Continuity And Change In Time Perspective: A Longitudinal Field Study Of Youth Workers.

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Acknowledgements

To Brenda, Fauve and Rémy.

To Teresa and Paul, wherever and whenever you are, and to those little ones whose

temporal becoming never became.

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ABSTRACT
Blaze Aylmer

The current temporal research agenda in time and organizations emphasizes the importance of continuity and change. This research sought to examine the coexistence of continuity and change in time perspective using the model proposed by (Zimbardo and Boyd, 1999).

The research sought answers to the following four research questions:

1. Do time perspectives demonstrate differential continuity?
2. Do time perspectives demonstrate mean level continuity?
3. Do time perspectives demonstrate interindividual differences in intraindividual change?
4. Do individuals demonstrate individual change in their time perspectives?

Survey data were collected from 128 youth workers across three measurement occasions using a twelve month prospective longitudinal panel design and measurement occasions were separated by a four month interval. Data were analysed using retest correlations, individual stability coefficients, latent growth modeling and the reliable change index. Time perspectives demonstrated rank order continuity and there was evidence of individual variation in stability. Although there was a decline in rank order continuity, it was not statistically significant. Time perspectives showed mean level continuity but did not demonstrate interindividual differences in intraindividual change. However, evidence of individual differences in change was indicated by the reliable change index across all time perspectives. The findings supported the co-existence of continuity and change in time perspectives. The research makes a methodological and theoretical contribution. Methodologically, the research contributes to a more thorough understanding of continuity and change in time perspective and provides different answers to the question, do time perspectives change? Theoretically, the research advocates an alternative perspective which questions current assumptions.

INTRODUCTION

The current temporal research agenda suggests that researchers should examine dynamic relationships, temporal relations and long term stability and change (Roe, 2008). To add to the present temporal research agenda, this research examines continuity and change in the dispositional view of time perspective advocated by Zimbardo & Boyd, (1999). Time perspective is considered to be a time related individual difference variable and is defined as "the often nonconscious process whereby the continual flows of personal and social experiences are assigned to temporal categories, or time frames, that help to give order, coherence, and meaning to those events," (Zimbardo & Boyd 1999, p.1271). The authors identified five time perspectives: past positive, past negative, present fatalism, present hedonism and future time perspective.

Time perspectives are currently related to a few organizational applications. Organizational scholars are developing their knowledge of time. Actors relate to time (Ancona et al., 2001), and one way we relate to time is through our time perspectives. Time perspectives are important to organizational research in the area of teams (Waller et al., 2001; Arman and Adair, 2013), organizational change (Huy, 2001) and managing procrastination in the work place (Gupta et al., 2012). Arman and Adair (2013) theorize that present oriented teams will focus on short term goals relative to future oriented teams. Time perspective as an individual difference has a role to play in recruitment and selection. Greening behaviour is a current focus of attention in organizations (Andersson et al., 2013) and Milfont et al. (2007) have shown that a present oriented time perspective is negatively related to environmental values while a future time perspective is positively related to environmental values. Clearly, time perspectives have a role in recruitment and

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selection to promote environmental values, to screen against present fatalism and recruit the required individuals into the appropriate team roles. Given the above, it is clear that time perspective has a role to play in organizational research. The present research differs from the existing body of literature in that it examines stability and change in time perspectives.

Time perspective can be regarded as a stable individual difference variable which predicts many different outcomes and it has ramifications for educational achievement. The research found that female instructors working with early school leavers demonstrated higher mean levels of present fatalism relative to male instructors and those in managerial roles. Previous research has shown that present fatalism is negatively related to educational achievement (Phan, 2009). The impression given in the current time perspective literature is that time perspectives are stable.

The research findings challenge this view by taking a broader interpretation of stability and change which shows that they are more useful if broken down into group and individual level indices. The findings indicate the presence of rank order stability and mean level stability; however, there are individual differences in change across all five time perspectives. Researchers need to understand the duration of stability (George and Jones, 2000), otherwise time perspective remains timeless. From a practical perspective, instructors working with early school leavers should be able to reduce the average level of present fatalism, however, current thinking would indicate that there is little one can do to alter time perspectives which ensures that time perspective research remains timeless. Time perspective researchers supporting the model of Zimbardo and Boyd (1999) continue to replicate this belief by not attending to time and reflecting what is rather than what happens (Roe, 2008). Theoretically, time perspectives are adaptable, yet we cannot describe the adapting time perspective. It is important for professionals

working with early school leavers to maintain a future time perspective that emphasizes the future as an achievement space from which learners might benefit. Professionals with high past negative and present fatalism time perspectives should recognize that these perspectives are not conducive to the role of an effective instructor. The main concern raised from a temporalist perspective is that time perspective is considered as a process but measured as a variable which reflects a methodological misfit. By continuing to treat time perspective as a stable individual difference variable researchers deprive themselves of understanding how time perspectives change which is central to intervention. Time perspectives are open to the influence of context (Zimbardo and Boyd, 1999) but, we do not know if the context of working with the early school leaver reduces future time perspective of new instructors and increases present fatalism. Time perspective researchers are unclear about describing the process of an unfolding time perspective in terms of improvement, bifurcation and relapse (Roe, 2008).

The study of continuity *and* change is subtle because it invokes a challenge to existing thinking by focusing on the coexistence of continuity and change rather than on their mutual exclusivity which reflects the current description of time perspective. The current description of time perspective is inadequate because it is characterized by a predominant view that rank order consistency implies that time perspectives are stable over time. The inadequacy is addressed by adopting a multilevel and multifaceted view of continuity and change.

The coexistence of continuity and change is a well-established line of investigation within organizational research and personality development. Long term continuity and change are important because they force scholars to update their understanding of the extant knowledge (Roe, 2005). Secondly, the study of continuity and change forces researchers to theorize about the reasons for continuity and change, and thirdly continuity

and change focuses on the construct as outcome rather than predictor. For example, the study of continuity and change in personality development has led to a number of theoretical principles explaining why personality changes and why it does not (Roberts et al. 2008).

Organizational research has examined the co-existence of continuity and change at strategic, organization, team and individual level of analysis. At a strategic level, researchers investigate continuity and change in competitive advantage using the work of (Porter,1987) and (D'aveni,1995). Competitive dynamics are illustrated in the hypercompetition literature which illustrates that competitive advantage is temporary and fleeting while (Porter, 1987) advocates sustainable competitive advantage by adopting a unique industry position.

At the organizational level, continuity and change are evident in models of punctuated equilibrium at the organizational level (Romanelli & Tushman, 1994). This model suggests that organizations experience periods of both continuity and change. At the team level, (Gersick, 1988) demonstrated the importance of the midpoint transition which disrupts team activity and realigns it with the remaining time to a deadline. Personality development researchers have shown the coexistence of continuity and change in personality which has provided a more detailed and richer description of individual and group level continuity and change (Roberts et al., 2001; Caspi & Roberts, 2001; Branje et al., 2004; Caspi et al., 2005; Fraley & Roberts, 2005; Roberts et al., 2005; van Aken et al., 2006; Branje et al., 2007; Lodi-Smith & Roberts, 2007; Roberts & Mroczek, 2008; Roberts et al., 2008; Klimstra et al., 2009). These research findings conclude that continuity and change are not mutually exclusive, but are independent and multifaceted.

The coexistence of continuity and change in personality has challenged the questions

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about whether personality has changed or remains the same. Personality development researchers highlight that discussions on continuity or change tend to focus on one aspect of continuity, namely rank order continuity. Continuity and change can coexist at the group and individual level which gives rise to a number of interpretations (Roberts et al 2008), namely rank order, and mean level, individual differences structural and ipsative continuity and these are presented in a theoretical framework in Figure 2.

The framework is used to invoke three problematizing assumptions: in-house, paradigmatic and ideological (Alvesson & Sandberg, 2011). These assumptions highlight that the theme of continuity and change is subsumed to the background which has led to a significant shortage of theory explaining when and why time perspective demonstrates change and continuity. The lack of theory means that present research is guided by a set of research questions rather than formal hypothesis. Research questions are presented after time perspective is problematized rather than following chronologically from each chapter.

By placing time perspective within these frameworks, the current description of continuity *and* change in time perspective is inadequate. Although there is evidence supporting the rank order consistency and mean level change in time perspective, this evidence is based on group level measures. The study of continuity and change invokes the plasticity principle which indicates that time perspectives are defined as open systems that can be influenced by the environment at any age (Robert et al., 2008). The plasticity principle undermines the assumption that time perspectives are stable. The belief that time perspectives are stable is a convenience because it allows researchers to predict outcomes using various time perspectives. By situating time perspectives within discussions on continuity *and* change, time perspective becomes central and a richer and more thorough description can be found, thereby addressing the present inadequacy. Plasticity is central

to the temporalist perspective which argues that all things are open to change.

The contribution of the present research is twofold. The first contribution is methodological which provides a more thorough description of continuity and change in time perspective, thereby addressing the claim of inadequacy. Despite rank order and mean level continuity, there are individual differences in change across the time perspectives developed by Zimbardo and Boyd (1999), and there is variation in individual stability coefficients in all five time perspectives. The contribution to theory advances the temporalist research agenda by placing time perspective as a disposition within a set of revised assumptions which researchers can make about time perspectives i.e. they are capable of both change and continuity, and they can demonstrate reliable change in relatively short periods of time.

