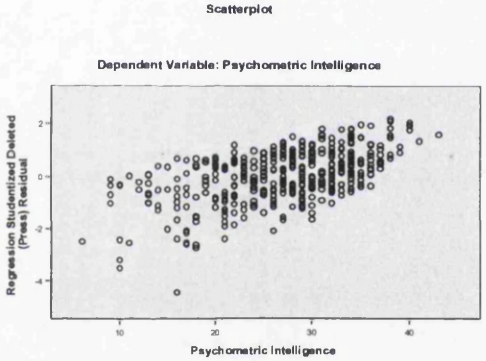
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	9.37	37.47	26.75	5.971	386
Std. Predicted Value	-2.910	1.797	.000	1.000	386
Standard Error of Predicted Value	.387	1.148	.619	.129	386
Adjusted Predicted Value	9.38	37.52	26.75	5.967	386
Residual	-16.703	8.457	.000	3.879	386
Std. Residual	-4.256	2.155	.000	.988	386
Stud. Residual	-4.342	2.171	.000	1.001	386
Deleted Residual	-17.386	8.586	-.004	3.983	386
Stud. Deleted Residual	-4.449	2.182	-.001	1.005	386
Mahal. Distance	2.739	31.950	8.977	4.312	386
Cook's Distance	.000	.077	.003	.006	386
Centered Leverage Value	.007	.083	.023	.011	386

a. Dependent Variable: Psychometric Intelligence

Charts





Nonparametric Correlations

Correlations

			Psychometric Intelligence	RAPM Incorrect Attempts	Subjective Time Estimate of Code Backward in Total (ms)
Spearman's rho	Psychometric Intelligence	Correlation Coefficient	1.000	-.809**	.071
		Sig. (1-tailed)	.	.000	.081
		N	386	386	386
	RAPM Incorrect Attempts	Correlation Coefficient	-.809**	1.000	.034
		Sig. (1-tailed)	.000	.	.250
		N	386	386	386
	Subjective Time Estimate of Code Backward in Total (ms)	Correlation Coefficient	.071	.034	1.000
		Sig. (1-tailed)	.081	.250	.
		N	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

Nationality & Speed:

Group Statistics

	Nationality of Respondent	N	Mean	Std. Deviation	Std. Error Mean
Mean Reaction Time of Copy in Total (ms)	British	199	635.9904	115.64429	8.19781
	Greek	187	704.3068	152.81973	11.17529
Mean Reaction Time of Code Forward in Total (ms)	British	199	1799.5949	699.63858	49.59606
	Greek	187	1642.1512	615.97933	45.04487
Mean Reaction Time for Code Backward in Total (ms)	British	199	2707.3912	927.94471	65.78026
	Greek	187	3074.2212	1236.08402	90.39142
Mean Reaction Time for Physical Identity in Total (ms)	British	199	682.8086	140.21176	9.93935
	Greek	187	734.8130	160.09048	11.70698
Mean Reaction Time for Name Identity in Total (ms)	British	199	726.6660	132.18710	9.37049
	Greek	187	743.0648	158.21577	11.56988

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Mean Reaction Time of Copy in Total (ms)	386	669.0866	139.02944	428.57	1201.00
Mean Reaction Time of Code Forward in Total (ms)	386	1723.3204	664.27130	800.00	4001.00
Mean Reaction Time for Code Backward in Total (ms)	386	2885.1042	1102.13146	1250.00	6667.67
Mean Reaction Time for Physical Identity in Total (ms)	386	708.0024	152.21536	420.17	1220.51
Mean Reaction Time for Name Identity in Total (ms)	386	734.6105	145.42066	446.43	1220.51
Nationality of Respondent	386	1.48	.500	1	2

Report

Nationality of Respondent		Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
British	Mean	635.9904	1799.5949	2707.3912	682.8086	726.6660
	N	199	199	199	199	199
	Std. Deviation	115.64429	699.63858	927.94471	140.21176	132.18710
	Median	606.0606	1666.6667	2500.0000	657.8947	714.2857
	Std. Error of Mean	8.19781	49.59606	65.78026	9.93935	9.37049
Greek	Mean	704.3068	1642.1512	3074.2212	734.8130	743.0648
	N	187	187	187	187	187
	Std. Deviation	152.81973	615.97933	1236.08402	160.09048	158.21577
	Median	666.6667	1500.0000	2727.2727	704.2254	714.2857
	Std. Error of Mean	11.17529	45.04487	90.39142	11.70698	11.56988
Total	Mean	669.0866	1723.3204	2885.1042	708.0024	734.6105
	N	386	386	386	386	386
	Std. Deviation	139.02944	664.27130	1102.13146	152.21536	145.42066
	Median	645.1613	1558.7045	2608.6957	684.9315	714.2857
	Std. Error of Mean	7.07641	33.81052	56.09701	7.74756	7.40172

Mann-Whitney Test

Ranks

	Nationality of Respondent	N	Mean Rank	Sum of Ranks
Mean Reaction Time of Copy in Total (ms)	British	199	168.49	33530.50
	Greek	187	220.11	41160.50
	Total	386		
Mean Reaction Time of Code Forward in Total (ms)	British	199	208.04	41400.50
	Greek	187	178.02	33290.50
	Total	386		
Mean Reaction Time for Code Backward in Total (ms)	British	199	179.62	35744.00
	Greek	187	208.27	38947.00
	Total	386		
Mean Reaction Time for Physical Identity in Total (ms)	British	199	173.99	34624.00
	Greek	187	214.26	40067.00
	Total	386		
Mean Reaction Time for Name Identity in Total (ms)	British	199	190.89	37986.50
	Greek	187	196.28	36704.50
	Total	386		

Test Statistics[a]

	Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
Mann-Whitney U	13630.500	15712.500	15844.000	14724.000	18086.500
Wilcoxon W	33530.500	33290.500	35744.000	34624.000	37986.500
Z	-4.543	-2.643	-2.524	-3.545	-.475
Asymp. Sig. (2-tailed)	.000	.008	.012	.000	.635

a. Grouping Variable: Nationality of Respondent

Ho1a: High-tech cultures are both monochronic and polychronic in terms of preferred (mind-based) temporal orientation. *Supported.*

Group Statistics

	Nationality of Respondent	N	Mean	Std. Deviation	Std. Error Mean
Total Polychronic Time Use Score	British	199	34.4305	8.52435	.60427
	Greek	187	32.5629	9.39303	.68689

Independent Samples Test

		vene's Test for Equal of Variances		t-test for Equality of Means						
									;% Confidence Interv of the Difference	
		F	Sig.	t	df	ig. (2-tailedean Differenc		Std. Error Difference	Lower	Upper
Total Polychro	Equal variances assur	.881	.349	2.048	384	.041	1.86761	.91210	.07428	3.66095
Time Use Scor	Equal variances not a			2.041	374.558	.042	1.86761	.91486	.06872	3.66651

Appendix 6C: Ho2

Ho2: Different cultural and/ or specific temporal orientations (i.e. monochronic, polychronic or both) manifest differential expectations of achievement. Partially supported.

Crosstabs: Cultural Differences in Expected Grade

Nationality of Respondent * Expected Grade Classification/ Degree Crosstabulation

			Expected Grade Classification/ Degree						
			1st	2:1	2:2	3rd	Pass	Fail	Total
Nationality of Respondent	British	Count	21	128	43	2	3	2	199
		Expected Count	21.1	107.2	62.9	5.2	1.5	1.0	199.0
		% within Nationality of Respondent	10.6%	64.3%	21.6%	1.0%	1.5%	1.0%	100.0%
		% within Expected Grade Classification/ Degree	51.2%	61.5%	35.2%	20.0%	100.0%	100.0%	51.6%
		% of Total	5.4%	33.2%	11.1%	.5%	.8%	.5%	51.6%
	Greek	Count	20	80	79	8	0	0	187
		Expected Count	19.9	100.8	59.1	4.8	1.5	1.0	187.0
		% within Nationality of Respondent	10.7%	42.8%	42.2%	4.3%	.0%	.0%	100.0%
		% within Expected Grade Classification/ Degree	48.8%	38.5%	64.8%	80.0%	.0%	.0%	48.4%
		% of Total	5.2%	20.7%	20.5%	2.1%	.0%	.0%	48.4%
Total		Count	41	208	122	10	3	2	386
		Expected Count	41.0	208.0	122.0	10.0	3.0	2.0	386.0
		% within Nationality of Respondent	10.6%	53.9%	31.6%	2.6%	.8%	.5%	100.0%
		% within Expected Grade Classification/ Degree	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	10.6%	53.9%	31.6%	2.6%	.8%	.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.980[a]	5	.000
Continuity Correction			
Likelihood Ratio	32.398	5	.000
Linear-by-Linear Association	5.622	1	.018
N of Valid Cases	386		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .97.

Crosstabs PC 2 Group Differences in Expected Grade

MC or PC Orientation * Expected Grade Classification/ Degree Crosstabulation

			Expected Grade Classification/ Degree						
			1st	2:1	2:2	3rd	Pass	Fail	Total
MC or PC Orientation	Monochronic	Count	31	152	102	8	3	2	298
		Expected Count	31.7	160.6	94.2	7.7	2.3	1.5	298.0
		% within MC or PC Orientation	10.4%	51.0%	34.2%	2.7%	1.0%	.7%	100.0%
		% within Expected Grade Classification/ Degree	75.6%	73.1%	83.6%	80.0%	100.0%	100.0%	77.2%
		% of Total	8.0%	39.4%	26.4%	2.1%	.8%	.5%	77.2%
	Polychronic	Count	10	56	20	2	0	0	88
		Expected Count	9.3	47.4	27.8	2.3	.7	.5	88.0
		% within MC or PC Orientation	11.4%	63.6%	22.7%	2.3%	.0%	.0%	100.0%
		% within Expected Grade Classification/ Degree	24.4%	26.9%	16.4%	20.0%	.0%	.0%	22.8%
		% of Total	2.6%	14.5%	5.2%	.5%	.0%	.0%	22.8%
Total		Count	41	208	122	10	3	2	386
		Expected Count	41.0	208.0	122.0	10.0	3.0	2.0	386.0
		% within MC or PC Orientation	10.6%	53.9%	31.6%	2.6%	.8%	.5%	100.0%
		% within Expected Grade Classification/ Degree	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	10.6%	53.9%	31.6%	2.6%	.8%	.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.434[a]	5	.266
Continuity Correction			
Likelihood Ratio	7.691	5	.174
Linear-by-Linear Association	4.175	1	.041
N of Valid Cases	386		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .46.

Crosstabs PC 3 Group Differences in Expected Grade

Mono/Polychron 3 groups * Expected Grade Classification/ Degree Crosstabulation

			Expected Grade Classification/ Degree						
			1st	2:1	2:2	3rd	Pass	Fail	Total
Mono/Polychron 3 groups	MC	Count	15	71	54	5	2	1	148
		Expected Count	15.7	79.8	46.8	3.8	1.2	.8	148.0
		% within Mono/Polychron 3 groups	10.1%	48.0%	36.5%	3.4%	1.4%	.7%	100.0%
		% within Expected Grade Classification/ Degree	36.6%	34.1%	44.3%	50.0%	66.7%	50.0%	38.3%
		% of Total	3.9%	18.4%	14.0%	1.3%	.5%	.3%	38.3%
	MC&PC	Count	22	129	65	5	1	1	223
		Expected Count	23.7	120.2	70.5	5.8	1.7	1.2	223.0
		% within Mono/Polychron 3 groups	9.9%	57.8%	29.1%	2.2%	.4%	.4%	100.0%
		% within Expected Grade Classification/ Degree	53.7%	62.0%	53.3%	50.0%	33.3%	50.0%	57.8%
		% of Total	5.7%	33.4%	16.8%	1.3%	.3%	.3%	57.8%
	PC	Count	4	8	3	0	0	0	15
		Expected Count	1.6	8.1	4.7	.4	.1	.1	15.0
		% within Mono/Polychron 3 groups	26.7%	53.3%	20.0%	.0%	.0%	.0%	100.0%
		% within Expected Grade Classification/ Degree	9.8%	3.8%	2.5%	.0%	.0%	.0%	3.9%
		% of Total	1.0%	2.1%	.8%	.0%	.0%	.0%	3.9%
Total		Count	41	208	122	10	3	2	386
		Expected Count	41.0	208.0	122.0	10.0	3.0	2.0	386.0
		% within Mono/Polychron 3 groups	10.6%	53.9%	31.6%	2.6%	.8%	.5%	100.0%
		% within Expected Grade Classification/ Degree	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	10.6%	53.9%	31.6%	2.6%	.8%	.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.652[a]	10	.472
Continuity Correction			
Likelihood Ratio	9.140	10	.519
Linear-by-Linear Association	5.441	1	.020
N of Valid Cases	386		

a. 10 cells (55.6%) have expected count less than 5. The minimum expected count is .08.

Appendix 6D: Ho3

Ho3: Males are more monochronic than females, whereas females are more polychronic. Not supported.

Regression: Gender & Preferred (Mind) Polychronicity

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	Total Type A Factor 1 Score, Respondent Sex, Total Role Ambiguity Score, Age of Respondent (Years), Total Impatience Irritability Score, Total Life Satisfaction Score, Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score, Nationality of Respondent [a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Polychronic Time Use Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.214[a]	.046	.020	8.90098

a. Predictors: (Constant), Total Type A Factor 1 Score, Respondent Sex, Total Role Ambiguity Score, Age of Respondent (Years), Total Impatience Irritability Score, Total Life Satisfaction Score, Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score, Nationality of Respondent

b. Dependent Variable: Total Polychronic Time Use Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1424.166	10	142.417	1.798	.059[a]
	Residual	29710.266	375	79.227		
	Total	31134.432	385			

a. Predictors: (Constant), Total Type A Factor 1 Score, Respondent Sex, Total Role Ambiguity Score, Age of Respondent (Years), Total Impatience Irritability Score, Total Life Satisfaction Score, Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score, Nationality of Respondent

b. Dependent Variable: Total Polychronic Time Use Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	24.989	8.700		2.872	.004
	Respondent Sex	.647	.958	.036	.676	.500
	Nationality of Respondent	-.195	1.331	-.011	-.146	.884
	Total Role Ambiguity Score	.108	.110	.067	.983	.326
	Total Self Efficacy Score	.449	.137	.191	3.286	.001
	Total Perceived Control of Time Score	-.109	.144	-.044	-.757	.449
	Total Life Satisfaction Score	-.027	.087	-.017	-.311	.756
	Age of Respondent (Years)	-.141	.166	-.044	-.849	.396
	Total Achievement Striving Score	.034	.136	.017	.251	.802
	Total Impatience Irritability Score	.140	.132	.055	1.064	.288
	Total Type A Factor 1 Score	-.408	.303	-.096	-1.345	.179

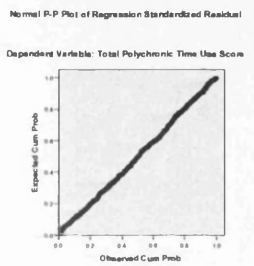
a. Dependent Variable: Total Polychronic Time Use Score

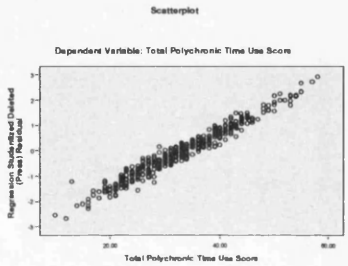
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	22.1318	38.9430	33.5257	1.92331	386
Std. Predicted Value	-5.924	2.817	.000	1.000	386
Standard Error of Predicted Value	.936	4.762	1.455	.374	386
Adjusted Predicted Value	25.7928	39.8455	33.5427	1.90620	386
Residual	-22.83281	25.52032	.00000	8.78462	386
Std. Residual	-2.565	2.867	.000	.987	386
Stud. Residual	-2.661	2.883	-.001	1.002	386
Deleted Residual	-24.57283	25.80803	-.01699	9.05567	386
Stud. Deleted Residual	-2.683	2.912	-.001	1.004	386
Mahal. Distance	3.261	109.181	9.974	7.573	386
Cook's Distance	.000	.054	.003	.005	386
Centered Leverage Value	.008	.284	.026	.020	386

a. Dependent Variable: Total Polychronic Time Use Score

Charts





Correlations

Correlations

		Total Self Efficacy Score	Total Polychronic Time Use Score
Total Self Efficacy Score	Pearson Correlation	1	.144**
	Sig. (1-tailed)		.002
	N	386	386
Total Polychronic Time Use Score	Pearson Correlation	.144**	1
	Sig. (1-tailed)	.002	
	N	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

Appendix 6E: Ho3a

Ho3a: Men are more achievement strivings and impatient/ irritable than women, as are cultures of a highly developed western orientation steeped in advanced states of technology. Not Supported.