POSITIONING THE RESEARCH

The present study examines the extent to which individuals demonstrate continuity and change in their orientation toward the past, present and future. Figures 1 and 2 are used to position the research. Figure 1 shows the literatures used to position the investigation and Figure 2 provides the framework by which to investigate the research topic.
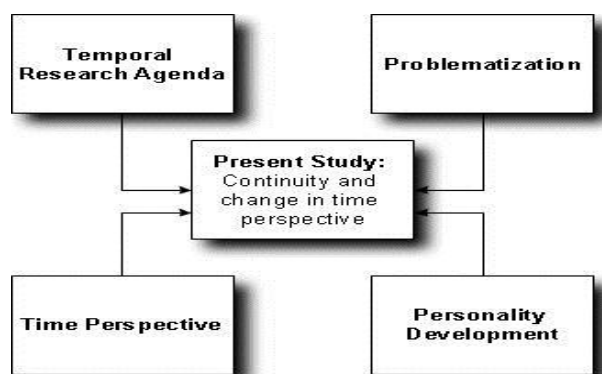
Figure 1 Positioning the research

The current temporal research agenda encourages the investigation of long term stability and change (Roe, 2008). The overarching assumption made by time perspective researchers is that it is stable and this view is questioned under the temporal research agenda. Problematization is used to surface taken for granted assumptions underpinning the dispositional view of time perspective which draws on a conceptualization of continuity and change in personality development research which suggests that continuity and change are multilevel and multifaceted.

In Figure 2, the theoretical framework indicates that continuity and change are coterminous and are multilevel. The framework has been used extensively in personality development research to show that personality demonstrates both continuity and change and it is used to explore the dispositional view of time perspective espoused by Zimbardo and Boyd (1999). By using this conceptualization of continuity and change, the present description of time perspective as a disposition is shown to be inadequate.

	Relative	Absolute
Population	Rank order consistency	Mean-level change
Individual	Ipsative consistency	**Individual differences in change**
Structural consistency		

Continuity *and* change in time perspective
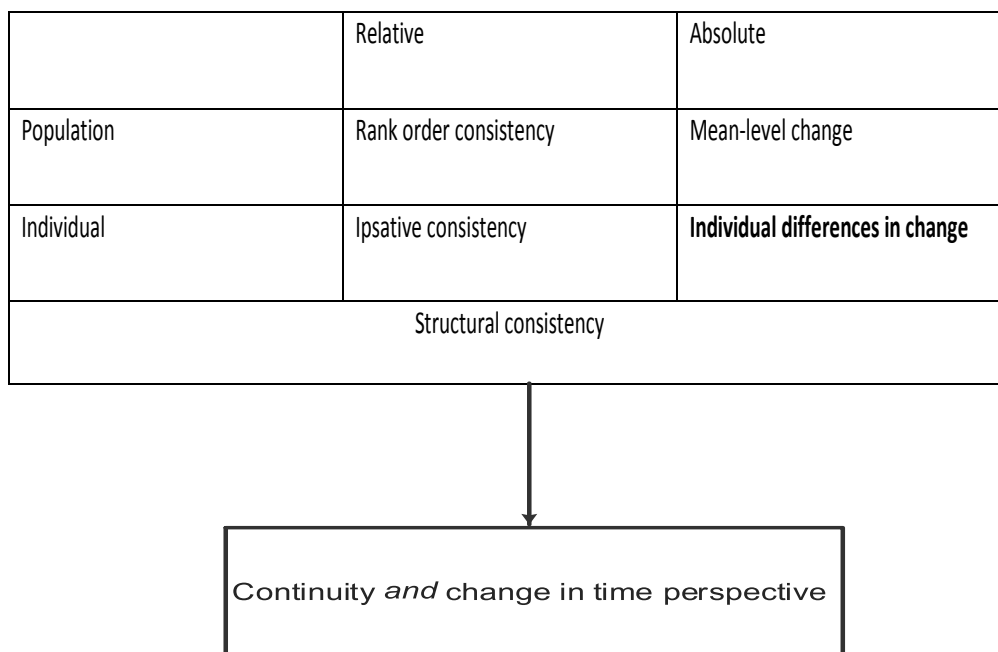
Figure 2 Theoretical framework shaping the research

The research found that female instructors working with early school leavers demonstrated higher mean levels of present fatalism relative to male instructors and those in managerial roles. Previous research has shown that present fatalism is negatively related to educational achievement (Phan, 2009). The impression given in the current time perspective literature is that time perspectives are stable. It is important for professionals working with early school leavers to maintain a future time perspective that emphasizes the future as an achievement space from which learners might benefit. Professionals with high past negative and present fatalism time perspectives should recognize that these perspectives may not be conducive to the role of an effective instructor.

Time perspective researchers supporting the model of Zimbardo and Boyd (1999) continue to replicate what is, rather than what happens (Roe, 2008). Theoretically, time perspectives are adaptable, yet we cannot describe the adapting time perspective. The main concern raised from a temporalist perspective is that time perspective is considered as a process but measured as a variable which reflects a methodological misfit. By continuing to treat time perspective as a stable individual difference variable, researchers gain little understanding of how time perspectives change. Time perspective researchers are unclear about describing the process of an unfolding time perspective in terms of improvement, bifurcation and relapse (Roe, 2008). The findings indicate that individuals can adapt their time perspectives; however time perspective researchers lack the tools to temporalize it. Time perspectives are not considered in the context of onset, duration and offset Roe (2008), which gives the appearance that they do not evolve and change over an interval. The practical importance of the findings is to critique this view and build a bidge toward temporalist thinking.

CONTRIBUTION

The study represents a contribution to the literature in the following ways.

- The research has addressed the temporal research agenda by examining issue of continuity and change in time perspective which remains largely overlooked. The research findings show that time perspectives can demonstrate plasticity in an adult sample and questions the continued preoccupation with supporting the validity status of time perspective as a disposition.

- The investigation brings time perspective in line with personality development literature and achievement goal stability studies which demonstrate that continuity and change are multilevel and coterminous.

- The findings question the trait like interpretation of time perspective by showing that time perspectives can demonstrate individual differences in change.

- The research challenges the assumption that rank order consistency is interpreted as the main indicator of continuity and despite rank order consistency, individuals demonstrate intraindividual variation in their stability coefficients.

- Methodologically, the study provides a more rigorous approach to continuity and change using a variety of different methods.

- The study is a longitudinal field study which represents a departure from the traditional two period designs adopted by time perspective researchers who make extensive use of university students.

- The plasticity of time perspective shows that time perspectives are somewhat adaptable over a number of weeks and this finding suggests a role for time perspective interventions.

THESIS STRUCTURE

Chapter one reviews the different philosophical positions underpinning time in the natural and social sciences and it presents a summary of many times. Chapter two presents' different times using organizations and develops the theme of continuity and change within organizational literature to show that they are multilevel and coterminous. The chapter marks the dispositional view time perspective as the focus of study. Chapter three presents a detailed discussion on the different schools of thought investigating time perspective and attends to the dispositional view of time perspective presented by (Zimbardo & Boyd, 1999) and measured by the Zimbardo and Boyd Time Perspective Index (ZTPI). Chapter four outlines the antecedents and outcomes of the model of time perspective developed by Zimbardo and Boyd (1999). Chapter five uses a problematization lens to generate the research questions about continuity and change in time perspective using personality development literature. Chapter six presents the research paradigm and methods adopted in the research. An evaluation of the statistical approaches chosen, data analysis and results are presented in chapter seven. The discussion of the study's findings is outlined in chapter eight and chapter nine advances the research conclusionsand limitations.

CHAPTER 1

INTERDISCIPLINARY PERSPECTIVES ON TIME

INTRODUCTION

The central concern of the present research is continuity and change in time perspective.

The chapter is divided into three sections. The layout of the chapter is presented in Figure 3. The first section presents a diverse view of philosophical perspectives on time, section two outlines different times: physical time, biological time, social time, practice based views and psychological time. In section three of the chapter, the theme of continuity and change is selected for discussion because it is shaped by philosophical perspectives and it is central to the temporal research agenda in organizations. The chapter concludes by suggesting that discussions on being and becoming are a central temporal theme which shapes debate on continuity and change in time related individual differences.

CHAPTER 1 INTERDISCIPLINARY PERSPECTIVES ON TIME

| Chapter Introduction | → | Section one | → | Section two | → | Section three | → | Chapter Discussion and Conclusion |

Philosophical Perspectives

Different times

Continuity and Change

Artistotle

Augustine

Husserl

Physical

Biological

Psychological

Social

Being and becoming

Substance and process philosophy
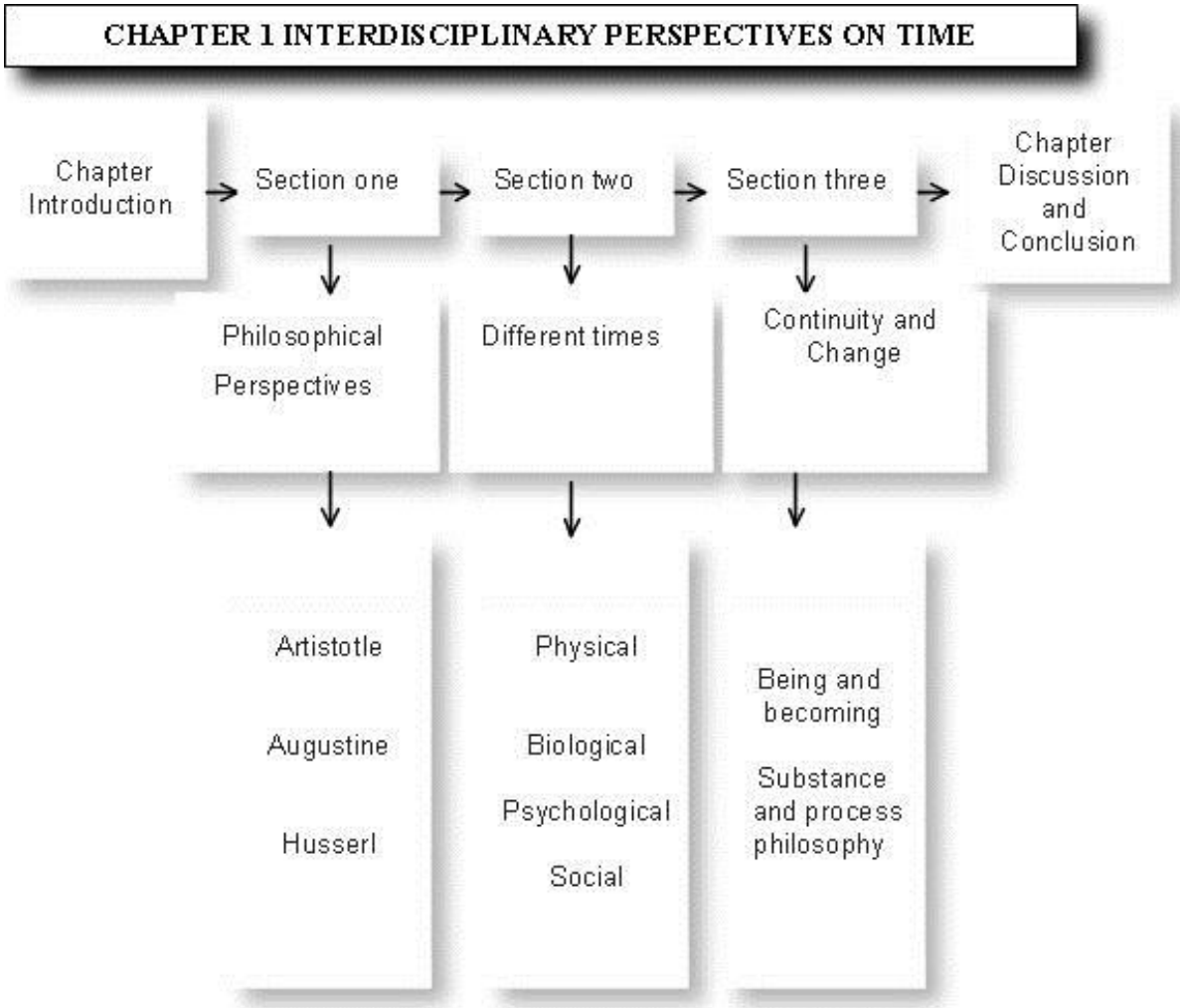
Figure 3 Layout of chapter one

1.1 PHILOSOPHICAL PERSPECTIVES

The first section of chapter one shows that philosopher's conceptualized time in terms of the physical, psychological and social worlds. Early work by philosophers focused on the question of what is time. Scholars have struggled to answer the question (Elias 1992 cited in Lawrence, 1986; Lobo, 2008), but still they do not know what time is (Davies, 2006).

1.1.1Philosophical perspective-physical time

Time in the physical universe was contemplated by Aristotle as "an aspect of great motions of the cosmos, embodied in numerable years, numerable months, and numerable days" (Lawrence, 1986,p.24). Plato suggested that time represents the moving image of eternity while the stoics regarded time in the cosmos as cyclical and they contemplated the eternal return. The eternal return refers to a cyclical theory of time where states of the universe will, after enormous periods of time repeat themselves as they did in the past and will repeat themselves again in the future (Capek, 1960). The Roman philosopher Plotinus (205-270 AD) commented that time among the Greeks was conceptualized three ways: (1) motion -all motion or motion of celestial bodies (2) as a moving celestial sphere and (3) the extent or number of motion (Roeckelein 2008). Aristotle's view on time remained influential until the work of St. Augustine, who contemplated psychological time.

1.1.2 Philosophical perspective-psychological time

St. Augustine contemplated time and conceptualized it as a subjective experience and these deliberations laid the foundation for the psychology of time. Rather than focusing on physical time, Augustine argued that time is in the mind. Furthermore, Augustine connected the past with memory, the present with attention and the future with expectation (Roeckelein, 2008). Time as a feature of the mind was further developed by

the French philosopher Guyau (1854-1888), who argued that time is a mental construction and "temporal experience is constructed based on the intensity, number and attention paid of stimuli" (Roeckelein 2008, p.18).

Augustine faced a dilemma of time felt versus time understood (Fraser, 1987). This dilemma is explained by Fraser using the development of brain structures where time felt resides in very old parts of the brain (brain stem) while time understood reflects the thinking parts of our brain (cerebral cortex). Time felt is largely inaccessible to language and cognitive processing and hence time felt is not easily articulated. Time understood reflects the temporal reality that is accessible and interpretable to our minds.

Considerations of time by early philosophers were largely grounded in physical reality until Augustine who focused philosophical discussion on psychological time which emphasizes human experience of time. Psychological time is examined from the perspective of the individual; however, time was also conceptualized as having a social nature.

1.1.3 Philosophical perspectives-social time

Philosophical positions held by George Herbert Mead and Husserl focused on the subjective nature of time which emphasized its social construction. According to Wood (2001), Husserl brought a phenomenological perspective to the study of time which began with the complete exclusion of all assumptions about objective time. Husserl dispensed with assumptions that there is a single all-embracing time and suggested that objective time is constituted through our experience. Husserl focused on our inner subjective time which was also a significant preoccupation for Bergson.

In his account of Bergson's philosophy, Moore (1996) outlines that events are temporally ordered in the succession of our experience. The segregation of our experience into discrete categories is necessary for human beings, but this discreteness is unreal.

Bergson's writings critiqued the physical view of time as a social convenience, he regarded duration or Dureé as a continuous progression of time where past, present and future are fused into an unbroken flux (Roeckelein, 2000). It is the Dureé that is real, "it is a property of going through time" (Moore, 1996, p.58), rather than measured duration. For Bergson, past and future are contained in the present and time exists through internal states of consciousness where time is considered as creation (Bergson, 1959, cited in Bergada, 1990). The sociologist Perleau-Monty, considered time as the construction of the world as directly experienced by human beings (Merleau-Ponty 1962, cited in Bergadaa, 1990). Time may be regarded as an orientation tool (Elias 1992, cited in Šubrt, 2001)and according to Elias, time refers to a relative framework which helps to create points of orientation in a continual flow of changes (Šubrt, 2001). The seasons, natural phenomenon such as the sun's movement, lunar cycle and events act as orientation points which become standardized. Time is described as a symbol "for a relationship that groups of humans…set between two or more courses of events, of which one is taken as a relative framework or measure for the standardization of the others (Elias 1992, cited in Šubrt, 2001, p.213).

The seminal paper by Sorokin and Merton (1937) proposed that social time is heterogeneous and they drew attention to the different meanings attributed to events in calendrical time. There are many social times which are described by scholars as time in events (Adam, 1990). Social time or epochal time is defined by events rather than being independent of time (Bluedorn & Standifer, 2006). Sociologists argue for a social theory of time which suggests that time is a socially constructed organising devise that is inherent in events (Clark, 1985). Social time refers to "the patterns and orientations that relate to social processes and to the conceptualization of the ordering of social life." (Lauer, 1981, p.21).

Interdisciplinary philosophical debate has delineated many times which have manifested in conceptualizations of time adopted by Newton and Einstein in the physical sciences while social science scholars have conceptualized time in a psychological and social sense. These philosophical perspectives underpin different times such as physical, psychological, social and practice based views of time.

1.2 DIFFERENT TIMES

In the second section of the chapter, different philosophical treatments of time support diverse conceptualizations of time in physics, biology, psychology and sociology and these are discussed.

1.2.1 Physical time- Newton and Einstein

Aristotelian conceptualization of time, as measured by number and its association with motion are inherent in Newton's time concept. Newton's goal was to describe motion which is a change in position over time (Falk, 2008). Mathematical time was central to Newton's theory and he proceeded to distinguish mathematical time from common notions of time derived from the motion of celestial bodies Newtonian physics was built around a model of a clockwork universe requiring an undisputed time measure, and Newton defined time as "absolute true and mathematical time, of itself , and from its own nature, flows equably without relation to anything external… and by another name is called duration" (Callendar & Edney, 2001, p.18). This definition of time provided a benchmark against which all other clocks were gauged (Falk, 2008).