Regression (Achievement Strivings)

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Mean Reaction Time for Name Identity in Total (ms), Total Role Ambiguity Score, Total Impatience Irritability Score, Total Polychronic Time Use Score, Respondent Sex, Total Type A Factor 1 Score, Age of Respondent (Years), Total Life Satisfaction Score, Mean Reaction Time of Code Forward in Total (ms), Total Perceived Control of Time Score, Mean Reaction Time of Copy in Total (ms), Total Self Efficacy Score, Mean Reaction Time for Physical Identity in Total (ms), Mean Reaction Time for Code Backward in Total (ms), Nationality of Respondent[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Achievement Striving Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.673[a]	.453	.431	3.34227

a. Predictors: (Constant), Mean Reaction Time for Name Identity in Total (ms), Total Role Ambiguity Score, Total Impatience Irritability Score, Total Polychronic Time Use Score, Respondent Sex, Total Type A Factor 1 Score, Age of Respondent (Years), Total Life Satisfaction Score, Mean Reaction Time of Code Forward in Total (ms), Total Perceived Control of Time Score, Mean Reaction Time of Copy in Total (ms), Total Self Efficacy Score, Mean Reaction Time for Physical Identity in Total (ms), Mean Reaction Time for Code Backward in Total (ms), Nationality of Respondent

b. Dependent Variable: Total Achievement Striving Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3423.920	15	228.261	20.434	.000[a]
	Residual	4133.172	370	11.171		
	Total	7557.092	385			

a. Predictors: (Constant), Mean Reaction Time for Name Identity in Total (ms), Total Role Ambiguity Score, Total Impatience Irritability Score, Total Polychronic Time Use Score, Respondent Sex, Total Type A Factor 1 Score, Age of Respondent (Years), Total Life Satisfaction Score, Mean Reaction Time of Code Forward in Total (ms), Total Perceived Control of Time Score, Mean Reaction Time of Copy in Total (ms), Total Self Efficacy Score, Mean Reaction Time for Physical Identity in Total (ms), Mean Reaction Time for Code Backward in Total (ms), Nationality of Respondent

b. Dependent Variable: Total Achievement Striving Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	23.970	3.276		7.316	.000
	Respondent Sex	1.285	.359	.145	3.576	.000
	Nationality of Respondent	1.093	.523	.123	2.092	.037
	Total Role Ambiguity Score	-.383	.037	-.482	-10.326	.000
	Total Self Efficacy Score	-.042	.052	-.036	-.797	.426
	Total Perceived Control of Time Score	.313	.052	.259	6.044	.000
	Total Polychronic Time Use Score	.006	.019	.013	.324	.746
	Total Life Satisfaction Score	-.043	.033	-.055	-1.312	.191
	Total Type A Factor 1 Score	-.325	.113	-.154	-2.870	.004
	Age of Respondent (Years)	.097	.063	.061	1.539	.125
	Total Impatience Irritability Score	.078	.050	.062	1.574	.116
	Mean Reaction Time of Copy in Total (ms)	-.002	.001	-.048	-1.101	.272
	Mean Reaction Time of Code Forward in Total (ms)	.001	.000	.138	2.729	.007
	Mean Reaction Time for Code Backward in Total (ms)	-.001	.000	-.162	-3.090	.002
	Mean Reaction Time for Physical Identity in Total (ms)	.002	.001	.053	1.170	.243
	Mean Reaction Time for Name Identity in Total (ms)	.002	.001	.076	1.551	.122

a. Dependent Variable: Total Achievement Striving Score

Residuals Statistics[a]

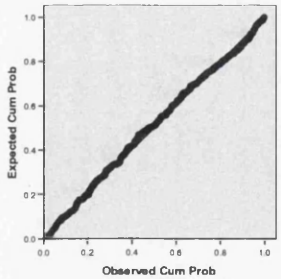
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	13.1663	30.0113	23.1663	2.98216	386
Std. Predicted Value	-3.353	2.295	.000	1.000	386
Standard Error of Predicted Value	.393	1.859	.661	.160	386
Adjusted Predicted Value	13.3029	29.8775	23.1604	2.98465	386
Residual	-9.54735	10.52139	.00000	3.27651	386
Std. Residual	-2.857	3.148	.000	.980	386
Stud. Residual	-2.919	3.238	.001	1.002	386
Deleted Residual	-9.96598	11.13206	.00592	3.42038	386
Stud. Deleted Residual	-2.949	3.280	.001	1.004	386
Mahal. Distance	4.338	118.072	14.961	9.287	386
Cook's Distance	.000	.038	.003	.005	386
Centered Leverage Value	.011	.307	.039	.024	386

a. Dependent Variable: Total Achievement Striving Score

Charts

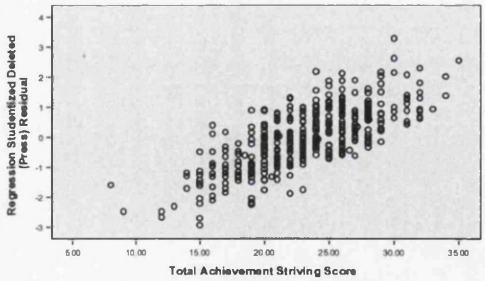
Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Total Achievement Striving Score



Scatterplot

Dependent Variable: Total Achievement Striving Score



Correlations

Correlations

		Respondent Sex	Nationality of Respondent	Total Role Ambiguity Score	Total Perceived Control of Time Score	Total Type A Factor 1 Score	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)	Total Achievement Striving Score
Respondent Sex	Pearson Correlatio	1	.106*	-.052	.086*	-.025	-.017	.002	.205*
	Sig. (1-tailed)		.019	.154	.046	.313	.368	.483	.000
	N	386	386	386	386	386	386	386	386
Nationality of Respondent	Pearson Correlatio	.106*	1	-.229*	.292*	.661*	-.119*	.167*	.188*
	Sig. (1-tailed)	.019		.000	.000	.000	.010	.001	.000
	N	386	386	386	386	386	386	386	386
Total Role Ambiguity Score	Pearson Correlatio	-.052	-.229*	1	-.337*	-.053	-.032	-.105*	-.553*
	Sig. (1-tailed)	.154	.000		.000	.148	.264	.020	.000
	N	386	386	386	386	386	386	386	386
Total Perceived Control of Time Score	Pearson Correlatio	.086*	.292*	-.337*	1	.118*	-.046	-.040	.436*
	Sig. (1-tailed)	.046	.000	.000		.010	.186	.214	.000
	N	386	386	386	386	386	386	386	386
Total Type A Factor 1 Scor	Pearson Correlatio	-.025	.661*	-.053	.118*	1	-.109*	.116*	-.044
	Sig. (1-tailed)	.313	.000	.148	.010		.016	.011	.196
	N	386	386	386	386	386	386	386	386
Mean Reaction Time of Co Forward in Total (ms)	Pearson Correlatio	-.017	-.119*	-.032	-.046	-.109*	1	.589*	.072
	Sig. (1-tailed)	.368	.010	.264	.186	.016		.000	.078
	N	386	386	386	386	386	386	386	386
Mean Reaction Time for Co Backward in Total (ms)	Pearson Correlatio	.002	.167*	-.105*	-.040	.116*	.589*	1	.003
	Sig. (1-tailed)	.483	.001	.020	.214	.011	.000		.478
	N	386	386	386	386	386	386	386	386
Total Achievement Striving Score	Pearson Correlatio	.205*	.188*	-.553*	.436*	-.044	.072	.003	1
	Sig. (1-tailed)	.000	.000	.000	.000	.196	.078	.478	
	N	386	386	386	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Nonparametric Correlations (Non-normal data comparisons)

Correlations

			Respondent Sex	Nationality of Respondent	Total Role Ambiguity Score	Total Perceived Control of Time Score	Total Type A Factor 1 Score	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)	Total Achievement Striving Score
Spearman's rho	Respondent Sex	Correlation Coefficient	1.000	.106*	-.065	.108*	-.026	-.055	.012	.192*
		Sig. (1-tailed)	.	.019	.102	.017	.308	.140	.404	.000
		N	386	386	386	386	386	386	386	386
	Nationality of Respondent	Correlation Coefficient	.106*	1.000	-.245*	.276*	.692*	-.135*	.129*	.169*
		Sig. (1-tailed)	.019	.	.000	.000	.000	.004	.006	.000
		N	386	386	386	386	386	386	386	386
	Total Role Ambiguity Score	Correlation Coefficient	-.065	-.245*	1.000	-.371*	-.099*	-.007	-.075	-.554*
		Sig. (1-tailed)	.102	.000	.	.000	.026	.446	.071	.000
		N	386	386	386	386	386	386	386	386
	Total Perceived Control of Time Score	Correlation Coefficient	.108*	.276*	-.371*	1.000	.137*	-.073	.002	.427*
		Sig. (1-tailed)	.017	.000	.000	.	.004	.077	.487	.000
		N	386	386	386	386	386	386	386	386
	Total Type A Factor 1 Score	Correlation Coefficient	-.026	.692*	-.099*	.137*	1.000	-.144*	.042	-.036
		Sig. (1-tailed)	.308	.000	.026	.004	.	.002	.206	.242
		N	386	386	386	386	386	386	386	386
	Mean Reaction Time of Code Forward in Total (ms)	Correlation Coefficient	-.055	-.135*	-.007	-.073	-.144*	1.000	.630*	.018
		Sig. (1-tailed)	.140	.004	.446	.077	.002	.	.000	.365
		N	386	386	386	386	386	386	386	386
	Mean Reaction Time for Code Backward in Total (ms)	Correlation Coefficient	.012	.129*	-.075	.002	.042	.630*	1.000	.017
		Sig. (1-tailed)	.404	.006	.071	.487	.206	.000	.	.368
		N	386	386	386	386	386	386	386	386
	Total Achievement Striving Score	Correlation Coefficient	.192*	.169*	-.554*	.427*	-.036	.018	.017	1.000
		Sig. (1-tailed)	.000	.000	.000	.000	.242	.365	.368	.
		N	386	386	386	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Regression (Impatience/ Irritability)

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Achievement Striving Score, Mean Reaction Time for Code Backward in Total (ms), Total Polychronic Time Use Score, Age of Respondent (Years), Total Life Satisfaction Score, Mean Reaction Time of Copy in Total (ms), Respondent Sex, Nationality of Respondent, Total Self Efficacy Score, Mean Reaction Time for Physical Identity in Total (ms), Total Perceived Control of Time Score, Mean Reaction Time for Name Identity in Total (ms), Mean Reaction Time of Code Forward in Total (ms), Total Role Ambiguity Score	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Impatience Irritability Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.234[a]	.055	.019	3.50465

a. Predictors: (Constant), Total Achievement Striving Score, Mean Reaction Time for Code Backward in Total (ms), Total Polychronic Time Use Score, Age of Respondent (Years), Total Life Satisfaction Score, Mean Reaction Time of Copy in Total (ms), Respondent Sex, Nationality of Respondent, Total Self Efficacy Score, Mean Reaction Time for Physical Identity in Total (ms), Total Perceived Control of Time Score, Mean Reaction Time for Name Identity in Total (ms), Mean Reaction Time of Code Forward in Total (ms), Total Role Ambiguity Score

b. Dependent Variable: Total Impatience Irritability Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	263.868	14	18.848	1.535	.096[a]
	Residual	4556.841	371	12.283		
	Total	4820.709	385			

a. Predictors: (Constant), Total Achievement Striving Score, Mean Reaction Time for Code Backward in Total (ms), Total Polychronic Time Use Score, Age of Respondent (Years), Total Life Satisfaction Score, Mean Reaction Time of Copy in Total (ms), Respondent Sex, Nationality of Respondent, Total Self Efficacy Score, Mean Reaction Time for Physical Identity in Total (ms), Total Perceived Control of Time Score, Mean Reaction Time for Name Identity in Total (ms), Mean Reaction Time of Code Forward in Total (ms), Total Role Ambiguity Score

b. Dependent Variable: Total Impatience Irritability Score

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	18.237	3.407		5.352	.000
	Respondent Sex	.479	.381	.068	1.257	.210
	Nationality of Respondent	.735	.421	.104	1.749	.081
	Total Role Ambiguity Score	-.005	.044	-.008	-.113	.910
	Total Self Efficacy Score	-.060	.054	-.065	-1.114	.266
	Total Perceived Control of Time Score	-.062	.057	-.064	-1.084	.279
	Total Polychronic Time Use Score	.016	.020	.042	.809	.419
	Total Life Satisfaction Score	-.081	.034	-.128	-2.376	.018
	Age of Respondent (Years)	-.025	.066	-.019	-.369	.712
	Mean Reaction Time of Copy in Total (ms)	-.002	.001	-.072	-1.250	.212
	Mean Reaction Time of Code Forward in Total (ms)	7.88E-005	.000	.015	.222	.825
	Mean Reaction Time for Code Backward in Total (ms)	.000	.000	-.051	-.731	.465
	Mean Reaction Time for Physical Identity in Total (ms)	.000	.001	-.009	-.152	.879
	Mean Reaction Time for Name Identity in Total (ms)	-6.22E-005	.002	-.003	-.040	.968
	Total Achievement Striving Score	.068	.054	.085	1.268	.206

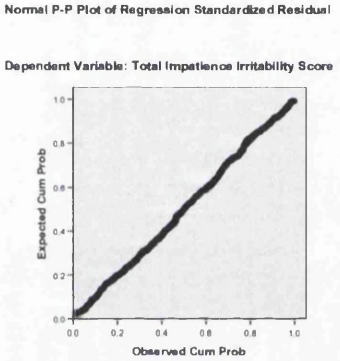
a. Dependent Variable: Total Impatience Irritability Score

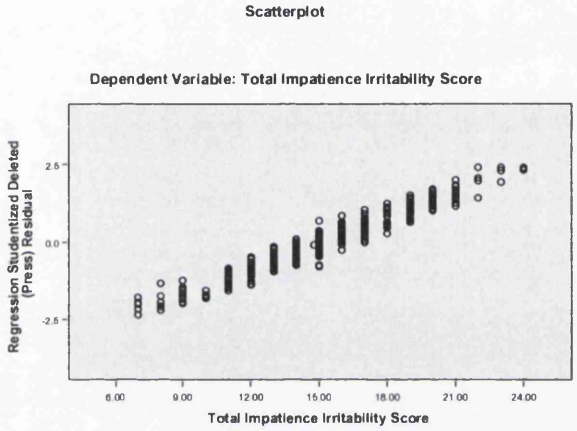
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	12.5063	17.6784	15.1859	.82787	386
Std. Predicted Value	-3.237	3.011	.000	1.000	386
Standard Error of Predicted Value	.384	1.921	.670	.170	386
Adjusted Predicted Value	12.4837	17.8104	15.1825	.83983	386
Residual	-8.01522	8.25883	.00000	3.44034	386
Std. Residual	-2.287	2.357	.000	.982	386
Stud. Residual	-2.319	2.384	.000	1.001	386
Deleted Residual	-8.24261	8.62796	.00342	3.58159	386
Stud. Deleted Residual	-2.333	2.399	.001	1.004	386
Mahal. Distance	3.631	114.663	13.964	9.103	386
Cook's Distance	.000	.031	.003	.004	386
Centered Leverage Value	.009	.298	.036	.024	386

a. Dependent Variable: Total Impatience Irritability Score

Charts





Correlations

Correlations

		Respondent Sex	Nationality of Respondent	Total Life Satisfaction Score	Total Impatience Irritability Score
Respondent Sex	Pearson Correlation	1	.106*	.050	.107*
	Sig. (1-tailed)		.019	.165	.018
	N	386	386	386	386
Nationality of Respondent	Pearson Correlation	.106*	1	.018	.077
	Sig. (1-tailed)	.019		.359	.066
	N	386	386	386	386
Total Life Satisfaction Score	Pearson Correlation	.050	.018	1	-.136**
	Sig. (1-tailed)	.165	.359		.004
	N	386	386	386	386
Total Impatience Irritability Score	Pearson Correlation	.107*	.077	-.136**	1
	Sig. (1-tailed)	.018	.066	.004	
	N	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Nonparametric Correlations (Non-normal data comparisons)

Correlations

			Respondent Sex	Nationality of Respondent	Total Life Satisfaction Score	Total Impatience Irritability Score
Spearman's rho	Respondent Sex	Correlation Coefficient	1.000	.106*	.055	.104*
		Sig. (1-tailed)	.	.019	.140	.021
		N	386	386	386	386
	Nationality of Respondent	Correlation Coefficient	.106*	1.000	.021	.062
		Sig. (1-tailed)	.019	.	.338	.113
		N	386	386	386	386
	Total Life Satisfaction Score	Correlation Coefficient	.055	.021	1.000	-.115*
		Sig. (1-tailed)	.140	.338	.	.012
		N	386	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.104*	.062	-.115*	1.000
		Sig. (1-tailed)	.021	.113	.012	.
		N	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

Appendix 6F: Ho4

Ho4: Higher levels of psychometric intelligence and lower levels of role ambiguity engender greater levels of self-efficacy. Supported.