Newtonian physics described the universe in terms of a three dimensional space: length, width and height, and time is denoted by t, and it is considered as an independent variable and has an implied flow and reversibility. Newtonian time is considered within science as homogenous for all times and does not recognise the different times inherent in

science such as rhythms, tempo, timing, duration or change (Adam,1998). The Newtonian view of time or substantivist perspective describes time as a neutral medium containing events, and is defined as a time in events approach (Levine, 2003). Newtonian mechanics played a central role in physics until Einstein.

Einstein's Theory of Special Relativity (SRT) demonstrated that time was not independent of events and it does not flow. Special relativity theory draws on space-time which represents a four dimensional block description of the universe. The block time model of the universe is formed by three dimensions and time is the fourth dimension. Under SRT the physical universe has no unique position of 'now'. Block time is a description of nature that gives no privileged position to the present and denies any process that would give rise to the flow of time (Davies, 2002). The block universe theory suggests that the passage of time is either an illusion or is a feature of the subjective mind (Ellis, 2006). The model of the universe in physics is static.

Conceptualizations of time in the natural sciences is multilevel in that different times apply to different levels of nature (Fraser, 1987). Fraser's analysis of time indicates the importance of an organic present which refers to the "instant-by-instant synchronization that assures the necessary collective viability …of all life forms" (Fraser, 1987, p.128). Human beings, as biological organisms contain these life sustaining processes which reflect biological time.

1.2.2 Biological time

Biological time is concerned with the synchronisation of biological reactions so that an organism remains alive or at least comes to no harm. Biological time is described by an orchestra metaphor where the instant by instant synchronization of rhythms and cycles occurs in the organic present (Fraser, 1987). Biological time covers rhythms, cycles, oscillations, biological clocks, synchronization and entrainment of oscillatory processes at

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different levels of analysis ranging from cells to organisms (McGrath and Kelly, 1986).

Biological rhythms such as the circadian rhythm are of central importance to human functioning. The circadian rhythm is defined as " the oscillations in the behavioural physiology and biochemical functions with a periodicity of approximately 24 hours," (Bhagwat, 2002, p.37). Circadian rhythms have three basic features: they are endogenously generated, the period of circadian rhythm is maintained at a constant value across a range of external temperatures and circadian rhythms are entrained to the day/night cycle (Bhagwat, 2002). With evolution and brain development, homosapiens learned to (1) represent real objects in a symbolic world, (2) decouple primary representations from the present and place them in different temporal categories and (3) they developed symbolic representations of relationships among secondary representations (Suddendorf & Corballis, 1997; Fortunato & Furey, 2009). Biological development permitted future thinking, present thinking and past thinking which opens discussion on psychological time.

1.2.3 Psychological time

Psychological time "consists of cognitive constructs, images, and symbolic representations. It has different dimensions such as the experience of time, time perspective, attitudes and beliefs toward time, and the individual's behaviour relating to time," (Shmotkin & Eyal, 2003, p.259).

Psychological time is preoccupied with the time related experiences, behaviors and judgments (Block & Zakay, 2001). It examines duration, time estimation, succession, time perspective (Block 1990) and time related individual differences (Francis-Symthe & Robertson, 1999). Succession refers to events that can be organized and perceived sequentially and it suggests a passage of our experience from present to past (Fraisse, 1984). Time estimation describes the processing of time intervals in the range of seconds,

minutes and larger time intervals while time perception describes the processing of extremely short intervals in the millisecond range (Rammsayer, 2008). Time perspective has a range of conceptualizations such as an orientation to the past present and future or the extension into the future (Lasane & O'Donnell, 2005) and reflects a level of involvement with these temporal categories.

More recent research on psychological time examines the importance of episodic memory. Episodic memory (Tulving, 1972) receives and stores information relating to temporally dated episodes or events and temporal spatial–relations among those events. Individuals simulate future events which draw on past experience and this capability refers to episodic future thought and it permits us to pre-experience one time future events (Szpunar, 2010). Episodic memory and episodic future thought are generally described as an underlying ability to mentally experience personal events in subjective time

(Spzunar, 2010). Neuroimaging studies support episodic memory and episodic future thought (Okuda et al., 2003; Nyberg et al., 2010; Szpunar, 2010; Szpunar, 2011; Tulving & Szpunar, 2012). These studies show that the frontal and temporal lobes are linked with recollection of the past and envisioning the future. Damage to these areas means that a person lives in a 'permanent present' where they are unable to access very recent or old memories.

1.2.4 Psychological time: time related individual differences

Psychological time includes time related individual differences which describe how individuals relate to time (Ancona et al., 2001b). Time related individual differences measure anxiousness about the future (Zaleski, 2005), procrastination, punctuality, polychronicity (Conte, 2007), individual time styles (Francis-Symthe and Robertson, 1999), the level of time urgency (Landy et al., 1991) the extent to which individuals orient themselves to past, present and future or time perspective (Zimbardo and Boyd, 1999) and

the extent of individual temporal focus (Shipp et al., 2009). These will be discussed in detail in chapter two. The study of psychological time has also been taken up by sociologists (Flaherty, 1987; Flaherty, 2003; Flaherty et al., 2005; Flaherty, 2010). This research investigates the extent to which people engaged in deliberate behaviours to fill time intervals by interpreting duration through the lens of social time.

1.2.5 Social time

Social time or subjective time is constructed out of norms, beliefs, the customs and practices of individuals and groups (Orlikowski & Yates, 2002). The hallmark of social life is a shared temporal reference framework such as clocks, calendars and dating systems (Zerubavel, 1977) and these are used to distinguish different social groups. Calendars, clocks and dating systems represent social artefacts which are imbued with meaning. All times are not the same and the different times are often presented within a hierarchy (McGrath & Kelly, 1986; Fraser, 1987), and the conceptualization of times in the hierarchy has led to significant debate about time.

To summarize, philosophical perspectives conceive of time as connected with the physical, mental and social worlds. In these worlds, time is related to physical reality through motion, in the mental world time is described as psychological time and in the social world there is social time. These times are different and are divided by rancorous debate.

1.3 INTERDISCIPLINARY TIME DEBATES

The third section of the chapter discusses an on-going debate of being and becoming which is one of many philosophical debates on time.

Physical time, biological time, social time and psychological time are immersed in cross disciplinary debates and these are summarized in Table 1 and it indicates that scholars are

divided in their views of time. In the physical universe, time does not flow, the past, present, future are illusions and time is simply a variable or a fourth dimension.

In Table 1 it is evident that social and natural scientists differ in their views. The practical reality of time's passage is evident in human affairs because psychologists and sociologists study thinking beings that have evolved biological brain structures to conceive of a past, present and future. With time, individuals and societies change- there is both being and becoming. Time's arrow indicates a unidirectional passage of time from past to future. The deterministic nature of the arrow of time is denied by psychologists and sociologists on the grounds that human beings have free will; they are agentic and can respond in novel ways to situations. The deterministic view of time's arrow is also problematic for sociologists because societal progress is based on creating instability rather than stability (Adam, 2010). The debate that is central to the present research is continuity and change which has its origins in discussions of being and becoming.

1.3.1 Being and becoming

Continuity and change have their origins in early philosophical debate between those who viewed the physical world as static (Being) and protagonists who described the world as ever changing (Becoming) and this discussion is still on-going in present philosophical debate. The debate is examined in terms of substance and process philosophies. Substance philosophy subscribes to being and denies becoming while process philosophy advocates becoming but does not deny being. Being and becoming in the physical universe are central to discussions on stability and change (Martone, 2004) and these are argued amongst proponents of substance and process philosophies.

Table 1

Summary of time debates

	Physical Time	Psychological Time	Social Time	Biological Time
Time debates				
Time position	Universe described by a static block Systems give rise to predictable outcomes Time is an independent variable/ Time is treated as space-time	There is a mental reality Time is a mental construction	Time is socially constructed There is a social reality and many times	Biological organisms are real synchronization to sustain life
Being and Becoming	There is only being	Continuity and change are central to theory development	Social structures are fixed, but can be changed through agency	Biological development
Time's Passage	Time does not pass	The passage of time is categorized into past, present future	Past present and future are social constructions	Time passes, there are differentiated stages
Directedness of time	Time can be bidirectional/ unidirectional - quantum theory	Time is unidirectional we get older not younger with age	Time is unidirectional, cyclical	Cycles, spirals,rhythms,linear
Past. present Future	The present has no special significance	Present is important it is used for mental time travel Orientation toward these zones predicts individual outcomes	Past and present are cumulative in the future. Futures are made and taken*	Biological present in which biochemical reactions happen to sustain life

*Adam (2010)

Being has its roots in philosophical perspectives of Aristotle and Plato which suggested that the world consists of hard and unchanging substances which endure (Mesle, 2008). The unchanging being forms the cornerstone of western thinking, which seeks certainty in its scientific laws. Eleatics such as Parmenides denied the reality of change, the past and future are illusions, and he argued that objects either existed or they did not and there was no temporal becoming or mediating stages of change. Parmenides attempted to eliminate time (Cornford, 1976) by denying temporal becoming because temporal becoming includes all change.

For Parmenides, change implies that something "which was not comes to be …and as such it was not before " (Cornford, 1976,p.142).The present is the only reality and terms like perishing and becoming are meaningless. An alternative perspective was offered by Heraclitus who suggested that the only permanent reality is that of change while permanence amounted to an illusion of the senses (Roeckelein, 2008).
Temporal becoming can be considered as the movement of the present in the direction of the future or it refers to a "change in the ontological states of events from unactualized to actualized" (Riggs, 2007, p.80). Physicists, in general deny temporal becoming because it infers the passage of physical time in the universe.

Temporal becoming was an essential feature of Heraclitus's philosophy because all things contained opposites within them such as life and death, and the only reality was transition or becoming (Roeckelein, 2008). Heraclitus's thinking is embodied within process philosophy which does not deny substance, but reconceptualises substance as process (Rescher, 1996). Process philosophy stresses the centrality of time as passage, the becoming and perishing of events (Mesle, 2008). Substance metaphysics has a difficulty with future things because the future does not yet exist. Within the social sciences, being and becoming are everywhere and are conceptualized differently and according to

Harrison (2002, p.12) "to say that nothing changes contradicts our experience". Being and becoming are conceptualized in the context of the flow of time, being is synonymous with the present, while becoming is future oriented (Uprichard, 2008). In contrast to substance philosophy, process philosophy is preoccupied with the unfolding of human experience and can accommodate the future because the process and nature of reality implies that the present constitution of things will always project itself into an unrealized and open future (Rescher,1996).

Prigongine (1980, cited in Uprichard, 2008) suggests that being and becoming reflects an arrow of time which is unidirectional. Being and becoming are emphasized in identity development, the progression of individual from childhood to adulthood and in youth transitions (Worth, 2009). Being and becoming are central to (Grosz, 1998, cited in Worth, 2009, p.1055) who conceptualizes time, not as a medium which frames life, but "as open to futurity – random, open ended and always becoming," Grosz gives special attention to the future where the complex processes of becoming unfold. Being and becoming are central to social sciences because they reflect our experience: Being is present, becoming invokes the future.

Themes of being and becoming are also emphasized by Heidegger. Heidegger suggests that human beings are inherently temporal, but not in a chronological sense. Central to Heidegger's philosophy was the Da-sein or consciousness of being possessed by human beings. Heidegger linked human existence to time through questions about the being of human beings. Being is what it means for a person to exist between birth and death and existence is described as ordinary existence in the world (Critchley, 2009). Human beings are defined by their mortality and so they are always being toward death. The realization that we are mortal makes us aware that our futures are filled with possibilities if we desire to capitalize on them. The past reflects our thrownness in the

world or that we find ourselves somewhere in the world, but this thrownness is not fixed, we can change it through action. We project ourselves toward the future, and projection is interpreted as freedom of the human being to demonstrate potential. In projecting ourselves toward the future, we project ourselves toward death which pulls us toward recognition of our possibilities.

Heidegger did not emphasize the passage or flow of time (Sheehan, 2003), but becoming, alreadiness and presence in the world (Sheehan, 1998). Alreadiness manifests itself in a becoming of the finality of death. Presence is characterized in the embracing of the mortality one has, which makes the human being meaningfully present to itself and allows the human being to make other entities meaningful to it. Becoming suggests that human beings are not static entities, human beings become possibilities including death, and being thrown into possibilities allows human beings to engage in purposeful action (Sheehan, 2003). We have a past, we move through the present and we project our possibilities on a future. Heidegger's Time concept consists of a unity of past, present and future and time is movement through the world as a space of possibilities (Karpowicz, 2001).

To summarize, scholars have defined time in terms of motion, creation, symbols, the social construction of the world and psychological attributes. These time concepts evolved from cross disciplinary debate on time from the philosophical, natural science, sociological and psychological inputs. The diversity of input signposts acrimonious debate around continuity and change, times arrow, past present and future and the passage of time. The theme of continuity and change has provoked significant discussion across the social and physical sciences where lines are drawn between those who favour being and those who advocate for becoming.

1.4 CHAPTER DISCUSSION AND CONCLUSION

Philosophical debate reflects different times which operate at different units of analysis. In the physical universe time is denoted by t, and is used to calculate the motions of bodies in space using Newton's Laws. Time has been spatialized in Relativity theory to form space-time in order to describe a block universe using four dimensions. These treatments of time disagree on the grounds that under Newton's perspective, time flows while Relativity disagrees with the passage of time in the physical universe. The physical world is replete with other times such as biological rhythms and pacers which facilitate life sustaining biological reactions.

At other levels of analysis time is connected with our social context in which we create different times. Societies construe time in different ways such as clock time which is a social construction in itself. Psychological time focuses on the flow of our experience which contradicts the view of time in the physical science which regards the flow of time as an illusion.

An on-going debate among philosophers relates to being and becoming. Being reflects a static conceptualization of reality which rejects change and change is at best an illusion. Process philosophy advocates becoming, but does not deny being, rather it reconceptualises being as a set of processes. Process philosophy examines the flow of our experience which unfolds over time. Substance and process perspectives treat time differently in that the future does not yet exist under substance and hence is unreal while process philosophy regards the future as open because our experience flows from the present into the future. The practical implications of being and becoming are that, being plays a role in shaping how theories are developed, it is a philosophical position advocating stability and denying change and underlies the development of scientific laws

especially within time related individual differences literature.

To conclude the chapter, there are many times and opinion about time is diverse, contradictory and controversial. Time is treated differently depending on the unit of analysis ranging from massive matter to human beings. Human beings occupy different worlds where at one level they are uncovering nature's laws which must be invariant for all time, and at another level they occupy a social and psychological world which invokes meaning and experience. Transgressing these worlds implies that times differ and the unfolding of our experience is legitimate at one level of analysis and is denied at others. The debate of being and becoming is not confined to physics and philosophy, but forms on-going discussion within organizations which are at the nexus of many times.

CHAPTER 2

TIME IN ORGANIZATIONS

INTRODUCTION

The aim of the chapter is to demonstrate that organizations are pluritemporal, they demonstrate multilevel aspects of continuity and change and recent organizational developments have attended to time in a variety of ways.

The chapter is divided into three sections. Section one outlines the different times in organizations highlighted in chapter one to suggest that organizations are pluritemporal. Section two presents multilevel examples of continuity and change in organizations to show that these coexist and that time related individual differences are at odds with organizational research. Section three discusses recent developments in organizations in terms of time related research agendas and centres the themes of continuity and change in time perspective, a time related individual difference variable, which is central to the present research. The chapter concludes by arguing that the themes of continuity and change are multilevel and coterminous at different levels of analysis in organizations. Figure 4 shows the chapter layout.

CHAPTER 2 TIME IN ORGANIZATIONS

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Chapter          Section one        Section two        Section three        Chapter
Introduction                                                                Discussion
                                                                            and
                                                                            Conclusion
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Organizations        Continuity and        Temporal
as                   changeas              research
                     multilevel            agenda
pluritemporal
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Clock time           Strategic             Continuity and
                                           change
Social time          Organizational
                                           Philosophical
Practice             Team                  and
based views                                methodological
of time              Individual            developments

                                           Time
                                           perspective
                                           described
                                           inadequately
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Figure 4 Layout of chapter two

2.1 ORGANIZATIONS AS PLURITEMPORAL

In the first section of chapter two, organizations are shown to be pluritemporal. The various time concepts presented in chapter one are evident in organizations. Table 2 provides an overview of different times in organizations, however, the table presents these different times as discrete, but they are not. The coexistence of different times in organizations is not new (McGrath & Kelly, 1986) and a description of simultaneous times is difficult, but it can be achieved using a project chart as an organizing device (Yakura, 2004).

Within organizations, there are different time concepts, activities are mapped to time and individuals relate to time in different ways (Ancona et al., 2001). Gantt charts are considered to be an organizational artefact (Yakura, 2004) or a modifiable temporal structure (Orlikowski & Yates, 2002). Gantt charts reflect deadlines, time in teams, conceptualizations of time, pacing, entrainment, the economic valuation of time, scheduling and time management, and they implicitly assume individual orientations to time such as time urgency, polychronicity, and time perspective.

2.1.1 Organizations as pluritemporal-clocks, scheduling and deadlines

Objective time or clock time is a feature of organizational life epitomized by deadlines, schedules, timelines and project charts. Clock time is the basic assumption underpinning societal management and operation and it is central to organizational control and worker productivity, (Lee & Liebenau, 2001). Under clock time, time is viewed as a valuable resource which has an economic value (Pfeffer & DeVoe, 2012) and it is considered as an asset to be managed (Bucciarelli, 1988). Time management may be considered as a set of "behaviours that aim at achieving an effective use of time while performing certain goal directed activities" (Claessens et al., 2005, p.267) and should be

considered within the domain of effective time use (Claessens et al., 2009). The effective use of time is central to meeting deadlines or project milestones and deadlines are assumed to motivate teams and their members to attend to time (Waller et al., 2002). Deadlines are linked to biological time in that they act as triggers to increase pacing behaviour.

2.1.2 Organizations as pluritemporal- biological time

Biological time in organizations addresses the entraining of human activity in organizations to other exogenous cycles or activities. Scheduling, allocation, coordinating activity and convergence of effort does not happen in a vacuum. Strong temporal cues or zeitgebers are used to explain how activities can mesh together or how the pace of activities becomes synchronized within an organization (Bluedorn, 2002). The zeitgeber is a cue or entraining force that captures another rhythm. Examples of zeitgebers include the firms' external environment, the fiscal year, project review cycle and deadlines. Entrainment is central to this view and it is defined as " the process by which one internal (or endogenous) rhythmic process is captured and modified by another (endogenous or exogenous) rhythmic process" (Kelly, 1986, p.89). Entrainment can be used to explain the synchronization of cycles and the meshing of management activity to external pacers such as the fiscal year. For example, senior managers operating in high velocity environments adapted the pace at which decisions were made to compete in fast moving external markets (Eisenhardt, 1989; Ancona & Waller, 2007).