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Role Ambiguity Score, Total Impatience Irritability Score, Age of Respondent (Years), Psychometric Intelligence, Respondent Sex, Nationality of Respondent, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Achievement Striving Score	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Self Efficacy Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.483[a]	.233	.215	3.39507

a. Predictors: (Constant), Total Role Ambiguity Score, Total Impatience Irritability Score, Age of Respondent (Years), Psychometric Intelligence, Respondent Sex, Nationality of Respondent, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Achievement Striving Score

b. Dependent Variable: Total Self Efficacy Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1318.655	9	146.517	12.711	.000[a]
	Residual	4333.969	376	11.527		
	Total	5652.624	385			

a. Predictors: (Constant), Total Role Ambiguity Score, Total Impatience Irritability Score, Age of Respondent (Years), Psychometric Intelligence, Respondent Sex, Nationality of Respondent, Expected Grade Classification/ Degree, Total Perceived Control of Time Score Total Achievement Striving Score

b. Dependent Variable: Total Self Efficacy Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	38.343	2.570		14.918	.000
	Nationality of Respondent	-.857	.375	-.112	-2.284	.023
	Respondent Sex	-.833	.361	-.109	-2.307	.022
	Age of Respondent (Years)	.079	.064	.057	1.242	.215
	Total Achievement Striving Score	-.086	.051	-.099	-1.675	.095
	Total Impatience Irritability Score	-.063	.050	-.058	-1.273	.204
	Total Perceived Control of Time Score	.023	.055	.022	.418	.676
	Expected Grade Classification/ Degree	-.340	.241	-.068	-1.409	.160
	Psychometric Intelligence	.083	.025	.155	3.309	.001
	Total Role Ambiguity Score	-.319	.038	-.465	-8.329	.000

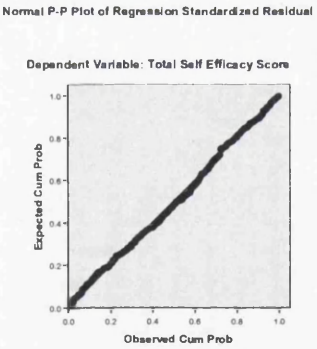
a. Dependent Variable: Total Self Efficacy Score

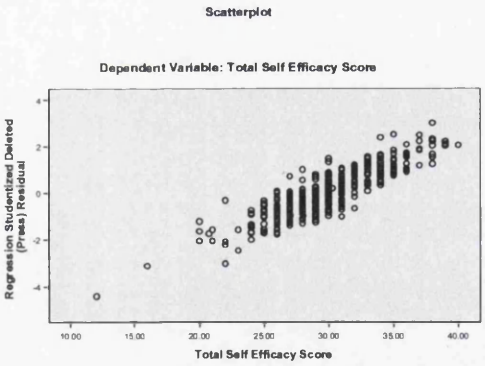
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	23.0055	34.3654	29.8396	1.85070	386
Std. Predicted Value	-3.693	2.445	.000	1.000	386
Standard Error of Predicted Value	.333	1.568	.529	.138	386
Adjusted Predicted Value	23.0959	34.4694	29.8412	1.84292	386
Residual	-12.95077	9.99086	.00000	3.35515	386
Std. Residual	-3.815	2.943	.000	.988	386
Stud. Residual	-4.301	2.972	.000	1.007	386
Deleted Residual	-16.46260	10.19281	-.00162	3.48519	386
Stud. Deleted Residual	-4.405	3.004	.000	1.010	386
Mahal. Distance	2.697	81.132	8.977	6.721	386
Cook's Distance	.000	.502	.004	.026	386
Centered Leverage Value	.007	.211	.023	.017	386

a. Dependent Variable: Total Self Efficacy Score

Charts





Correlations

Correlations

		Respondent Sex	Nationality of Respondent	Psychometric Intelligence	Total Role Ambiguity Score	Total Self Efficacy Score
Respondent Sex	Pearson Correlation	1	.106*	-.003	-.052	-.125*
	Sig. (1-tailed)		.019	.476	.154	.007
	N	386	386	386	386	386
Nationality of Respondent	Pearson Correlation	.106*	1	-.098*	-.229*	-.054
	Sig. (1-tailed)	.019		.027	.000	.143
	N	386	386	386	386	386
Psychometric Intelligence	Pearson Correlation	-.003	-.098*	1	.075	.148*
	Sig. (1-tailed)	.476	.027		.070	.002
	N	386	386	386	386	386
Total Role Ambiguity Score	Pearson Correlation	-.052	-.229*	.075	1	-.389*
	Sig. (1-tailed)	.154	.000	.070		.000
	N	386	386	386	386	386
Total Self Efficacy Score	Pearson Correlation	-.125*	-.054	.148*	-.389*	1
	Sig. (1-tailed)	.007	.143	.002	.000	
	N	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Appendix 6G: Ho5

Ho5: Polychronics show greater signs of self-efficacy compared to Monochronics. Supported.

Main Analysis:

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Perceived Control of Time Score, Total Impatience Irritability Score, Age of Respondent (Years), Total Polychronic Time Use Score, Respondent Sex, Nationality of Respondent, Total Achievement Striving Score	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Self Efficacy Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.273[a]	.074	.057	3.72042

a. Predictors: (Constant), Total Perceived Control of Time Score, Total Impatience Irritability Score, Age of Respondent (Years), Total Polychronic Time Use Score, Respondent Sex, Nationality of Respondent, Total Achievement Striving Score

b. Dependent Variable: Total Self Efficacy Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	420.535	7	60.076	4.340	.000[a]
	Residual	5232.089	378	13.842		
	Total	5652.624	385			

a. Predictors: (Constant), Total Perceived Control of Time Score, Total Impatience Irritability Score, Age of Respondent (Years), Total Polychronic Time Use Score, Respondent Sex, Nationality of Respondent, Total Achievement Striving Score

b. Dependent Variable: Total Self Efficacy Score

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	26.529	2.172		12.214	.000
	Nationality of Respondent	-.469	.402	-.061	-1.166	.244
	Total Polychronic Time Use Score	.064	.021	.150	3.003	.003
	Respondent Sex	-1.068	.394	-.139	-2.708	.007
	Age of Respondent (Years)	.063	.069	.046	.906	.366
	Total Achievement Striving Score	.121	.049	.140	2.489	.013
	Total Impatience Irritability Score	-.098	.054	-.090	-1.797	.073
	Total Perceived Control of Time Score	.055	.060	.053	.922	.357

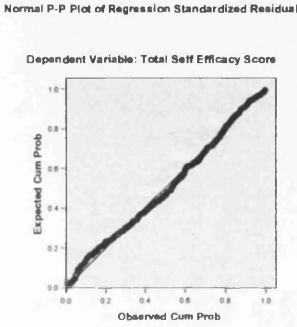
a. Dependent Variable: Total Self Efficacy Score

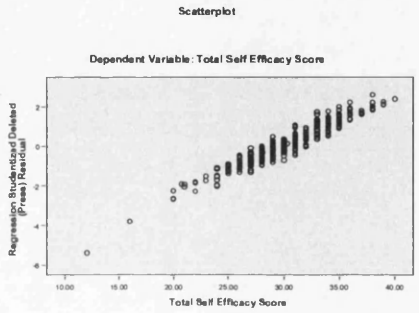
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	26.7322	32.6767	29.8396	1.04513	386
Std. Predicted Value	-2.973	2.715	.000	1.000	386
Standard Error of Predicted Value	.334	1.630	.519	.133	386
Adjusted Predicted Value	26.5148	33.5601	29.8429	1.07008	386
Residual	-17.41990	9.41121	.00000	3.68644	386
Std. Residual	-4.682	2.530	.000	.991	386
Stud. Residual	-5.209	2.556	.000	1.008	386
Deleted Residual	-21.56014	9.60729	-.00330	3.81992	386
Stud. Deleted Residual	-5.400	2.575	-.001	1.013	386
Mahal. Distance	2.098	72.935	6.982	5.558	386
Cook's Distance	.000	.806	.005	.041	386
Centered Leverage Value	.005	.189	.018	.014	386

a. Dependent Variable: Total Self Efficacy Score

Charts





Correlations

Correlations

		Total Polychronic Time Use Score	Respondent Sex	Total Achievement Striving Score	Total Self Efficacy Score
Total Polychronic Time Use Score	Pearson Correlation	1	.020	-.008	.144**
	Sig. (1-tailed)		.347	.441	.002
	N	386	386	386	386
Respondent Sex	Pearson Correlation	.020	1	.205**	-.125**
	Sig. (1-tailed)	.347		.000	.007
	N	386	386	386	386
Total Achievement Striving Score	Pearson Correlation	-.008	.205**	1	.118**
	Sig. (1-tailed)	.441	.000		.010
	N	386	386	386	386
Total Self Efficacy Score	Pearson Correlation	.144**	-.125**	.118**	1
	Sig. (1-tailed)	.002	.007	.010	
	N	386	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Nonparametric Correlations

Correlations

			Total Polychronic Time Use Score	Respondent Sex	Total Achievement Striving Score	Total Self Efficacy Score
Spearman's rho	Total Polychronic Time Use Score	Correlation Coefficient	1.000	.007	-.010	.138**
		Sig. (1-tailed)	.	.446	.424	.003
		N	386	386	386	386
	Respondent Sex	Correlation Coefficient	.007	1.000	.192**	-.134**
		Sig. (1-tailed)	.446	.	.000	.004
		N	386	386	386	386
	Total Achievement Striving Score	Correlation Coefficient	-.010	.192**	1.000	.093*
		Sig. (1-tailed)	.424	.000	.	.035
		N	386	386	386	386
	Total Self Efficacy Score	Correlation Coefficient	.138**	-.134**	.093*	1.000
		Sig. (1-tailed)	.003	.004	.035	.
		N	386	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Preliminary Analyses:

Oneway ANOVA

Descriptives

Total Self Efficacy Score

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
MC	148	28.9307	3.82750	.31462	28.3089	29.5524	12.00	37.00
MC&PC	223	30.3603	3.79239	.25396	29.8598	30.8608	16.00	40.00
PC	15	31.0667	2.68506	.69328	29.5797	32.5536	27.00	38.00
Total	386	29.8396	3.83173	.19503	29.4562	30.2231	12.00	40.00

Test of Homogeneity of Variances

Total Self Efficacy Score

Levene Statistic	df1	df2	Sig.
1.799	2	383	.167

ANOVA

Total Self Efficacy Score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	205.319	2	102.660	7.218	.001
Within Groups	5447.305	383	14.223		
Total	5652.624	385			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Total Self Efficacy Score

Tukey HSD

(I) Mono/Polychron 3 groups	(J) Mono/Polychron 3 groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
MC	MC					
	MC&PC	-1.42964*	.39985	.001	-2.3704	-.4889
	PC	-2.13599	1.02190	.093	-4.5404	.2684
MC&PC	MC	1.42964*	.39985	.001	.4889	2.3704
	MC&PC					
	PC	-.70635	1.00596	.762	-3.0732	1.6605
PC	MC	2.13599	1.02190	.093	-.2684	4.5404
	MC&PC	.70635	1.00596	.762	-1.6605	3.0732
	PC					

*. The mean difference is significant at the .05 level.

Homogeneous Subsets

Total Self Efficacy Score

Tukey HSD[a,b]

Mono/Polychron 3 groups	N	Subset for alpha = .05	
		1	2
MC	148	28.9307	
MC&PC	223	30.3603	30.3603
PC	15		31.0667
Sig.		.221	.690

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 38.507.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

In terms of preliminary analyses differences in self-efficacy were tested for across measures of preferred temporal orientation, a t-test was performed across categorisations of monochronic and polychronic groupings only (output is not presented). To tests for differences in self-efficacy across the three temporal categorisations, (monochronic; monochronic and polychronic; polychronic), a one-way analysis of variance (ANOVA) was performed appropriate for analyses involving one independent variable examined across three groups. By accounting for a dual temporal approach in terms of self-efficacy eventual results are particularly more illuminating than those gleaned from the t-test concerning monochronic and polychronic categorisations only.

The hypothesis that polychronics (M = 30.42, SD = 3.55, SE = .37) show greater signs of self-efficacy than monochronics (M = 29.67, SD = 3.90, SE = .22) gains borderline support, $t(384) = -1.590$, $p = .0565$. To delve deeper into the intricacies of the mono/polychronicity continuum and self-efficacy, categorisations that account for a dual MC&PC approach are also deemed of empirical significance particularly in light of the fact that no research to date has addressed the value of midpoint of this temporal continuum to areas such as sales and marketing, consumer behaviour, and organisational research, and *why* it is relevant in high-tech societies. In comparing the mean values polychronics (M = 31.07, SD = 2.69, SE = .693) scored significantly higher in scores of self-efficacy than monochronics (M = 28.93, SD = 3.83, SE = .315). Those operating a dual approach (M= 30.36, SD = 3.79, SE = .25) scored approximately in the middle of the two endpoint categories, $F(2,383) = 7.218$, $p < .01$.

Appendix 6H: Ho6 & Ho6a

Ho6: Cultures high in perceived control of time incorporate more monochronic tendencies in the approach to task-to-time management. Supported.