Project charts emphasize deadlines which can act as zeitgebers by motivating teams and individuals to accelerate their activities and can influence the tempo aspect of entrainment (Bluedorn, 2002). Deadlines are external environmental stimuli that are perceived, interpreted and remembered in order to pace activity (Labianca et al., 2005).

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Table 2
Conceptualizations of time in organizations

<u>Socially constructed</u>

	Objective	Subjective	Practice	Psychological
View of time	Exists independently of human Action; exogenous absolute.	Socially constructed by human action; culturally relative.	Constituted by ,as well as constituting on-going human action.	Time exists in a mental reality consisting of cognitive constructs, images and symbolic representations. It has different dimensions: time perspective, temporal experiences, duration, and reaction time.
Experience of Time	Time determines or powerfully constrains people's actions through their use of standardized time-measurement systems such as clocks and calendars.	Time is experienced through the interpretive processes of people who create meaningful temporal notions such as events, cycles, routines, and rites of passage.	Time is realized through people's recurrent practices that (re)produce temporal structures (e.g., tenure clocks, project schedules) that are both the medium and outcome of those practices.	Succession duration, time perspective time flies and drags, flows, hurried .Mental time travel, past present future ,punctuality time related individual differences.
Role of actions in Temporal change	Actors cannot change time; they can only adapt their actions to respond differently to its apparent inexorability and predictability, e.g., speeding up, slowing down, or reprioritizing their activities.	Actors can change their cultural interpretations of time, and thus their experiences of temporal notions such as events, cycles, and routines, e.g., designating a "snow day," "quiet time," "fast track," or "mommy track."	Actors are knowledgeable agents who reflexively monitor their action, and in doing so may, in certain conditions, enact (explicitly or implicitly) new or modified temporal structures in their practices, e.g., adopting a new fiscal year or "casual Fridays."	Individuals set goals and achieve them through self regulation. Goals are proximal and distal. Individuals enact possible selves In the present we draw on past experience and use it to achieve an envisioned future Individuals engage in temporal therapy to alter their time perspectives.

Adapted from (Orlikowsk & Yates (2002, p689)

Under static deadlines the pace of activity may also be influenced by a midpoint transition in punctuated equilibrium models of group behaviour (Gersick, 1988; Gersick, 1989). The midpoint transition acts as a temporal marker which allows the group to re-examine their previous activities, reorganize them and advance to task completion.

The midpoint transition allows the group to open itself to the influence of external stakeholders (Gersick, 1988). External stakeholders may trigger timing changes which produce revisions to project and personal goals (Blount & Janicik, 2001) such as deadlines. Under dynamic deadlines, Waller et al. (2002) found that teams did not alter pacing behaviour, but attended to time by contracting or expanding time resources as a function of deadline proximity. Clock time appears in many guises, but is argued to be homogenous for all times and is external to human action. Within organizations, social theorists suggest that we construct different times.

2.1.3 Organizations as pluritemporal-socially constructed times

The social constructionist view of time suggests that individuals may act agentically to create a variety of social times which is evident in timework (Flaherty, 2010). Timework is defined as "individual or interpersonal efforts to create or suppress particular kinds of temporal experience," (Flaherty, 2003, p.17). The social construction of time appears in the project or Gantt chart (Yakura, 2004). In a study by Yakura (2004), a single artefact, the project chart, was interpreted in different ways by different organisational members who brought differing assumptions to bear on the interpretation of milestones and resources. Instead of the monotemporal time inherent in the project chart, different organizational members imbued the chart with different meanings, thereby constructing many times such as "overtime", "down time" and "on time."

Project charts represents a temporal structure within organizations which is reproduced and modified through use. It is in the modification and remodification of

temporal structures that one encounters a practice based view of time (Anderson-Gough et al., 2001; Orlikowski & Yates, 2002; Ballard & Seibold, 2003; Ballard & Seibold, 2004a; Ballard & Seibold, 2004b; Ballard & Seibold, 2006). The practice based view posits that humans are shaped by and shape temporal structures that are used in everyday life within organizations. Practice based views draw on Giddens structuration theory to study time in organizations. Temporal structures can be schedules, deadlines, calendars and weekly meetings which are used as guidelines to specify appropriate conduct and they are also modified by the actions they inform (Orlikowski & Yates, 2002).

The practice based lens makes the conception of time within organizations more dynamic to show that even well-established temporal structures are malleable. Practice based views draw upon human agency which is regarded

> "as a temporally embedded process of social engagement, informed by the past (in its iterational" or habitual aspect) but also oriented toward the future (as a "projective"capacity to imagine alternative possibilities) and toward the present (as a "practical-evaluative" capacity to contextualize past habits and
> future projects within the contingencies of the moment). (Emirbayer & Mische, 1998, p.962).

In their study of electronic media, Orlikowski and Yates (2002) examined a project team tasked with creating a standard computer language manual. The study described the change in temporal structure adopted by remote IT workers from meetings based on adhoc drafts of documentation to more deadline driven outcomes and discussion of draft documentation using electronic balloting.

To summarize, it is clear that organizations are pluritemporal. Clock time invokes time: as independent of events, having an economic value and is considered as an asset to be managed. Individual and team activities are paced through deadlines. There are other times such as practice based and socially constructed times which suggest that time is in

events. Times have meanings and a period of clock time may be interpreted differently by different social groupings. Practice based views indicate a more dynamic view of social time which highlights tensions between continuity of the past and change for the future. The theme of continuity and change is further developed using a multi-level perspective within organizations in section two.

2.2 CONTINUITY AND CHANGE IN ORGANIZATIONS

The aim of section two of the chapter is to examine the theme of continuity and change in organizations from a multilevel perspective.

Continuity and change are themes that are reflected in organizations at different levels of analysis such as strategic, organizational, group and individual levels. Organizational change researchers are recognizing that continuity and change are coterminous and coexistent rather than mutually exclusive (Romanelli & Tushman, 1994; Leana & Barry, 2000; Huy, 2002; Sturdy & Grey, 2003; Nasim & Sushil, 2011; Kaplan & Orlikowski, 2012). The coexistence of continuity and change is also recognized in models examining the impact of change on group structure (Arrow, 1997) and in the stability and adaptability of individual differences (Leana & Barry, 2000).

2.2.1 Continuity and change-strategic level

At a strategic level, models of competitive advantage contain perspectives based on continuity such as Porters five forces model (Porter, 1987) and models of change include hypercompetition (D'aveni, 1995). Porter's model advocates achievement of a sustainable or enduring competitive advantage within industry through adoption of unique strategic positions while hyper-competition reflects the constant erosion of temporary advantages through swift strategic action. Hypercompetition researchers suggest that enduring advantages arising from monopolistic or oligarchical market structures are replaced by a

series of temporary advantages (D'Aveni et al., 2010). Monopolistic and oligopolistic market behaviour is undermined by high velocity environments which emphasize constant change and reinvention (Eisenhardt, 1997; Eisenhardt & Brown, 1998).

2.2.2 Continuity and change-organizational level

At an organizational level, continuity and change are featured in the punctuated model of change (Romanelli & Tushman, 1994). Punctuated equilibrium models demonstrate that organizations experience long periods of stability in their activities followed by periods of change brought about by shock which moves the organization to another state. The punctuated equilibrium model highlights the tension between stability and change (Lant & Mezias, 1992). Stable equilibrium in the pattern of firm activity is achieved through a variety of ways (Romanelli & Tushman, 1994) such as: establishing and embedding an initial activity pattern through routines, ensuring fit between the state of the external environment and managerial decision making and establishing shared meanings.

2.2.3 Continuity and change–group level

Continuity and change are evident themes in group development. "Traditional models of group development-the patterning of change and continuity in group structure and behaviour over time –propose that groups follow a fixed sequence of stages"(Arrow, 1997, p.75). Fixed stage models suggest that groups move through different stages which follow a linear sequence from testing and dependence, conflict, group development and functional role relatedness (Tuckman, 1965). Arrow (1997) outlines four models of continuity and change in group structure and these are outlined in Table 3. The table indicates that continuity and change are standard themes in groups who act to either stabilize the impact of shocks to preserve existing structures, or adapt to manage them. At

the individual level of analysis, continuity is evident in time related individual differences that were briefly outlined in chapter one and these are discussed in more detail.

2.2.4 Continuity-the individual level

Organizations are at the nexus of various time theories and time concepts where actors map activities to time, they relate to time and they work under different conceptions of time (Ancona et al., 2001b). We relate to time through time related individual differences which were developed using differential thinking. These "innate tendencies influence how individuals structure, organize and make sense of time, thus shaping their own temporal preferences, and more generally how people situate their time," (Blount & Leroy, 2007, p.163). Organizational scholars borrow theory from neighbouring disciplines on the basis that the theory will demonstrate similar results in a different context (Whetten et al., 2009). Time related individual differences are borrowed with stability in mind, yet they are out of sync with other levels of analysis.