PCT Across Culture T-Test

Group Statistics

	Nationality of Respondent	N	Mean	Std. Deviation	Std. Error Mean
Total Perceived Control of Time Score	British	199	14.9749	3.66865	.26006
	Greek	187	17.1146	3.33545	.24391

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
								95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Total Perceived Control of Time S	Equal variances assum	.954	.329	-5.984	384	.000	-2.13972	.35760	-2.84283	-1.43662
	Equal variances not ass			-6.001	383.587	.000	-2.13972	.35655	-2.84076	-1.43869

Two-way between groups Analysis of Variance

Between-Subjects Factors

		Value Label	N
Nationality of Respondent	1	British	199
	2	Greek	187
Perceived Control of Time 3 Groups	1	Low PCT	45
	2	Mid PCT	233
	3	High PCT	108

Tests of Between-Subjects Effects

Dependent Variable: Total Polychronic Time Use Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1927.516[a]	5	385.503	5.016	.000
Intercept	174135.387	1	174135.387	2265.609	.000
R8	358.637	1	358.637	4.666	.031
PCT3grp	741.893	2	370.947	4.826	.009
R8 * PCT3grp	1496.339	2	748.170	9.734	.000
Error	29206.916	380	76.860		
Total	464988.498	386			
Corrected Total	31134.432	385			

a. R Squared = .062 (Adjusted R Squared = .050)

1. Perceived Control of Time 3 Groups

Dependent Variable: Total Polychronic Time Use Score

Perceived Control of Time 3 Groups	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Low PCT	38.827	1.922	35.047	42.607
Mid PCT	33.766	.576	32.633	34.899
High PCT	32.255	.908	30.469	34.040

3. Perceived Control of Time 3 Groups * Nationality of Respondent

Dependent Variable: Total Polychronic Time Use Score

Perceived Control of Time 3 Groups	Nationality of Respondent	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Low PCT	British	32.487	1.404	29.727	35.247
	Greek	45.167	3.579	38.129	52.204
Mid PCT	British	35.720	.781	34.184	37.255
	Greek	31.812	.848	30.145	33.478
High PCT	British	31.882	1.504	28.926	34.839
	Greek	32.627	1.019	30.623	34.631

Post Hoc Tests
Perceived Control of Time 3 Groups

Multiple Comparisons

Dependent Variable: Total Polychronic Time Use Score

Tukey HSD

(I) Perceived Control of Time 3 Groups	(J) Perceived Control of Time 3 Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Low PCT	Low PCT					
	Mid PCT	.2528	1.42754	.983	-3.1061	3.6117
	High PCT	1.7851	1.55553	.485	-1.8750	5.4452
Mid PCT	Low PCT	-.2528	1.42754	.983	-3.6117	3.1061
	Mid PCT					
	High PCT	1.5323	1.02056	.291	-.8690	3.9336
High PCT	Low PCT	-1.7851	1.55553	.485	-5.4452	1.8750
	Mid PCT	-1.5323	1.02056	.291	-3.9336	.8690
	High PCT					

Based on observed means.

Homogeneous Subsets

Total Polychronic Time Use Score

Tukey HSD[a,b,c]

Perceived Control of Time 3 Groups	N	Subset 1
High PCT	108	32.3927
Mid PCT	233	33.9250
Low PCT	45	34.1778
Sig.		.386

Means for groups in homogeneous subsets are displayed.
Based on Type III Sum of Squares
The error term is Mean Square(Error) = 76.860.

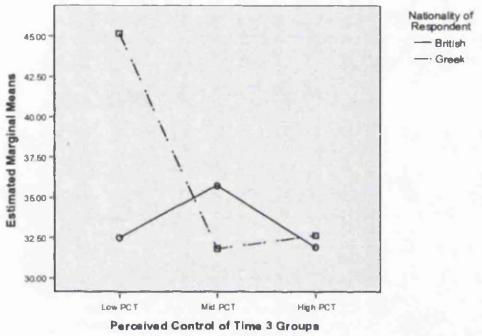
a. Uses Harmonic Mean Sample Size = 83.861.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

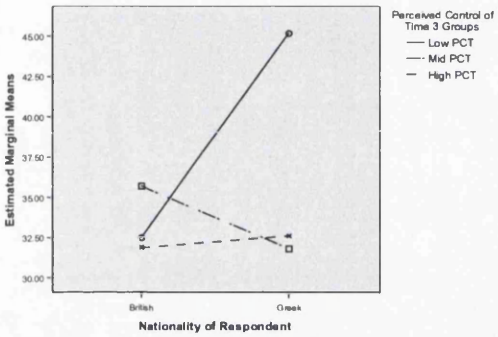
c. Alpha = .050.

Profile Plots

Estimated Marginal Means of Total Polychronic Time Use Score



Estimated Marginal Means of Total Polychronic Time Use Score



Correlations

		Total Perceived Control of Time Score	Total Polychronic Time Use Score
Total Perceived Control of Time Score	Pearson Correlation	1	-.059
	Sig. (1-tailed)		.124
	N	386	386
Total Polychronic Time Use Score	Pearson Correlation	-.059	1
	Sig. (1-tailed)	.124	
	N	386	386

Ho6a: Technology, culture and personality affect satisfaction. For high-tech, clock-oriented cultures, self-efficacy and perceived control of time are significant predictors. For low-tech, event-oriented cultures, self-efficacy and achievement strivings are significant predictors. Supported.

Regression (British sample only)

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Polychronic Time Use Score, Age of Respondent (Years), Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Life Satisfaction Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.382[a]	.146	.124	5.49165

a. Predictors: (Constant), Total Polychronic Time Use Score, Age of Respondent (Years), Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score

b. Dependent Variable: Total Life Satisfaction Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	993.224	5	198.645	6.587	.000[a]
	Residual	5820.545	193	30.158		
	Total	6813.769	198			

a. Predictors: (Constant), Total Polychronic Time Use Score, Age of Respondent (Years), Total Perceived Control of Time Score, Total Self Efficacy Score, Total Achievement Striving Score

b. Dependent Variable: Total Life Satisfaction Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6.807	5.183		1.313	.191
	Total Achievement Striving Score	-.067	.098	-.050	-.683	.495
	Total Perceived Control of Time Score	.318	.117	.199	2.722	.007
	Total Self Efficacy Score	.531	.111	.321	4.770	.000
	Age of Respondent (Years)	-.135	.183	-.050	-.735	.463
	Total Polychronic Time Use Score	-.011	.046	-.017	-.250	.803

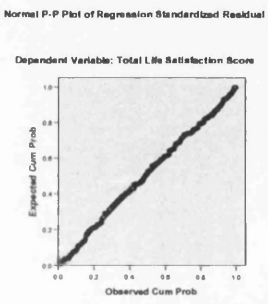
a. Dependent Variable: Total Life Satisfaction Score

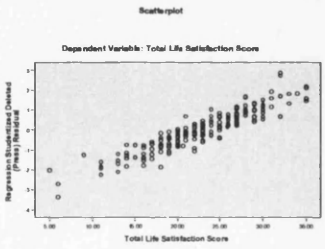
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	15.4248	28.5354	22.8774	2.23971	199
Std. Predicted Value	-3.327	2.526	.000	1.000	199
Standard Error of Predicted Value	.461	2.864	.900	.316	199
Adjusted Predicted Value	16.1392	28.5939	22.8791	2.24252	199
Residual	-17.74217	14.92924	.00000	5.42187	199
Std. Residual	-3.231	2.719	.000	.987	199
Stud. Residual	-3.284	2.802	.000	1.006	199
Deleted Residual	-18.32964	15.86077	-.00171	5.62702	199
Stud. Deleted Residual	-3.371	2.853	-.001	1.012	199
Mahal. Distance	.400	52.870	4.975	5.762	199
Cook's Distance	.000	.097	.006	.014	199
Centered Leverage Value	.002	.267	.025	.029	199

a. Dependent Variable: Total Life Satisfaction Score

Charts





Regression (Greek sample only)

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Polychronic Time Use Score, Total Achievement Striving Score, Age of Respondent (Years), Total Self Efficacy Score, Total Perceived Control of Time Score[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Life Satisfaction Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.265[a]	.070	.044	5.18000

a. Predictors: (Constant), Total Polychronic Time Use Score, Total Achievement Striving Score, Age of Respondent (Years), Total Self Efficacy Score, Total Perceived Control of Time Score

b. Dependent Variable: Total Life Satisfaction Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	365.589	5	73.118	2.725	.021[a]
	Residual	4856.668	181	26.832		
	Total	5222.257	186			

a. Predictors: (Constant), Total Polychronic Time Use Score, Total Achievement Striving Score, Age of Respondent (Years), Total Self Efficacy Score, Total Perceived Control of Time Score

b. Dependent Variable: Total Life Satisfaction Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	13.132	4.347		3.021	.003
	Total Achievement Striving Score	.173	.099	.140	1.752	.081
	Total Perceived Control of Time Score	.054	.127	.034	.423	.673
	Total Self Efficacy Score	.235	.096	.183	2.445	.015
	Age of Respondent (Years)	-.077	.115	-.048	-.666	.506
	Total Polychronic Time Use Score	-.015	.042	-.027	-.369	.713

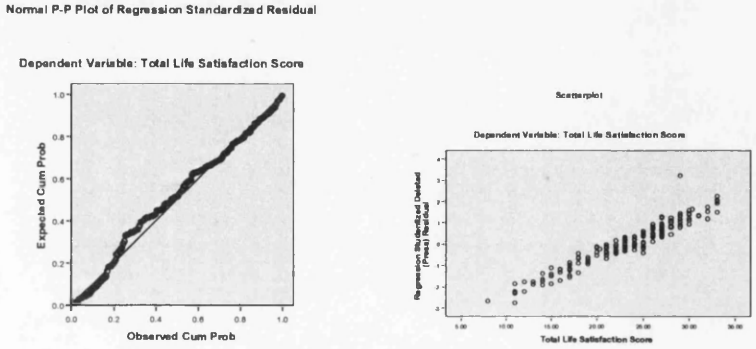
a. Dependent Variable: Total Life Satisfaction Score

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	16.1371	27.1417	23.0836	1.40197	187
Std. Predicted Value	-4.955	2.895	.000	1.000	187
Standard Error of Predicted Value	.459	3.141	.877	.304	187
Adjusted Predicted Value	8.6598	27.2677	23.0463	1.67715	187
Residual	-13.64369	12.86293	.00000	5.10990	187
Std. Residual	-2.634	2.483	.000	.986	187
Stud. Residual	-2.711	3.123	.003	1.011	187
Deleted Residual	-14.45257	20.34018	.03737	5.38983	187
Stud. Deleted Residual	-2.760	3.201	.002	1.017	187
Mahal. Distance	.465	67.381	4.973	5.977	187
Cook's Distance	.000	.945	.010	.069	187
Centered Leverage Value	.002	.362	.027	.032	187

a. Dependent Variable: Total Life Satisfaction Score

Charts



Appendix 6I: Ho7

Ho7: Cultures high in emotion polychronicity (P-time) are more positively oriented towards work than cultures low in emotion polychronicity (M-time). Greater levels of achievement strivings and lower levels of impatience/ irritability are also argued to manifest. Partially Supported.

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Impatience Irritability Score, Age of Respondent (Years), Total Polychronic Time Use Score, Total Achievement Striving Score, Nationality of Respondent, Respondent Sex	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Type A Factor 1 Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.692[a]	.479	.471	1.53204

a. Predictors: (Constant), Total Impatience Irritability Score, Age of Respondent (Years), Total Polychronic Time Use Score, Total Achievement Striving Score, Nationality of Respondent, Respondent Sex

b. Dependent Variable: Total Type A Factor 1 Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	817.145	6	136.191	58.024	.000[a]
	Residual	889.567	379	2.347		
	Total	1706.712	385			

a. Predictors: (Constant), Total Impatience Irritability Score, Age of Respondent (Years), Total Polychronic Time Use Score, Total Achievement Striving Score, Nationality of Respondent, Respondent Sex

b. Dependent Variable: Total Type A Factor 1 Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	10.541	.864		12.206	.000
	Nationality of Respondent	2.901	.161	.690	18.060	.000
	Total Polychronic Time Use Score	-.007	.009	-.031	-.832	.406
	Respondent Sex	-.299	.162	-.071	-1.841	.066
	Age of Respondent (Years)	.008	.028	.011	.296	.768
	Total Achievement Striving Score	-.079	.018	-.166	-4.293	.000
	Total Impatience Irritability Score	.051	.022	.086	2.296	.022

a. Dependent Variable: Total Type A Factor 1 Score

Casewise Diagnostics[a]

Case Number	Std. Residual	Total Type A Factor 1 Score	Predicted Value	Residual
138	3.675	21.00	15.3704	5.62959
257	-3.010	7.00	11.6118	-4.61185
339	3.959	21.00	14.9349	6.06508
347	3.028	20.00	15.3609	4.63910

a. Dependent Variable: Total Type A Factor 1 Score

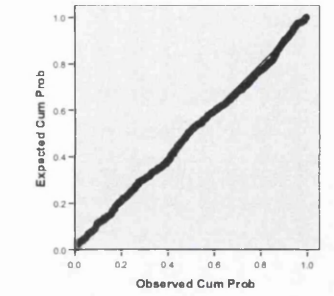
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	10.8357	15.7852	13.2741	1.45686	386
Std. Predicted Value	-1.674	1.724	.000	1.000	386
Standard Error of Predicted Value	.133	.671	.200	.052	386
Adjusted Predicted Value	10.7991	15.8508	13.2735	1.45565	386
Residual	-4.61185	6.06508	.00000	1.52005	386
Std. Residual	-3.010	3.959	.000	.992	386
Stud. Residual	-3.040	3.980	.000	1.001	386
Deleted Residual	-4.70380	6.13034	.00064	1.54835	386
Stud. Deleted Residual	-3.074	4.061	.001	1.005	386
Mahal. Distance	1.907	72.833	5.984	5.293	386
Cook's Distance	.000	.076	.003	.006	386
Centered Leverage Value	.005	.189	.016	.014	386

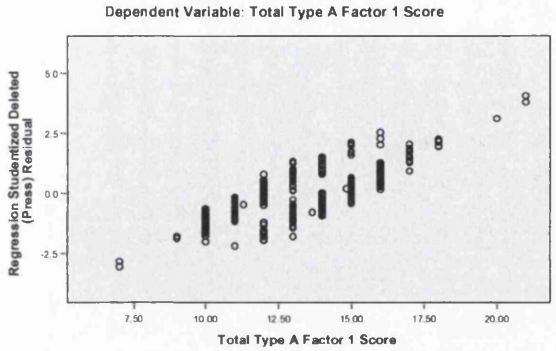
a. Dependent Variable: Total Type A Factor 1 Score

Charts

Normal P-P Plot of Regression Standardized Residual



Scatterplot



Correlations

Correlations

		Nationality of Respondent	Respondent Sex	Total Achievement Striving Score	Total Impatience Irritability Score	Total Type A Factor 1 Score
Nationality of Respondent	Pearson Correlation	1	.106*	.188*	.077	.661*
	Sig. (1-tailed)		.019	.000	.066	.000
	N	386	386	386	386	386
Respondent Sex	Pearson Correlation	.106*	1	.205*	.107*	-.025
	Sig. (1-tailed)	.019		.000	.018	.313
	N	386	386	386	386	386
Total Achievement Striving Score	Pearson Correlation	.188*	.205*	1	.070	-.044
	Sig. (1-tailed)	.000	.000		.085	.196
	N	386	386	386	386	386
Total Impatience Irritability Score	Pearson Correlation	.077	.107*	.070	1	.118*
	Sig. (1-tailed)	.066	.018	.085		.010
	N	386	386	386	386	386
Total Type A Factor 1 Score	Pearson Correlation	.661*	-.025	-.044	.118*	1
	Sig. (1-tailed)	.000	.313	.196	.010	
	N	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Nonparametric Correlations

Correlations

			Nationality of Respondent	Respondent Sex	Total Achievement Striving Score	Total Impatience Irritability Score	Total Type A Factor 1 Score
Spearman's rho	Nationality of Respondent	Correlation Coefficient	1.000	.106*	.169*	.062	.692*
		Sig. (1-tailed)	.	.019	.000	.113	.000
		N	386	386	386	386	386
	Respondent Sex	Correlation Coefficient	.106*	1.000	.192*	.104*	-.026
		Sig. (1-tailed)	.019	.	.000	.021	.308
		N	386	386	386	386	386
	Total Achievement Striving Score	Correlation Coefficient	.169*	.192*	1.000	.070	-.036
		Sig. (1-tailed)	.000	.000	.	.085	.242
		N	386	386	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.062	.104*	.070	1.000	.109*
		Sig. (1-tailed)	.113	.021	.085	.	.016
		N	386	386	386	386	386
	Total Type A Factor 1 Score	Correlation Coefficient	.692*	-.026	-.036	.109*	1.000
		Sig. (1-tailed)	.000	.308	.242	.016	.
		N	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Appendix 6J: Ho8

Ho8: Role ambiguity is more characteristic of high-tech cultures than nations more socially/ P-time oriented. Lower levels of achievement strivings, self-efficacy and life satisfaction are also argued. Supported.

Regression To Predict Role Ambiguity

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Nationality of Respondent, Total Life Satisfaction Score, Age of Respondent (Years), Total Impatience Irritability Score, Total Achievement Striving Score, Total Self Efficacy Score, Total Perceived Control of Time Score, Total Type A Factor 1 Score	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Role Ambiguity Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.673[a]	.452	.441	4.16910

a. Predictors: (Constant), Nationality of Respondent, Total Life Satisfaction Score, Age of Respondent (Years), Total Impatience Irritability Score, Total Achievement Striving Score, Total Self Efficacy Score, Total Perceived Control of Time Score, Total Type A Factor 1 Score

b. Dependent Variable: Total Role Ambiguity Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5413.920	8	676.740	38.935	.000[a]
	Residual	6552.785	377	17.381		
	Total	11966.705	385			

a. Predictors: (Constant), Nationality of Respondent, Total Life Satisfaction Score, Age of Respondent (Years), Total Impatience Irritability Score, Total Achievement Striving Score, Total Self Efficacy Score, Total Perceived Control of Time Score, Total Type A Factor 1 Score

b. Dependent Variable: Total Role Ambiguity Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	51.464	3.010		17.100	.000
	Total Impatience Irritability Score	.002	.062	.001	.029	.977
	Total Achievement Striving Score	-.557	.056	-.443	-10.036	.000
	Total Type A Factor 1 Score	.153	.141	.058	1.083	.279
	Total Perceived Control of Time Score	-.086	.067	-.056	-1.278	.202
	Total Self Efficacy Score	-.462	.059	-.317	-7.820	.000
	Total Life Satisfaction Score	-.103	.041	-.104	-2.553	.011
	Age of Respondent (Years)	.005	.077	.003	.071	.943
	Nationality of Respondent	-2.037	.612	-.183	-3.331	.001

a. Dependent Variable: Total Role Ambiguity Score

Residuals Statistics[a]

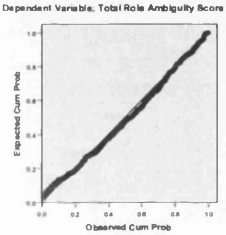
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.7082	33.7990	20.1800	3.74995	386
Std. Predicted Value	-3.326	3.632	.000	1.000	386
Standard Error of Predicted Value	.320	2.198	.612	.174	386
Adjusted Predicted Value	7.8019	33.7855	20.1720	3.73615	386
Residual	-13.73990	17.09219	.00000	4.12556	386
Std. Residual	-3.296	4.100	.000	.990	386
Stud. Residual	-3.357	4.171	.001	1.003	386
Deleted Residual	-14.25584	17.69477	.00803	4.24349	386
Stud. Deleted Residual	-3.404	4.265	.002	1.008	386
Mahal. Distance	1.268	106.051	7.979	7.147	386
Cook's Distance	.000	.165	.003	.011	386
Centered Leverage Value	.003	.275	.021	.019	386

a. Dependent Variable: Total Role Ambiguity Score

Charts

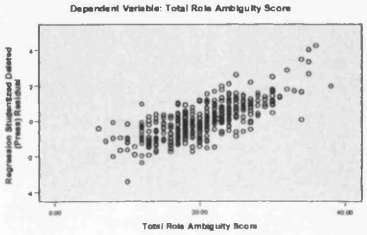
Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Total Role Ambiguity Score



Scatterplot

Dependent Variable: Total Role Ambiguity Score



Correlations

Correlations

		Nationality of Respondent	Age of Respondent (Years)	Total Achievement Striving Score	Total Impatience Irritability Score	Total Self Efficacy Score	Total Perceived Control of Time Score	Total Type A Factor 1 Score	Total Role Ambiguity Score
Nationality of Respondent	Pearson Correlation	1	.047	.188**	.077	-.054	.292**	.661**	-.229**
	Sig. (1-tailed)		.180	.000	.066	.143	.000	.000	.000
	N	386	386	386	386	386	386	386	386
Age of Respondent (Years)	Pearson Correlation	.047	1	.043	-.032	.061	-.039	.044	-.036
	Sig. (1-tailed)	.180		.201	.266	.115	.221	.194	.241
	N	386	386	386	386	386	386	386	386
Total Achievement Striving Score	Pearson Correlation	.188**	.043	1	.070	.118*	.436**	-.044	-.553**
	Sig. (1-tailed)	.000	.201		.085	.010	.000	.196	.000
	N	386	386	386	386	386	386	386	386
Total Impatience Irritability Score	Pearson Correlation	.077	-.032	.070	1	-.097*	-.019	.118*	.009
	Sig. (1-tailed)	.066	.266	.085		.028	.353	.010	.431
	N	386	386	386	386	386	386	386	386
Total Self Efficacy Score	Pearson Correlation	-.054	.061	.118*	-.097*	1	.075	.035	-.389**
	Sig. (1-tailed)	.143	.115	.010	.028		.070	.243	.000
	N	386	386	386	386	386	386	386	386
Total Perceived Control of Time Score	Pearson Correlation	.292**	-.039	.436**	-.019	.075	1	.118*	-.337**
	Sig. (1-tailed)	.000	.221	.000	.353	.070		.010	.000
	N	386	386	386	386	386	386	386	386
Total Type A Factor 1 Score	Pearson Correlation	.661**	.044	-.044	.118*	.035	.118*	1	-.053
	Sig. (1-tailed)	.000	.194	.196	.010	.243	.010		.148
	N	386	386	386	386	386	386	386	386
Total Role Ambiguity Score	Pearson Correlation	-.229**	-.036	-.553**	.009	-.389**	-.337**	-.053	1
	Sig. (1-tailed)	.000	.241	.000	.431	.000	.000	.148	
	N	386	386	386	386	386	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Nonparametric Correlations (Non-normal data comparisons)

Correlations

			Nationality of Respondent	Age of Respondent (Years)	Total Achievement Striving Score	Total Impatience Irritability Score	Total Self Efficacy Score	Total Perceived Control of Time Score	Total Type A Factor 1 Score	Total Role Ambiguity Score
Spearman's rho	Nationality of Respondent	Correlation Coefficient	1.000	.009	.169**	.062	-.038	.276**	.692**	-.245**
		Sig. (1-tailed)	.	.431	.000	.113	.228	.000	.000	.000
		N	386	386	386	386	386	386	386	386
	Age of Respondent (Years)	Correlation Coefficient	.009	1.000	.047	-.035	.145**	-.040	-.042	-.135**
		Sig. (1-tailed)	.431	.	.180	.244	.002	.219	.206	.004
		N	386	386	386	386	386	386	386	386
	Total Achievement Striving Score	Correlation Coefficient	.169**	.047	1.000	.070	.093*	.427**	-.036	-.554**
		Sig. (1-tailed)	.000	.180	.	.085	.035	.000	.242	.000
		N	386	386	386	386	386	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.062	-.035	.070	1.000	-.078	-.017	.109*	.032
		Sig. (1-tailed)	.113	.244	.085	.	.063	.371	.016	.266
		N	386	386	386	386	386	386	386	386
	Total Self Efficacy Score	Correlation Coefficient	-.038	.145**	.093*	-.078	1.000	.076	.068	-.323**
		Sig. (1-tailed)	.228	.002	.035	.063	.	.069	.091	.000
		N	386	386	386	386	386	386	386	386
	Total Perceived Control of Time Score	Correlation Coefficient	.276**	-.040	.427**	-.017	.076	1.000	.137**	-.371**
		Sig. (1-tailed)	.000	.219	.000	.371	.069	.	.004	.000
		N	386	386	386	386	386	386	386	386
	Total Type A Factor 1 Score	Correlation Coefficient	.692**	-.042	-.036	.109*	.068	.137**	1.000	-.099*
		Sig. (1-tailed)	.000	.206	.242	.016	.091	.004	.	.026
		N	386	386	386	386	386	386	386	386
	Total Role Ambiguity Score	Correlation Coefficient	-.245**	-.135**	-.554**	.032	-.323**	-.371**	-.099*	1.000
		Sig. (1-tailed)	.000	.004	.000	.266	.000	.000	.026	.
		N	386	386	386	386	386	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Appendix 6K: Ho9

Ho9: Speed correlates more so with the II (impatience/ irritability) than with AS (achievement strivings), and in a negative direction. Partially supported.

Combined Sample Nonparametric Correlations

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.070	-.017	.018	.017
		Sig. (1-tailed)	.	.085	.369	.365	.368
		N	386	386	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.070	1.000	-.059	-.038	-.015
		Sig. (1-tailed)	.085	.	.126	.229	.383
		N	386	386	386	386	386
	Mean Reaction Time of Copy in Total (ms)	Correlation Coefficient	-.017	-.059	1.000	.172**	.130**
		Sig. (1-tailed)	.369	.126	.	.000	.005
		N	386	386	386	386	386
	Mean Reaction Time of Code Forward in Total (ms)	Correlation Coefficient	.018	-.038	.172**	1.000	.630**
		Sig. (1-tailed)	.365	.229	.000	.	.000
		N	386	386	386	386	386
	Mean Reaction Time for Code Backward in Total (ms)	Correlation Coefficient	.017	-.015	.130**	.630**	1.000
		Sig. (1-tailed)	.368	.383	.005	.000	.
		N	386	386	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Coding Time Forward	Coding Time Backward
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.070	.017	.016
		Sig. (1-tailed)	.	.085	.373	.378
		N	386	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.070	1.000	-.031	-.008
		Sig. (1-tailed)	.085	.	.269	.440
		N	386	386	386	386
	Coding Time Forward	Correlation Coefficient	.017	-.031	1.000	.625**
		Sig. (1-tailed)	.373	.269	.	.000
		N	386	386	386	386
	Coding Time Backward	Correlation Coefficient	.016	-.008	.625**	1.000
		Sig. (1-tailed)	.378	.440	.000	.
		N	386	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.070	.047	.061
		Sig. (1-tailed)	.	.085	.181	.115
		N	386	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.070	1.000	-.014	-.029
		Sig. (1-tailed)	.085	.	.389	.283
		N	386	386	386	386
	Mean Reaction Time for Physical Identity in Total (ms)	Correlation Coefficient	.047	-.014	1.000	.504**
		Sig. (1-tailed)	.181	.389	.	.000
		N	386	386	386	386
	Mean Reaction Time for Name Identity in Total (ms)	Correlation Coefficient	.061	-.029	.504**	1.000
		Sig. (1-tailed)	.115	.283	.000	.
		N	386	386	386	386

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Time Needed for Long Term Memory Retrieval in Total
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.070	-.027
		Sig. (1-tailed)	.	.085	.300
		N	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.070	1.000	-.021
		Sig. (1-tailed)	.085	.	.338
		N	386	386	386
	Time Needed for Long Term Memory Retrieval in Total	Correlation Coefficient	-.027	-.021	1.000
		Sig. (1-tailed)	.300	.338	.
		N	386	386	386

British Sample Nonparametric Correlations

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.084	-.088	.093	.070
		Sig. (1-tailed)	.	.119	.108	.095	.163
		N	199	199	199	199	199
	Total Impatience Irritability Score	Correlation Coefficient	.084	1.000	-.156*	.048	.032
		Sig. (1-tailed)	.119	.	.014	.248	.327
		N	199	199	199	199	199
	Mean Reaction Time of Copy in Total (ms)	Correlation Coefficient	-.088	-.156*	1.000	.125*	-.020
		Sig. (1-tailed)	.108	.014	.	.039	.392
		N	199	199	199	199	199
	Mean Reaction Time of Code Forward in Total (ms)	Correlation Coefficient	.093	.048	.125*	1.000	.713**
		Sig. (1-tailed)	.095	.248	.039	.	.000
		N	199	199	199	199	199
	Mean Reaction Time for Code Backward in Total (ms)	Correlation Coefficient	.070	.032	-.020	.713**	1.000
		Sig. (1-tailed)	.163	.327	.392	.000	.
		N	199	199	199	199	199

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Coding Time Forward	Coding Time Backward
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.084	.108	.072
		Sig. (1-tailed)	.	.119	.064	.155
		N	199	199	199	199
	Total Impatience Irritability Score	Correlation Coefficient	.084	1.000	.088	.056
		Sig. (1-tailed)	.119	.	.109	.214
		N	199	199	199	199
	Coding Time Forward	Correlation Coefficient	.108	.088	1.000	.724**
		Sig. (1-tailed)	.064	.109	.	.000
		N	199	199	199	199
	Coding Time Backward	Correlation Coefficient	.072	.056	.724**	1.000
		Sig. (1-tailed)	.155	.214	.000	.
		N	199	199	199	199

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.084	.027	.160*
		Sig. (1-tailed)	.	.119	.350	.012
		N	199	199	199	199
	Total Impatience Irritability Score	Correlation Coefficient	.084	1.000	.000	.000
		Sig. (1-tailed)	.119	.	.498	.498
		N	199	199	199	199
	Mean Reaction Time for Physical Identity in Total (ms)	Correlation Coefficient	.027	.000	1.000	.396**
		Sig. (1-tailed)	.350	.498	.	.000
		N	199	199	199	199
	Mean Reaction Time for Name Identity in Total (ms)	Correlation Coefficient	.160*	.000	.396**	1.000
		Sig. (1-tailed)	.012	.498	.000	.
		N	199	199	199	199

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Time Needed for Long Term Memory Retrieval in Total
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.084	.082
		Sig. (1-tailed)	.	.119	.124
		N	199	199	199
	Total Impatience Irritability Score	Correlation Coefficient	.084	1.000	-.010
		Sig. (1-tailed)	.119	.	.445
		N	199	199	199
	Time Needed for Long Term Memory Retrieval in Total	Correlation Coefficient	.082	-.010	1.000
		Sig. (1-tailed)	.124	.445	.
		N	199	199	199

Greek Sample Nonparametric Correlations

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.039	-.014	-.032	-.087
		Sig. (1-tailed)	.	.296	.423	.333	.119
		N	187	187	187	187	187
	Total Impatience Irritability Score	Correlation Coefficient	.039	1.000	.027	-.105	-.079
		Sig. (1-tailed)	.296	.	.356	.077	.140
		N	187	187	187	187	187
	Mean Reaction Time of Copy in Total (ms)	Correlation Coefficient	-.014	.027	1.000	.292**	.197**
		Sig. (1-tailed)	.423	.356	.	.000	.003
		N	187	187	187	187	187
	Mean Reaction Time of Code Forward in Total (ms)	Correlation Coefficient	-.032	-.105	.292**	1.000	.610**
		Sig. (1-tailed)	.333	.077	.000	.	.000
		N	187	187	187	187	187
	Mean Reaction Time for Code Backward in Total (ms)	Correlation Coefficient	-.087	-.079	.197**	.610**	1.000
		Sig. (1-tailed)	.119	.140	.003	.000	.
		N	187	187	187	187	187

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Coding Time Forward	Coding Time Backward
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.039	-.013	-.083
		Sig. (1-tailed)	.	.296	.428	.130
		N	187	187	187	187
	Total Impatience Irritability Score	Correlation Coefficient	.039	1.000	-.125*	-.086
		Sig. (1-tailed)	.296	.	.045	.122
		N	187	187	187	187
	Coding Time Forward	Correlation Coefficient	-.013	-.125*	1.000	.610**
		Sig. (1-tailed)	.428	.045	.	.000
		N	187	187	187	187
	Coding Time Backward	Correlation Coefficient	-.083	-.086	.610**	1.000
		Sig. (1-tailed)	.130	.122	.000	.
		N	187	187	187	187

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.039	.002	-.049
		Sig. (1-tailed)	.	.296	.491	.253
		N	187	187	187	187
	Total Impatience Irritability Score	Correlation Coefficient	.039	1.000	-.061	-.064
		Sig. (1-tailed)	.296	.	.204	.193
		N	187	187	187	187
	Mean Reaction Time for Physical Identity in Total (ms)	Correlation Coefficient	.002	-.061	1.000	.617**
		Sig. (1-tailed)	.491	.204	.	.000
		N	187	187	187	187
	Mean Reaction Time for Name Identity in Total (ms)	Correlation Coefficient	-.049	-.064	.617**	1.000
		Sig. (1-tailed)	.253	.193	.000	.
		N	187	187	187	187

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

			Total Achievement Striving Score	Total Impatience Irritability Score	Time Needed for Long Term Memory Retrieval in Total
Spearman's rho	Total Achievement Striving Score	Correlation Coefficient	1.000	.039	-.100
		Sig. (1-tailed)	.	.296	.086
		N	187	187	187
	Total Impatience Irritability Score	Correlation Coefficient	.039	1.000	-.021
		Sig. (1-tailed)	.296	.	.388
		N	187	187	187
	Time Needed for Long Term Memory Retrieval in Total	Correlation Coefficient	-.100	-.021	1.000
		Sig. (1-tailed)	.086	.388	.
		N	187	187	187

Appendix 6L: Ho10

Ho10: A negative relationship is hypothesised to exist between preferred polychronic time use and role overload, and especially for cultures more socially oriented than those more individualistic. Partially Supported.