A selective review of time related individual differences is presented. Individuals differ across a range of time related constructs such as time orientation (Zimbardo & Boyd, 1999), temporal focus (Shipp et al., 2009), their levels of time urgency (Conte et al., 1995; Conte et al., 1998; Conte, 2001; Waller et al., 2001), future anxiety (Zaleski, 2005), polychronicity (Conte, 2007) and the extent to which individuals perceive time as continuous and smooth or purposive and structured (Kaufman-Scarborough & Lindquist, 1999). A selective overview of these individual differences is presented.

2.2.4.1 Polychronicity

Time related individual differences such as polychronicity; temporal focus, time urgency, and time perspective have featured in organizational studies. Polychronicity refers to the "extent to which people (1) prefer to be engaged in two or more tasks or

Table 3

Models of continuity and change in group structure

Model	Explanation	Source of Change	Nature of change	Source of continuity
Robust Equilibrium	Group members self-regulate to retain a persistent group structure after an initial shock. The adjustment mechanisms include group hierarchy and role systems.	Internal	Internal fluctuation	Internal forces
Life cycle	Groups go through various stages until they group expires. The group moves through different stages through conflict and its resolution.	Internal	Gradual,ongoing	External disruption
Punctuated equilibrium	The model suggests that group structures whether optimal or not will persist until an abrupt external shock forces the group to restructure. The new structure will persist until the next shock.	External	Radical abrupt	Internal force
Adaptive response	This model suggests that groups alter their structure in response to their task, technology and environment.	External	Immediate or delayed response	External forces

Source Adapted from (Arrow 1997, p.76)

events simultaneously and are actually so engaged….and (2) believe their preference is the best way to do things, (Bluedorn, 2002, p. 51); and it can be regarded as a cultural trait (Slocombe, 1999) and as a stable individual difference variable (Conte & Jacobs, 2003,p.124). Monochronic individuals tend to be task oriented; they stress promptness and stick to their plans while polychronic individuals tend to alter plans and emphasize relationships. Organizational research shows that, among sales executives, polychronicity was positively correlated with supervisory ratings of customer service and sales performance, (Conte & Gintoft, 2005), group polychronicity and individual time urgency are negatively related when a team is required to complete a goal (Waller et al., 1999) and polychronicity is positively related to a learning goal orientation and negatively related to a performance avoidance goal orientation (Conte & Schell, 2007).

2.2.4.2 Concern for future consequences and time urgency

The concern for future consequences (CFC) is a stable individual difference which refers to the extent to which an individual weighs the immediate versus distant consequences of their actions (Strathman et al., 1994). The concern for future consequences is used in the context of social dilemmas which involve trade-offs between short term costs and long term benefits. Within the context of organizations, organizational citizenship behaviour (OCB) is considered to be a social dilemma (Joireman et al., 2006). The authors found that employees high on (CFC) may be very good employees if they believe that they have a future with the organization.

2.2.4.3 Time urgency

Time urgency reflects a multi-dimensional construct which includes factors on: (1) a time awareness, (2) eating behaviour (3) scheduling, (4) nervous energy, (5) list making, (6) speech pattern and (7) deadline control (Landy et al., 1991), but these were reduced to

five dimensions :time awareness, eating behaviour, scheduling, list making and deadline control by Conte et al. (1995) Research evidence also indicates that time urgency dimensions consist of competitiveness, general hurry, eating behaviour and task hurry (Conte, 2001). The researchers found significant and positive correlations between: eating behaviour and job involvement, depersonalization and speech patterns and general hurry and emotional exhaustion.

2.2.4.4 Time perspective

Time perspective refers to the preference an individual has for past, present and future (Block, 1990). There are both state and trait measures of time perspective adopted in organizations. Time perspective as a state measure is related to pace, linearity, time urgency and time scarcity (Ballard & Seibold, 2004a) and time perspective is largely depicted as a unidimensional scale measuring past or present or future (Schriber & Gutek, 1987; Usunier & Valette-Florence, 2007). There are other time perspectives such as the transcendental time perspective (Boyd & Zimbardo, 1997) and a limited time perspective (Cozzolino et al., 2009), but these are not considered in organizational contexts.

A broader definition of time perspective suggests that it refers to the "composite cognitive structures that characterize the way an individual projects, collects, assesses ,values and organizes events that reside in a distinct temporal foci, (Lasane & O'Donnell, 2005, p.12). Time perspective is generally regarded as synonymous with time orientation (Luyckx et al., 2010). Time orientation reflects both cognitive structures and the mix of "individual and socially constructed traits"(Usunier & Valette-Florence, 2007, p.337).

Organizational researchers have shown relatively little attention to time perspective (Waller et al., 2001; Gibson et al., 2008). Waller et al. (2001) combine time perspective with time urgency to indicate that different team members can assume roles of organizers, crammers, visioners and relators when facing deadlines. Gibson et al. (2008) examine the

antecedents and outcomes of time perspective heterogeneity and draw on globalization and cultural contexts to present propositions of antecedents, mediators and outcomes of time perspective. Time perspective and alliance formation were studied by Thoms et al.(2006) who indicated that future time perspective was positively related to alliance formation and past negative time perspective was positively related to cooperation.

The theme of continuity and change is reflected in time related individual differences which are assumed to be stable over time. Unlike the organizational literature on continuity and change, time related individual differences appear to rely on a one-dimensional view of continuity represented by rank order consistency from which researchers conclude that there is little change. The individual differences literature in psychology has a history of protracted debate on the stability of traits versus their openness to the influence of context in the person-situation debate (Roberts & Caspi, 2001; Lewis, 2001).

The term stability within the individual differences literature appears to have diverse meanings. Nomenclature referring to stability and change ranges from consistency and change (Cervone, 2004), continuity and change (Caspi & Roberts, 2001) or constancy and change (Nesselroade, 1990). Stability can refer to something that is enduring or immutable. However, stability and change can refer to group and individual level properties (Roberts et al. 2008).To rectify the difficulty with defining stability, the present research draws on a multifaceted and multilevel understanding of stability developed by these authors. Stablity and change are not seen as opposite ends of a spectrum, but are considered to co-exist and are mutually exclusive.These researchers do not associate stability with immutability and enduring patterns, but advocate a broader interpretation which permits a more detailed description of time perspective relative to existing research. Rather than detract from the research topic, the present study will follow a precedent set in the personality literature which uses the terms stability, continuity and consistency interchangeably. However, it is

important to note that stability as a monolithic view is challenged i.e constructs are stable over time or they are not.

It is a common belief among individual difference researchers that demonstrating temporal consistency over time implies the absence of change and this assertion is incorrect (Roberts et al., 2006b). The view that temporal stability implies the absence of change has been contradicted (Caspi & Roberts, 1999; Caspi & Roberts, 2001; Roberts et al., 2001; Caspi et al., 2005; Caspi & Shiner, 2006). Personality development researchers suggest that asking if a person's personality has remained the same (continuity) or has changed is an ambiguous question because there are several meanings to the term continuity (Caspi & Roberts, 1999). Continuity in individual differences can be broadly classified into rank order, mean level, ipsative and individual differences (Caspi et al., 2005; Roberts et al., 2008). These different faces of continuity are independent and the existence of one does not preclude the occurrence of another. The study of continuity and change in time related individual differences has not been considered despite the wider debate about the coexistence of continuity and change at higher levels of analysis and within the individual differences literature itself.

To summarize, the theme of continuity and change is ubiquitous in organizations and ranges from strategic management to individual differences. Models of continuity and change across the different levels of analysis are underpinned by practice based conceptions of time and clock time. Practice based views of time explain continuity and change as a tension between past habits and envisioning a future in the present. Clock based views of time are evident in punctuated models of continuity and change which attend to the duration of continuity and change. At each level of analysis, there is consensus about the coexistence of continuity and change except for time related individual differences which still remain silent. Personality development investigators dispute assumptions that temporal stability or

rank order consistency is a blanket term for the absence of change and have moved personality to a coexistence perspective.

Over the past number of years, scholars have embraced philosophical and methodological developments which have aided the study of continuity and change such as multiwave designs and adopting more time sensitive methods. Section three of the chapter examines recent developments in time related research.

2.3 RECENT THEORETICAL DEVELOPMENTS

The purpose of section three is to demonstrate that organizational researchers are attending to time related research in different ways. They have embraced process epistemology, developed time sensitive theoretical frameworks, emphasized the integration of temporally sensitive designs, and examined continuity and change at the individual and group level of analysis.

2.3.1 Recent development-temporal research agenda

Recent calls for greater emphasis on time in organizations are made by numerous researchers (Lee & Liebenau, 1999; George & Jones, 2000; Ancona et al., 2001b; Roe, 2005; Roe, 2006; Roe, 2008; Roe, 2009; Roe et al., 2012; Sonnentag, 2012; Langley et al., 2013) and there is varied guidance on how time related research should proceed. For organizational theorists, time can represent a boundary condition for theory (Whetten, 1989), they may attend to the emergence, development, growth and termination of organizational phenomenon (Langley et al., 2013) or they think about time in terms of past present and future (George & Jones, 2000) and they develop new time related constructs such as temporal focus (Shipp et al., 2009) and team temporal diversity (Mohammed & Nadkarni, 2011). Other commentators attend to the temporal research agenda by suggesting that researchers should examine timing norms and lags (Ancona et

al., 2001a) while others advocate the importance of temporal relationships, dynamic features and the study of long term stability and change (Roe, 2008; Roe, 2009; Roe et al., 2012). It is clear that time related research has proceeded along different levels of analysis and along different paths.