Greek Sample Correlations

Correlations

		Total Polychronic Time Use Score	Total Role Overload Score
Total Polychronic Time Use Score	Pearson Correlation	1	-.099
	Sig. (1-tailed)		.089
	N	187	187
Total Role Overload Score	Pearson Correlation	-.099	1
	Sig. (1-tailed)	.089	
	N	187	187

British Sample Correlations

Correlations

		Total Polychronic Time Use Score	Total Role Overload Score
Total Polychronic Time Use Score	Pearson Correlation	1	-.031
	Sig. (1-tailed)		.330
	N	199	199
Total Role Overload Score	Pearson Correlation	-.031	1
	Sig. (1-tailed)	.330	
	N	199	199

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Total Role Ambiguity Score, Total Impatience Irritability Score, Total Polychronic Time Use Score, Age of Respondent (Years), Total Type A Factor 1 Score, Respondent Sex, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Achievement Striving Score, Nationality of Respondent[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Total Role Overload Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.429[a]	.184	.163	3.46512

a. Predictors: (Constant), Total Role Ambiguity Score, Total Impatience Irritability Score, Total Polychronic Time Use Score, Age of Respondent (Years), Total Type A Factor 1 Score, Respondent Sex, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Achievement Striving Score, Nationality of Respondent

b. Dependent Variable: Total Role Overload Score

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1018.156	10	101.816	8.480	.000[a]
	Residual	4502.636	375	12.007		
	Total	5520.792	385			

a. Predictors: (Constant), Total Role Ambiguity Score, Total Impatience Irritability Score, Total Polychronic Time Use Score, Age of Respondent (Years), Total Type A Factor 1 Score, Respondent Sex, Expected Grade Classification/ Degree, Total Perceived Control of Time Score, Total Achievement Striving Score, Nationality of Respondent

b. Dependent Variable: Total Role Overload Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.647	2.811		-.230	.818
	Nationality of Respondent	-1.993	.515	-.263	-3.873	.000
	Respondent Sex	1.129	.370	.149	3.049	.002
	Total Polychronic Time Use Score	-.023	.020	-.055	-1.175	.241
	Total Achievement Striving Score	.165	.053	.193	3.121	.002
	Total Impatience Irritability Score	.129	.051	.121	2.531	.012
	Total Perceived Control of Time Score	-.075	.056	-.072	-1.341	.181
	Age of Respondent (Years)	.234	.065	.172	3.605	.000
	Expected Grade Classification/ Degree	1.096	.243	.222	4.514	.000
	Total Type A Factor 1 Score	.034	.116	.019	.294	.769
	Total Role Ambiguity Score	.062	.039	.091	1.578	.115

a. Dependent Variable: Total Role Overload Score

Residuals Statistics[a]

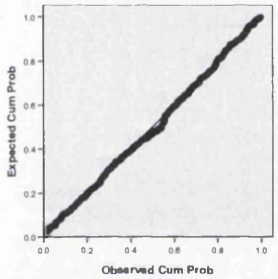
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6.3477	17.2614	10.9516	1.62621	386
Std. Predicted Value	-2.831	3.880	.000	1.000	386
Standard Error of Predicted Value	.354	1.628	.567	.143	386
Adjusted Predicted Value	6.4057	17.2827	10.9553	1.63918	386
Residual	-9.46761	10.41881	.00000	3.41982	386
Std. Residual	-2.732	3.007	.000	.987	386
Stud. Residual	-2.816	3.030	-.001	1.002	386
Deleted Residual	-10.05394	10.57721	-.00365	3.52517	386
Stud. Deleted Residual	-2.842	3.063	.000	1.005	386
Mahal. Distance	3.013	84.015	9.974	6.940	386
Cook's Distance	.000	.045	.003	.005	386
Centered Leverage Value	.008	.218	.026	.018	386

a. Dependent Variable: Total Role Overload Score

Charts

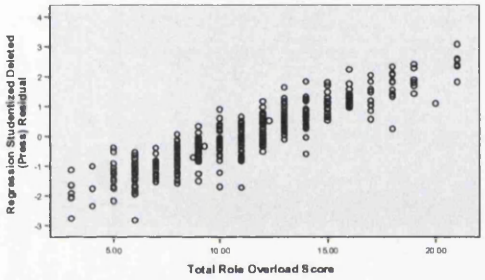
Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Total Role Overload Score



Scatterplot

Dependent Variable: Total Role Overload Score



Correlations

Correlations

		Nationality of Respondent	Respondent Sex	Total Achievement Striving Score	Total Impatience Irritability Score	Age of Respondent (Years)	Expected Grade Classification/ Degree
Nationality of Respondent	Pearson Correlation	1	.106*	.188**	.077	.047	.121*
	Sig. (1-tailed)		.019	.000	.066	.180	.009
	N	386	386	386	386	386	386
Respondent Sex	Pearson Correlation	.106*	1	.205**	.107*	-.130**	-.057
	Sig. (1-tailed)	.019		.000	.018	.005	.133
	N	386	386	386	386	386	386
Total Achievement Striving Score	Pearson Correlation	.188**	.205**	1	.070	.043	-.195**
	Sig. (1-tailed)	.000	.000		.085	.201	.000
	N	386	386	386	386	386	386
Total Impatience Irritability Score	Pearson Correlation	.077	.107*	.070	1	-.032	-.028
	Sig. (1-tailed)	.066	.018	.085		.266	.294
	N	386	386	386	386	386	386
Age of Respondent (Years)	Pearson Correlation	.047	-.130**	.043	-.032	1	.119*
	Sig. (1-tailed)	.180	.005	.201	.266		.010
	N	386	386	386	386	386	386
Expected Grade Classification/ Degree	Pearson Correlation	.121*	-.057	-.195**	-.028	.119*	1
	Sig. (1-tailed)	.009	.133	.000	.294	.010	
	N	386	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Nonparametric Correlations

Correlations

			Nationality of Respondent	Respondent Sex	Total Achievement Striving Score	Total Impatience Irritability Score	Age of Respondent (Years)	Expected Grade Classification/ Degree
Spearman's rho	Nationality of Respondent	Correlation Coefficient	1.000	.106*	.169**	.062	.009	.177**
		Sig. (1-tailed)	.	.019	.000	.113	.431	.000
		N	386	386	386	386	386	386
	Respondent Sex	Correlation Coefficient	.106*	1.000	.192**	.104*	-.154**	-.039
		Sig. (1-tailed)	.019	.	.000	.021	.001	.224
		N	386	386	386	386	386	386
	Total Achievement Striving Score	Correlation Coefficient	.169**	.192**	1.000	.070	.047	-.215**
		Sig. (1-tailed)	.000	.000	.	.085	.180	.000
		N	386	386	386	386	386	386
	Total Impatience Irritability Score	Correlation Coefficient	.062	.104*	.070	1.000	-.035	-.040
		Sig. (1-tailed)	.113	.021	.085	.	.244	.215
		N	386	386	386	386	386	386
	Age of Respondent (Years)	Correlation Coefficient	.009	-.154**	.047	-.035	1.000	.204**
		Sig. (1-tailed)	.431	.001	.180	.244	.	.000
		N	386	386	386	386	386	386
	Expected Grade Classification/ Degree	Correlation Coefficient	.177**	-.039	-.215**	-.040	.204**	1.000
		Sig. (1-tailed)	.000	.224	.000	.215	.000	.
		N	386	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Appendix 6M: Ho11

Ho11: Preferred polychronic time use (IPV) and speed will be negatively correlated, i.e., high polychronic time use relates with faster reaction time speeds. Partially Supported.

Nonparametric Correlations

Correlations

			Total Polychronic Time Use Score	Mean Reaction Time of Copy in Total (ms)
Spearman's rho	Total Polychronic Time Use Score	Correlation Coefficient	1.000	-.092*
		Sig. (1-tailed)	.	.035
		N	386	386
	Mean Reaction Time of Copy in Total (ms)	Correlation Coefficient	-.092*	1.000
		Sig. (1-tailed)	.035	.
		N	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

Nonparametric Correlations

Correlations

			Total Polychronic Time Use Score	Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
Spearman's rho	Total Polychronic Time Use Score	Correlation Coefficient	1.000	-.092*	-.024	-.050	-.028	-.036
		Sig. (1-tailed)	.	.035	.321	.165	.293	.243
		N	386	386	386	386	386	386
	Mean Reaction Time of Copy in Total (ms)	Correlation Coefficient	-.092*	1.000	.172*	.130*	.385*	.419*
		Sig. (1-tailed)	.035	.	.000	.005	.000	.000
		N	386	386	386	386	386	386
	Mean Reaction Time of Code Forward in Total (ms)	Correlation Coefficient	-.024	.172*	1.000	.630*	.262*	.424*
		Sig. (1-tailed)	.321	.000	.	.000	.000	.000
		N	386	386	386	386	386	386
	Mean Reaction Time for Code Backward in Total (ms)	Correlation Coefficient	-.050	.130*	.630*	1.000	.257*	.413*
		Sig. (1-tailed)	.165	.005	.000	.	.000	.000
		N	386	386	386	386	386	386
	Mean Reaction Time for Physical Identity in Total (ms)	Correlation Coefficient	-.028	.385*	.262*	.257*	1.000	.504*
		Sig. (1-tailed)	.293	.000	.000	.000	.	.000
		N	386	386	386	386	386	386
	Mean Reaction Time for Name Identity in Total (ms)	Correlation Coefficient	-.036	.419*	.424*	.413*	.504*	1.000
		Sig. (1-tailed)	.243	.000	.000	.000	.000	.
		N	386	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

British Nonparametric Correlations

Correlations

			Total Polychronic Time Use Score	Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
Spearman's rho	Total Polychronic Time Use Score	Correlation Coefficient	1.000	-.011	-.039	.005	.041	-.029
		Sig. (1-tailed)	.	.437	.294	.474	.282	.342
		N	199	199	199	199	199	199
	Mean Reaction Time of Copy in Total (ms)	Correlation Coefficient	-.011	1.000	.125*	-.020	.291*	.314*
		Sig. (1-tailed)	.437	.	.039	.392	.000	.000
		N	199	199	199	199	199	199
	Mean Reaction Time of Code Forward in Total (ms)	Correlation Coefficient	-.039	.125*	1.000	.713*	.249*	.316*
		Sig. (1-tailed)	.294	.039	.	.000	.000	.000
		N	199	199	199	199	199	199
	Mean Reaction Time for Code Backward in Total (ms)	Correlation Coefficient	.005	-.020	.713*	1.000	.149*	.337*
		Sig. (1-tailed)	.474	.392	.000	.	.018	.000
		N	199	199	199	199	199	199
	Mean Reaction Time for Physical Identity in Total (ms)	Correlation Coefficient	.041	.291*	.249*	.149*	1.000	.396*
		Sig. (1-tailed)	.282	.000	.000	.018	.	.000
		N	199	199	199	199	199	199
	Mean Reaction Time for Name Identity in Total (ms)	Correlation Coefficient	-.029	.314*	.316*	.337*	.396*	1.000
		Sig. (1-tailed)	.342	.000	.000	.000	.000	.
		N	199	199	199	199	199	199

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Greek Nonparametric Correlations

Correlations

			Total Polychronic Time Use Score	Mean Reaction Time of Copy in Total (ms)	Mean Reaction Time of Code Forward in Total (ms)	Mean Reaction Time for Code Backward in Total (ms)	Mean Reaction Time for Physical Identity in Total (ms)	Mean Reaction Time for Name Identity in Total (ms)
Spearman's rho	Total Polychronic Time Use Score	Correlation Coefficient	1.000	-.110	-.068	-.070	-.043	-.041
		Sig. (1-tailed)	.	.066	.178	.172	.280	.287
		N	187	187	187	187	187	187
	Mean Reaction Time of Copy in Total (ms)	Correlation Coefficient	-.110	1.000	.292*	.197*	.420*	.507*
		Sig. (1-tailed)	.066	.	.000	.003	.000	.000
		N	187	187	187	187	187	187
	Mean Reaction Time of Code Forward in Total (ms)	Correlation Coefficient	-.068	.292*	1.000	.610*	.338*	.556*
		Sig. (1-tailed)	.178	.000	.	.000	.000	.000
		N	187	187	187	187	187	187
	Mean Reaction Time for Code Backward in Total (ms)	Correlation Coefficient	-.070	.197*	.610*	1.000	.328*	.486*
		Sig. (1-tailed)	.172	.003	.000	.	.000	.000
		N	187	187	187	187	187	187
	Mean Reaction Time for Physical Identity in Total (ms)	Correlation Coefficient	-.043	.420*	.338*	.328*	1.000	.617*
		Sig. (1-tailed)	.280	.000	.000	.000	.	.000
		N	187	187	187	187	187	187
	Mean Reaction Time for Name Identity in Total (ms)	Correlation Coefficient	-.041	.507*	.556*	.486*	.617*	1.000
		Sig. (1-tailed)	.287	.000	.000	.000	.000	.
		N	187	187	187	187	187	187

**. Correlation is significant at the 0.01 level (1-tailed).

Appendix 6N: Ho12

Ho12: Preferred polychronic time use (IPV) and accuracy of response are positively related. Partially supported.

Correlations

Correlations

		Total Polychronic Time Use Score	Psychometric Intelligence	Total Copy Score of Correct Answers	Total Code Forward Score of Correct Answers	Total Code Backward Score of Correct Answers	Total Physical Identity Score of Correct Answers	Total Name Identity Score of Correct Answers
Total Polychronic Time Use Score	Pearson Correlation	1	.060	.098*	.029	.043	.021	.052
	Sig. (1-tailed)		.119	.027	.283	.198	.337	.155
	N	386	386	386	386	386	386	386
Psychometric Intelligence	Pearson Correlation	.060	1	.049	.210*	.243*	.186*	.176*
	Sig. (1-tailed)	.119		.171	.000	.000	.000	.000
	N	386	386	386	386	386	386	386
Total Copy Score of Correct Answers	Pearson Correlation	.098*	.049	1	.182*	.125*	.359*	.390*
	Sig. (1-tailed)	.027	.171		.000	.007	.000	.000
	N	386	386	386	386	386	386	386
Total Code Forward Score of Correct Answers	Pearson Correlation	.029	.210*	.182*	1	.613*	.258*	.417*
	Sig. (1-tailed)	.283	.000	.000		.000	.000	.000
	N	386	386	386	386	386	386	386
Total Code Backward Score of Correct Answers	Pearson Correlation	.043	.243*	.125*	.613*	1	.245*	.417*
	Sig. (1-tailed)	.198	.000	.007	.000		.000	.000
	N	386	386	386	386	386	386	386
Total Physical Identity Score of Correct Answers	Pearson Correlation	.021	.186*	.359*	.258*	.245*	1	.477*
	Sig. (1-tailed)	.337	.000	.000	.000	.000		.000
	N	386	386	386	386	386	386	386
Total Name Identity Score of Correct Answers	Pearson Correlation	.052	.176*	.390*	.417*	.417*	.477*	1
	Sig. (1-tailed)	.155	.000	.000	.000	.000	.000	
	N	386	386	386	386	386	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

Correlations

		Total Polychronic Time Use Score	Total Copy Score of Correct Answers
Total Polychronic Time Use Score	Pearson Correlation	1	.098*
	Sig. (1-tailed)		.027
	N	386	386
Total Copy Score of Correct Answers	Pearson Correlation	.098*	1
	Sig. (1-tailed)	.027	
	N	386	386

*. Correlation is significant at the 0.05 level (1-tailed).

British Sample Correlations

Correlations

		Total Polychronic Time Use Score	Psychometric Intelligence	Total Copy Score of Correct Answers	Total Code Forward Score of Correct Answers	Total Code Backward Score of Correct Answers	Total Physical Identity Score of Correct Answers	Total Name Identity Score of Correct Answers
Total Polychronic Time Use Score	Pearson Correlation	1	.086	-.004	.015	-.026	-.068	.020
	Sig. (1-tailed)		.112	.478	.417	.356	.169	.391
	N	199	199	199	199	199	199	199
Psychometric Intelligence	Pearson Correlation	.086	1	-.157*	.227*	.253*	.131*	.104
	Sig. (1-tailed)	.112		.013	.001	.000	.032	.072
	N	199	199	199	199	199	199	199
Total Copy Score of Correct Answers	Pearson Correlation	-.004	-.157*	1	.122*	-.030	.250*	.300*
	Sig. (1-tailed)	.478	.013		.043	.338	.000	.000
	N	199	199	199	199	199	199	199
Total Code Forward Score of Correct Answers	Pearson Correlation	.015	.227*	.122*	1	.710*	.232*	.325*
	Sig. (1-tailed)	.417	.001	.043		.000	.000	.000
	N	199	199	199	199	199	199	199
Total Code Backward Score of Correct Answers	Pearson Correlation	-.026	.253*	-.030	.710*	1	.137*	.360*
	Sig. (1-tailed)	.356	.000	.338	.000		.027	.000
	N	199	199	199	199	199	199	199
Total Physical Identity Score of Correct Answers	Pearson Correlation	-.068	.131*	.250*	.232*	.137*	1	.354*
	Sig. (1-tailed)	.169	.032	.000	.000	.027		.000
	N	199	199	199	199	199	199	199
Total Name Identity Score of Correct Answers	Pearson Correlation	.020	.104	.300*	.325*	.360*	.354*	1
	Sig. (1-tailed)	.391	.072	.000	.000	.000	.000	
	N	199	199	199	199	199	199	199

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Greek Sample Correlations

Correlations

		Total Polychronic Time Use Score	Psychometric Intelligence	Total Copy Score of Correct Answers	Total Code Forward Score of Correct Answers	Total Code Backward Score of Correct Answers	Total Physical Identity Score of Correct Answers	Total Name Identity Score of Correct Answers
Total Polychronic Time Use Score	Pearson Correlation	1	.021	.147*	.068	.083	.072	.076
	Sig. (1-tailed)		.387	.022	.177	.129	.165	.151
	N	187	187	187	187	187	187	187
Psychometric Intelligence	Pearson Correlation	.021	1	.180*	.225*	.215*	.209*	.234*
	Sig. (1-tailed)	.387		.007	.001	.002	.002	.001
	N	187	187	187	187	187	187	187
Total Copy Score of Correct Answers	Pearson Correlation	.147*	.180*	1	.312*	.219*	.412*	.484*
	Sig. (1-tailed)	.022	.007		.000	.001	.000	.000
	N	187	187	187	187	187	187	187
Total Code Forward Score of Correct Answers	Pearson Correlation	.068	.225*	.312*	1	.576*	.337*	.518*
	Sig. (1-tailed)	.177	.001	.000		.000	.000	.000
	N	187	187	187	187	187	187	187
Total Code Backward Score of Correct Answers	Pearson Correlation	.083	.215*	.219*	.576*	1	.320*	.478*
	Sig. (1-tailed)	.129	.002	.001	.000		.000	.000
	N	187	187	187	187	187	187	187
Total Physical Identity Score of Correct Answers	Pearson Correlation	.072	.209*	.412*	.337*	.320*	1	.601*
	Sig. (1-tailed)	.165	.002	.000	.000	.000		.000
	N	187	187	187	187	187	187	187
Total Name Identity Score of Correct Answers	Pearson Correlation	.076	.234*	.484*	.518*	.478*	.601*	1
	Sig. (1-tailed)	.151	.001	.000	.000	.000	.000	
	N	187	187	187	187	187	187	187

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Combined Oneway

Descriptives

Psychometric Intelligence

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
MC	148	26.20	7.113	.585	25.04	27.35	6	39
MC&PC	223	26.81	7.100	.475	25.87	27.75	9	41
PC	15	31.20	6.247	1.613	27.74	34.66	21	43
Total	386	26.75	7.120	.362	26.03	27.46	6	43

Test of Homogeneity of Variances

Psychometric Intelligence

Levene Statistic	df1	df2	Sig.
.631	2	383	.533

ANOVA

Psychometric Intelligence

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	343.312	2	171.656	3.429	.033
Within Groups	19173.807	383	50.062		
Total	19517.119	385			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Psychometric Intelligence

Tukey HSD

(I) Mono/Polychron 3 groups	(J) Mono/Polychron 3 groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
MC	MC					
	MC&PC	-.616	.750	.690	-2.38	1.15
	PC	-5.004*	1.917	.025	-9.52	-.49
MC&PC	MC	.616	.750	.690	-1.15	2.38
	MC&PC					
	PC	-4.388	1.887	.054	-8.83	.05
PC	MC	5.004*	1.917	.025	.49	9.52
	MC&PC	4.388	1.887	.054	-.05	8.83
	PC					

*. The mean difference is significant at the .05 level.

Homogeneous Subsets

Psychometric Intelligence

Tukey HSD[a,b]

Mono/Polychron 3 groups	N	Subset for alpha = .05	
		1	2
MC	148	26.20	
MC&PC	223	26.81	
PC	15		31.20
Sig.		.923	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 38.507.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

British Sample Oneway

Descriptives

Psychometric Intelligence

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
MC	67	26.34	6.498	.794	24.76	27.93	12	38
MC&PC	124	27.80	6.367	.572	26.67	28.93	9	40
PC	8	30.63	7.836	2.771	24.07	37.18	21	43
Total	199	27.42	6.506	.461	26.51	28.33	9	43

Test of Homogeneity of Variances

Psychometric Intelligence

Levene Statistic	df1	df2	Sig.
.378	2	196	.686

ANOVA

Psychometric Intelligence

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	177.604	2	88.802	2.122	.123
Within Groups	8202.939	196	41.852		
Total	8380.543	198			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Psychometric Intelligence

Tukey HSD

(I) Mono/Polychron 3 groups	(J) Mono/Polychron 3 groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
MC	MC					
	MC&PC	-1.455	.981	.301	-3.77	.86
	PC	-4.282	2.420	.183	-10.00	1.43
MC&PC	MC	1.455	.981	.301	-.86	3.77
	MC&PC					
	PC	-2.827	2.360	.456	-8.40	2.75
PC	MC	4.282	2.420	.183	-1.43	10.00
	MC&PC	2.827	2.360	.456	-2.75	8.40
	PC					

Homogeneous Subsets

Psychometric Intelligence

Tukey HSD[a,b]

Mono/Polychron 3 groups	N	Subset for alpha = .05
		1
MC	67	26.34
MC&PC	124	27.80
PC	8	30.63
Sig.		.091

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 20.272.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Greek Sample Oneway

Descriptives

Psychometric Intelligence

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
MC	81	26.07	7.622	.847	24.39	27.76	6	39
MC&PC	99	25.58	7.780	.782	24.02	27.13	9	41
PC	7	31.86	4.298	1.625	27.88	35.83	27	40
Total	187	26.03	7.672	.561	24.92	27.13	6	41

Test of Homogeneity of Variances

Psychometric Intelligence

Levene Statistic	df1	df2	Sig.
2.135	2	184	.121

ANOVA

Psychometric Intelligence

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	258.272	2	129.136	2.223	.111
Within Groups	10690.595	184	58.101		
Total	10948.866	186			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Psychometric Intelligence

Tukey HSD

(I) Mono/Polychron 3 groups	(J) Mono/Polychron 3 groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
MC	MC					
	MC&PC	.498	1.142	.900	-2.20	3.20
	PC	-5.783	3.003	.134	-12.88	1.31
MC&PC	MC	-.498	1.142	.900	-3.20	2.20
	MC&PC					
	PC	-6.281	2.981	.091	-13.33	.76
PC	MC	5.783	3.003	.134	-1.31	12.88
	MC&PC	6.281	2.981	.091	-.76	13.33
	PC					

Homogeneous Subsets

Psychometric Intelligence

Tukey HSD[a,b]

Mono/Polychron 3 groups	N	Subset for alpha = .05	
		1	2
MC&PC	99	25.58	
MC	81	26.07	26.07
PC	7		31.86
Sig.		.979	.060

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 18.148.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Appendix 6O: Ho13

Ho13: As the complexity of cognitive challenges increase, the subjective experience of the passage of time decreases, and is further differentiated by culture. Supported.

British Data Set: Friedman ANOVA (NPar Test) Coding & Letter Matching STEs

British STEs: 3 Coding Tests (Copy, CodeForward, CodeBackward)

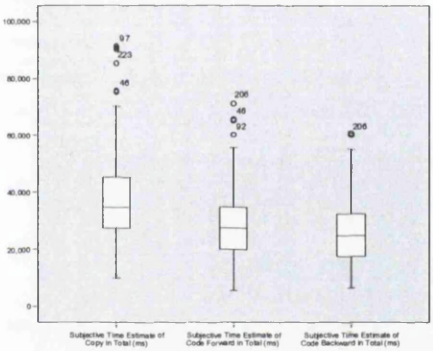
Ranks

	Mean Rank
Subjective Time Estimate of Copy in Total (ms)	2.66
Subjective Time Estimate of Code Forward in Total (ms)	1.85
Subjective Time Estimate of Code Backward in Total (ms)	1.49

Test Statistics[a]

N	199
Chi-Square	158.999
df	2
Asymp. Sig.	.000

a. Friedman Test



British STEs: 2 Letter Matching Tests (Physical Identity, Name Identity)

British Sample Descriptive Statistics

	N	Mean	Std. Deviation	Reliability
Subjective Time Estimate of Physical Identity in Total (ms)	199	27594.60	11792.352	(a) .857 (b) .923 (c) .922
Subjective Time Estimate of Name Identity in Total (ms)	199	26894.48	11998.511	(a) .877 (b) .934 (c) .934
Valid N (listwise)	199			

Statistics

		Subjective Time Estimate of Physical Identity in Total (ms)	Subjective Time Estimate of Name Identity in Total (ms)
N	Valid	199	199
	Missing	0	0
Median		25000.00	25000.00

Ranks

		N	Mean Rank	Sum of Ranks
Subjective Time Estimate of Name Identity in Total (ms) - Subjective Time Estimate of Physical Identity in Total (ms)	Negative Ranks	83[a]	85.30	7080.00
	Positive Ranks	76[b]	74.21	5640.00
	Ties	40[c]		
	Total	199		

a. Subjective Time Estimate of Name Identity in Total (ms) < Subjective Time Estimate of Physical Identity in Total (ms)

b. Subjective Time Estimate of Name Identity in Total (ms) > Subjective Time Estimate of Physical Identity in Total (ms)

c. Subjective Time Estimate of Name Identity in Total (ms) = Subjective Time Estimate of Physical Identity in Total (ms)

Test Statistics[b]

	Subjectve Time Estimate of Name Identity in Total (ms) - Subjective Time Estimate of Physical Identity in Total (ms)
Z	-1.241[a]
Asymp. Sig. (2-tailed)	.215

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Greek Data Set: Friedman ANOVA (NPar Test) Coding & Letter Matching STEs

Greek STEs: 3 Coding Tests (Copy, CodeForward, CodeBackward)

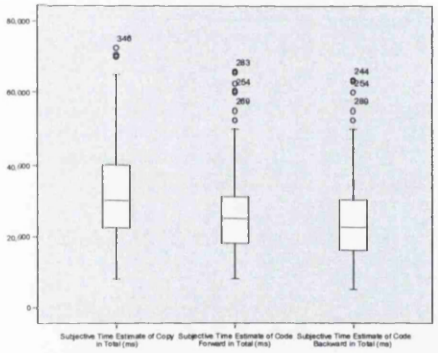
Ranks

	Mean Rank
Subjective Time Estimate of Copy in Total (ms)	2.53
Subjective Time Estimate of Code Forward in Total (ms)	1.91
Subjective Time Estimate of Code Backward in Total (ms)	1.56

Test Statistics[a]

N	187
Chi-Square	99.937
df	2
Asymp. Sig.	.000

a. Friedman Test



Greek STEs: 2 Letter Matching Tests (Physical Identity, Name Identity)

Greek Sample Descriptive Statistics

	N	Mean	Std. Deviation	Reliability
Subjective Time Estimate of Physical Identity in Total (ms)	187	25899.47	12747.503	(a) .882 (b) .937 (c) .937
Subjective Time Estimate of Name Identity in Total (ms)	187	24573.10	12329.611	(a) .892 (b) .943 (c) .943
Valid N (listwise)	187			

Statistics

		Subjective Time Estimate of Physical Identity in Total (ms)	Subjective Time Estimate of Name Identity in Total (ms)
N	Valid	187	187
	Missing	0	0
Median		22500.00	22500.00

Ranks

		N	Mean Rank	Sum of Ranks
Subjective Time Estimate of Name Identity in Total (ms) - Subjective Time Estimate of Physical Identity in Total (ms)	Negative Ranks	82[a]	77.41	6347.50
	Positive Ranks	59[b]	62.09	3663.50
	Ties	46[c]		
	Total	187		

a. Subjective Time Estimate of Name Identity in Total (ms) < Subjective Time Estimate of Physical Identity in Total (ms)

b. Subjective Time Estimate of Name Identity in Total (ms) > Subjective Time Estimate of Physical Identity in Total (ms)

c. Subjective Time Estimate of Name Identity in Total (ms) = Subjective Time Estimate of Physical Identity in Total (ms)

Test Statistics[b]

	Subjective Time Estimate of Name Identity in Total (ms) - Subjective Time Estimate of Physical Identity in Total (ms)
Z	-2.773[a]
Asymp. Sig. (2-tailed)	.006

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

NPar Tests: British vs. Greek Coding STEs

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Copy in Total (ms)	386	35106.92	15601.658	8000	91000
Subjective Time Estimate of Code Forward in Total (ms)	386	28120.26	12863.026	5500	71000
Subjective Time Estimate of Code Backward in Total (ms)	386	25735.63	12082.536	5000	63500
Nationality of Respondent	386	1.48	.500	1	2

Mann-Whitney Test

Ranks

	Nationality of Respondent	N	Mean Rank	Sum of Ranks
Subjective Time Estimate of Copy in Total (ms)	British	199	209.85	41760.00
	Greek	187	176.10	32931.00
	Total	386		
Subjective Time Estimate of Code Forward in Total (ms)	British	199	203.28	40452.50
	Greek	187	183.09	34238.50
	Total	386		
Subjective Time Estimate of Code Backward in Total (ms)	British	199	204.38	40671.00
	Greek	187	181.93	34020.00
	Total	386		

Test Statistics[a]

	Subjective Time Estimate of Copy in Total (ms)	Subjective Time Estimate of Code Forward in Total (ms)	Subjective Time Estimate of Code Backward in Total (ms)
Mann-Whitney U	15353.000	16660.500	16442.000
Wilcoxon W	32931.000	34238.500	34020.000
Z	-2.973	-1.780	-1.980
Asymp. Sig. (2-tailed)	.003	.075	.048

a. Grouping Variable: Nationality of Respondent

NPar Tests: Letter Matching STEs

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Physical Identity in Total (ms)	386	26773.38	12277.696	4000	62500
Subjective Time Estimate of Name Identity in Total (ms)	386	25769.88	12199.642	4000	62501
Nationality of Respondent	386	1.48	.500	1	2

Mann-Whitney Test

Ranks

	Nationality of Respondent	N	Mean Rank	Sum of Ranks
Subjective Time Estimate of Physical Identity in Total (ms)	British	199	204.48	40692.50
	Greek	187	181.81	33998.50
	Total	386		
Subjective Time Estimate of Name Identity in Total (ms)	British	199	206.87	41168.00
	Greek	187	179.27	33523.00
	Total	386		

Test Statistics[a]

	Subjective Time Estimate of Physical Identity in Total (ms)	Subjective Time Estimate of Name Identity in Total (ms)
Mann-Whitney U	16420.500	15945.000
Wilcoxon W	33998.500	33523.000
Z	-1.999	-2.433
Asymp. Sig. (2-tailed)	.046	.015

a. Grouping Variable: Nationality of Respondent

Appendix 6P: Ho13a

Ho13a: Monochronics will be more adept than polychronics in providing accurate subjective estimates of an objective passage of time whilst performing a simple, non-taxing activity. Partially supported.

Combined Coding NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Copy in Total (ms)	386	35106.92	15601.658	8000	91000
Subjective Time Estimate of Code Forward in Total (ms)	386	28120.26	12863.026	5500	71000
Subjective Time Estimate of Code Backward in Total (ms)	386	25735.63	12082.536	5000	63500
Mono/Polychron 3 groups	386	1.66	.552	1	3

Kruskal-Wallis Test

Ranks

	Mono/Polychron 3 groups	N	Mean Rank
Subjective Time Estimate of Copy in Total (ms)	MC	148	190.34
	MC&PC	223	198.34
	PC	15	152.80
	Total	386	
Subjective Time Estimate of Code Forward in Total (ms)	MC	148	189.78
	MC&PC	223	197.91
	PC	15	164.67
	Total	386	
Subjective Time Estimate of Code Backward in Total (ms)	MC	148	194.09
	MC&PC	223	195.67
	PC	15	155.37
	Total	386	

Test Statistics[a,b]

	Subjective Time Estimate of Copy in Total (ms)	Subjective Time Estimate of Code Forward in Total (ms)	Subjective Time Estimate of Code Backward in Total (ms)
Chi-Square	2.539	1.519	1.848
df	2	2	2
Asymp. Sig.	.281	.468	.397

a. Kruskal Wallis Test

b. Grouping Variable: Mono/Polychron 3 groups

British Coding NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Copy in Total (ms)	199	37251.41	16147.420	10000	91000
Subjective Time Estimate of Code Forward in Total (ms)	199	28993.52	12768.826	5500	71000
Subjective Time Estimate of Code Backward in Total (ms)	199	26599.17	11682.980	6500	60500
Mono/Polychron 3 groups	199	1.70	.539	1	3

Kruskal-Wallis Test

Ranks

	Mono/Polychron 3 groups	N	Mean Rank
Subjective Time Estimate of Copy in Total (ms)	MC	67	95.35
	MC&PC	124	104.94
	PC	8	62.31
	Total	199	
Subjective Time Estimate of Code Forward in Total (ms)	MC	67	102.53
	MC&PC	124	100.00
	PC	8	78.81
	Total	199	
Subjective Time Estimate of Code Backward in Total (ms)	MC	67	104.57
	MC&PC	124	98.53
	PC	8	84.50
	Total	199	

Test Statistics[a,b]

	Subjective Time Estimate of Copy in Total (ms)	Subjective Time Estimate of Code Forward in Total (ms)	Subjective Time Estimate of Code Backward in Total (ms)
Chi-Square	4.790	1.217	1.088
df	2	2	2
Asymp. Sig.	.091	.544	.580

a. Kruskal Wallis Test

b. Grouping Variable: Mono/Polychron 3 groups

Greek Coding NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Copy in Total (ms)	187	32824.81	14700.980	8000	72500
Subjective Time Estimate of Code Forward in Total (ms)	187	27190.96	12931.867	8000	66000
Subjective Time Estimate of Code Backward in Total (ms)	187	24816.68	12459.293	5000	63500
Mono/Polychron 3 groups	187	1.60	.562	1	3

Kruskal-Wallis Test

Ranks

	Mono/Polychron 3 groups	N	Mean Rank
Subjective Time Estimate of Copy in Total (ms)	MC	81	96.01
	MC&PC	99	92.35
	PC	7	94.00
	Total	187	
Subjective Time Estimate of Code Forward in Total (ms)	MC	81	89.95
	MC&PC	99	97.72
	PC	7	88.21
	Total	187	
Subjective Time Estimate of Code Backward in Total (ms)	MC	81	92.39
	MC&PC	99	96.96
	PC	7	70.79
	Total	187	

Test Statistics[a,b]

	Subjective Time Estimate of Copy in Total (ms)	Subjective Time Estimate of Code Forward in Total (ms)	Subjective Time Estimate of Code Backward in Total (ms)
Chi-Square	.204	1.005	1.662
df	2	2	2
Asymp. Sig.	.903	.605	.436

a. Kruskal Wallis Test

b. Grouping Variable: Mono/Polychron 3 groups

Combined Letter Matching NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Physical Identity in Total (ms)	386	26773.38	12277.696	4000	62500
Subjective Time Estimate of Name Identity in Total (ms)	386	25769.88	12199.642	4000	62501
Mono/Polychron 3 groups	386	1.66	.552	1	3

Kruskal-Wallis Test

Ranks

	Mono/Polychron 3 groups	N	Mean Rank
Subjective Time Estimate of Physical Identity in Total (ms)	MC	148	190.59
	MC&PC	223	198.28
	PC	15	151.20
	Total	386	
Subjective Time Estimate of Name Identity in Total (ms)	MC	148	188.97
	MC&PC	223	196.87
	PC	15	188.07
	Total	386	

Test Statistics[a,b]

	Subjective Time Estimate of Physical Identity in Total (ms)	Subjective Time Estimate of Name Identity in Total (ms)
Chi-Square	2.676	.484
df	2	2
Asymp. Sig.	.262	.785

a. Kruskal Wallis Test

b. Grouping Variable: Mono/Polychron 3 groups

British Letter Matching NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Physical Identity in Total (ms)	199	27594.60	11792.352	6000	61000
Subjective Time Estimate of Name Identity in Total (ms)	199	26894.48	11998.511	6500	62501
Mono/Polychron 3 groups	199	1.70	.539	1	3

Kruskal-Wallis Test

Ranks

	Mono/Polychron 3 groups	N	Mean Rank
Subjective Time Estimate of Physical Identity in Total (ms)	MC	67	102.47
	MC&PC	124	99.66
	PC	8	84.63
	Total	199	
Subjective Time Estimate of Name Identity in Total (ms)	MC	67	99.40
	MC&PC	124	101.22
	PC	8	86.19
	Total	199	

Test Statistics[a,b]

	Subjective Time Estimate of Physical Identity in Total (ms)	Subjective Time Estimate of Name Identity in Total (ms)
Chi-Square	.702	.525
df	2	2
Asymp. Sig.	.704	.769

a. Kruskal Wallis Test

b. Grouping Variable: Mono/Polychron 3 groups

Greek Letter Matching NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Subjective Time Estimate of Physical Identity in Total (ms)	187	25899.47	12747.503	4000	62500
Subjective Time Estimate of Name Identity in Total (ms)	187	24573.10	12329.611	4000	62500
Mono/Polychron 3 groups	187	1.60	.562	1	3

Kruskal-Wallis Test

Ranks

	Mono/Polychron 3 groups	N	Mean Rank
Subjective Time Estimate of Physical Identity in Total (ms)	MC	81	91.14
	MC&PC	99	98.07
	PC	7	69.64
	Total	187	
Subjective Time Estimate of Name Identity in Total (ms)	MC	81	92.10
	MC&PC	99	94.92
	PC	7	102.86
	Total	187	

Test Statistics[a,b]

	Subjective Time Estimate of Physical Identity in Total (ms)	Subjective Time Estimate of Name Identity in Total (ms)
Chi-Square	2.210	.316
df	2	2
Asymp. Sig.	.331	.854

a. Kruskal Wallis Test

b. Grouping Variable: Mono/Polychron 3 groups

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Nationality of Respondent	1	British	199
	2	Greek	187
Mono/Polychron 3 groups	1	MC	148
	2	MC&PC	223
	3	PC	15

Descriptive Statistics

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

Nationality of Respondent	Mono/Polychron 3 groups	Mean	Std. Deviation	N
British	MC	35850.75	14458.932	67
	MC&PC	38322.82	16425.355	124
	PC	32375.00	24436.141	8
	Total	37251.41	16147.420	199
Greek	MC	32849.75	13935.530	81
	MC&PC	33004.14	15784.127	99
	PC	30000.00	5590.170	7
	Total	32824.81	14700.980	187
Total	MC	34208.31	14205.529	148
	MC&PC	35961.61	16324.041	223
	PC	31266.67	17704.788	15
	Total	35106.92	15601.658	386

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

F	df1	df2	Sig.
1.415	5	380	.218

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept+R8+MCPCgrp3+R8 * MCPCgrp3

Tests of Between-Subjects Effects

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2412177859.5[a]	5	482435571.9	2.008	.077
Intercept	130761500769	1	1.308E+011	544.235	.000
R8	365076130.397	1	365076130.4	1.519	.218
MCPCgrp3	375815197.632	2	187907598.8	.782	.458
R8 * MCPCgrp3	132818887.038	2	6640443.52	.276	.759
Error	91301344322	380	240266695.6		
Total	569456834650	386			
Corrected Total	93713522181	385			

a. R Squared = .026 (Adjusted R Squared = .013)

Estimated Marginal Means

1. Grand Mean

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
33733.744	1446.010	30890.560	36576.927

2. Nationality of Respondent

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

Nationality of Respondent	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
British	35516.190	1987.658	31608.005	39424.374
Greek	31951.298	2100.714	27820.818	36081.778

3. Mono/Polychron 3 groups

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

Mono/Polychron 3 groups	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
MC	34350.250	1279.876	31833.725	36866.775
MC&PC	35663.482	1044.578	33609.606	37717.358
PC	31187.500	4011.145	23300.680	39074.320

4. Nationality of Respondent * Mono/Polychron 3 groups

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

Nationality of Respondent	Mono/Polychron 3 groups	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
British	MC	35850.746	1893.692	32127.319	39574.174
	MC&PC	38322.823	1391.989	35585.856	41059.789
	PC	32375.000	5480.268	21599.552	43150.448
Greek	MC	32849.753	1722.282	29463.357	36236.150
	MC&PC	33004.141	1557.863	29941.031	36067.252
	PC	30000.000	5858.653	18480.562	41519.438

Post Hoc Tests
Mono/Polychron 3 groups

Multiple Comparisons

Dependent Variable: Subjective Time Estimate of Copy in Total (ms)

Tukey HSD

(I) Mono/Polychron 3 groups	(J) Mono/Polychron 3 groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
MC	MC					
	MC&PC	-1753.30	1643.427	.535	-5620.18	2113.57
	PC	2941.64	4200.143	.763	-6941.01	12824.30
MC&PC	MC	1753.30	1643.427	.535	-2113.57	5620.18
	MC&PC					
	PC	4694.95	4134.635	.493	-5033.57	14423.47
PC	MC	-2941.64	4200.143	.763	-12824.30	6941.01
	MC&PC	-4694.95	4134.635	.493	-14423.47	5033.57
	PC					

Based on observed means.

Homogeneous Subsets

Subjective Time Estimate of Copy in Total (ms)

Tukey HSD[a,b,c]

Mono/Polychron 3 groups	N	Subset 1
PC	15	31266.67
MC	148	34208.31
MC&PC	223	35961.61
Sig.		.380

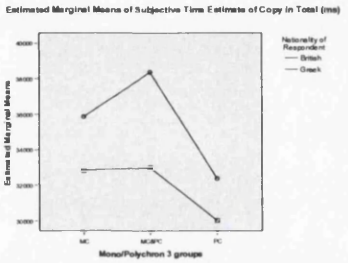
Means for groups in homogeneous subsets are displayed.
Based on Type III Sum of Squares
The error term is Mean Square(Error) = 240266695.584.

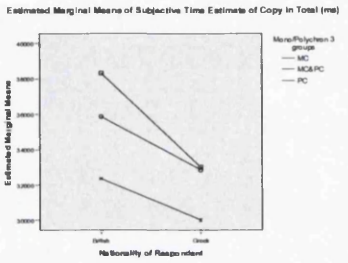
a. Uses Harmonic Mean Sample Size = 38.507.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Alpha = .05.

Profile Plots





APPENDIX 6Q: VERIFICATION OF MULTIVARIATE ANALYSIS ASSUMPTIONS

Multiple Regression Assumptions	Mreg1Ho1	Mreg2Ho1	Mreg1Ho3	Mreg1Ho3a	Mreg2Ho3a	Mreg1Ho4
Continuous Dependent Variable	☺	☺	☺	☺	☺	☺
Linear Relationship	☺	☺	☺	☺	☺	☺
Normal Distribution of Residuals (Normality probability plots)	☺	☺	☺	☺	☺	☺
Homoskedasticity (See Residuals Scatterplots)	☺	☺	☺	☺	☺	☺
Independence of Error terms/ residuals	☺	☺	☺	☺	☺	☺
Multicollinearity	☺	☺	☺	☺	☺	☺

Legend:

☺: Assumption Met
X : Assumption Violated
? : Violation is Questionable

Multiple Regression Assumptions	Mreg1Ho5	Mreg1Ho6a	Mreg2Ho6a	Mreg1Ho7	Mreg1Ho8	Mreg1Ho10
Continuous Dependent Variable	☺	☺	☺	☺	☺	☺
Linear Relationship	☺	☺	☺	☺	☺	☺
Normal Distribution of Residuals (Normality probability plots)	☺	☺	☺	☺	☺	☺
Homoskedasticity (See Residuals Scatterplots)	☺	☺	☺	☺	☺	☺
Independence of Error terms/ residuals	☺	☺	☺	☺	☺	☺
Multicollinearity	☺	☺	☺	☺	☺	☺

Legend:

☺: Assumption Met

X : Assumption Violated

? : Violation is Questionable