2.3.1.1 Rationale for temporal research

These calls for time related research have emerged for a number of reasons. Researchers realise that organizational theories need updating to show how behaviours unfold (Sonnentag, 2012). Scholars recognise that knowledge based on cross sectional designs is uninformative about growth and development (Ployhart & Vandenberg, 2010) and that the current weakness facing organizational theory is that it does not describe what is happening (Roe, 2008). The temporal research agenda has been addressed at different levels of analysis. At a strategic level, scholars continue to: develop conceptualizations of time (Kaplan & Orlikowski, 2012) , to examine entrainment and rhythm in acquisitions and alliances (Shi & Prescott, 2013) and study time concepts underpinning mergers and acquisitions (Shi et al., 2012). At the organizational level, investigators theorize about time and fit theory (Shipp & Jansen, 2011) and at the group level, researchers study the unfolding dynamic processes in teams (Roe et al., 2012), and chaotic dynamics in teams (Ramos-Villagrasa et al., 2012). These different research directions have witnessed improvements in methodology.

2.3.2 Recent developments-epistemology and methodology

Scholars acknowledge that the study of time in organizations adopts variance and process epistemologies (Van de Ven, 2007). Variance approaches reflect the relationship between dependent and independent variables while process epistemologies examine evolving phenomenon and events (Langley et al., 2013), such as work place socialization

(Solinger et al., 2013). Variance and process epistemologies address different questions. Researchers examining the antecedents and outcomes adopt a variance epistemology while investigators examining emergence, development and growth draw on process epistemologies (Van de Ven, 2007). The author argued that these epistemologies are in some way complementary because the research from a variance model has an underlying process explanation.

Variance and process epistemologies have guided researchers to attend to time using approaches such as Latent Growth Modeling, Growth Mixture Modeling and Latent Class Growth Modeling (Vandenberg & Lance, 2000; Bentein et al., 2005; Wang & Bodner, 2007; Vandenberghe et al., 2010). Researchers have adopted experience sampling methodology to capture intraindividual change (Fisher & To, 2012) and used daily diary studies (Binnewies & Wörnlein, 2010; Claessens et al., 2010). Studies adopting single latent growth models have examined change in new comer socialization (Vandenberg & Lance, 2000) and proactivity (Chan & Schmitt, 2000). Others have studied dynamic relationships using multivariate latent growth models to study changes in: turnover and commitment (Bentein et al., 2005), changes to supervisor support and socialization after organizational entry (Jokisaari & Nurmi, 2009), dynamic mediators of individual and team performance (Pitariu & Ployhart, 2009) and relationships between role stressors, job attitudes, turnover intentions and well-being (Vandenberghe et al., 2010).

Latent growth models (LGM) assume that all individuals come from the same population and share the same population parametres- slopes, intercepts and error variances (Wang & Bodner, 2007). A population may have latent groupings and membership of a latent class impacts the shape of a growth trajectory. With the assistance of Growth Mixture Modeling, Qureshi and Fang, (2011) found that socialization trajectories among members of an open software development group were associated with

different periods of time taken to achieve core developer status. Scholars have also adopted survival analysis to examine time to events such employee turnover, and survival analysis reflects the expected speed and the probability of turnover (Kammeyer-Mueller et al., 2005).

Emerging methodological improvements include intra-team longitudinal perspectives, which uses a bottom up approach to studying team process dynamics (Li & Roe, 2012). Dynamic processes are studied using intraindividual trajectories which describe team processes in terms of: change direction, change degree and change rate which are used to create an inventory of temporal dynamic patterns. Step two depicts temporal dynamics using trajectories, step three clusters trajectories and step four links antecedents and consequences to temporal dynamics. The authors developed this method in response to the criticism of methodological misfit arising from the study of dynamics using variables. These recent developments are compared and contrasted in Table 4 using variance and process approaches.

Table 4

Summary of recent methodological developments

	Variance approaches	Process approaches
Philosophies	Substance	Process
Tenets	World consists of fixed entities with varying attributes. Change is captured by variables.	The world is made up of entities that participate in events. Entities change over time.
Research Questions	What	How
Emphasis on	Relationships between variables	Understanding underlying mechanism through narrative
Design	Longitudinal	Multiwave
Time treated as	Variable	Passage, becoming and perishing
Methods	Quantitative	Mixed Methods
Statistical approaches	SEM,LGM	LCGM[a], GMM[b], pattern identification, sequence methods

Source Adapted from Van de Ven (2007)

Note. [a] LCGM refers to Latent Class Growth Models, [b] GMM means Growth Mixture Models

The ideal candidates to address this call for research are time related individual differences. Researchers know very little about long term continuity and change in time related individual differences such as time perspective. Typically, change and continuity are regarded as mutually exclusive and are inferred using a 'chunk of time' inherent in a retest design. The purpose of the present study is to address continuity and change in the dispositional view of time perspective using the model developed by Zimbardo and Boyd (1999) by positioning time related individual differences within the debate on continuity and change.

To summarize the section, recent developments incorporating time into organizational research is attending to new temporal constructs, dynamic features and advocating studies of long term stability and change. The various calls for time related research produced a diversified response which may be synthesized using variance and process approaches. Time has been treated as a variable which is used to describe the unfolding changes in other variables or time is treated as passage which highlights unfolding and perishing.

2.4 CHAPTER DISCUSSION AND CONCLUSIONS

To recap, chapter two outlined the different times and centred these times on the debate of continuity and change. Secondly, it outlined the different times and time concepts in organizations and developed the debate on continuity and change at different units of analysis using practice based views and clock time. Thirdly, continuity or change was shown to be inconsistent with developments in the individual differences literatures and discussion of continuity and change in the broader OMT literature. Finally, some new developments in time related research are in progress along multiple lines such as: new construct

development, dynamic relationships, temporal relationships and calls for the study of stability and change.

Continuity and change as a temporal theme is firmly located within the temporal research agenda (Roe, 2008).The theme of continuity and change is also present in organizations at different levels of analysis. Discussions about continuity and change in organizations have moved from a view of either or to the recognition of their coexistence. The coexistence of continuity and change are depicted as tensions which occur in clock time between forces of inertia and forces of change e.g. punctuated model of group development or models of organizational change. These models suggest that the status quo is stability which is punctuated by periods of change. These tensions are also present in practice based explanations for continuity and change which arise from socially constructed meanings of time and are evident in temporal work.

Thinking about continuity and change as coterminous has not yet reached time related individual differences. Time related individual differences are developed within the tradition of differential thinking which generalizes findings across individuals. Under differential thinking it appears in general that the presence of rank order consistency is generalized to the individual level of analysis. Personality development researchers have challenged this view and found that continuity and change can co-exist rather than being mutually exclusive.

To conclude, the central theme of the chapter is continuity and change which has its roots in discussions on being and becoming. Being reflects the static while becoming invokes the dynamic. Traditionally, within the individual differences literature continuity and change are seen as mutually exclusive, however multilevel thinking about organizational change and team development shows that continuity and change can coexist. However, time related individual differences are out of sync with the wider acceptance of

continuity and change as co-existing in the broader OMT and individual differences literature.

The study of long term continuity and change is important because they force researchers to update their extant knowledge (Roe, 2005). Continuity and change are inherently temporal and highlight the importance of a theory's validity interval or the period of time over which a theory's claims are valid (Zaheer et al., 1998). Time related individual difference researchers do not distinguish between continuity and change, at the group and individual level, and retain an inadequate understanding of these important temporal features. The study of continuity and change in time perspective is neglected and the present study attempts to address this oversight.

CHAPTER 3

TIME PERSPECTIVE LITERATURE REVIEW

INTRODUCTION

The time perspective literature will be examined over two chapters. Chapter three provides a broad over view of its conceptualization, measurement and schools of thought. Chapter four specifically examines the dispositional view of time perspective developed by Zimbardo and Boyd (1999). The chapter is divided into three sections which are shown in Figure 5. Section one overviews the conceptualization and measurement debate. Section two discusses the different schools of thought examining time perspective. Section three develops the dispositional view of time perspective espoused by Zimbardo and Boyd (1999). The chapter ends with a discussion and conclusion arguing that it is time to begin a discussion on the themes of continuity and change using the dispositional view of time perspective developed by Zimbardo and Boyd (1999).

CHAPER 3 TIME PERSPECTIVE LITERATURE REVIEW

| Chapter Introduction | → | Section one | → | Section two | → | Section three | → | Chapter Discussion and Conclusion |

Section one ↓ Conceptual and measurement

Section two ↓ Different schools of thought

Section three ↓ Dispositional view Zimbardo and Boyd(1999)

Conceptual and measurement ↓ Orientation to and evaluation of past present, future

Extension Content Time remaining

Direct and indirect measures

Different schools of thought ↓ Cognitive social theory

Identity based

Life span

Development

Dispositional

Dispositional view Zimbardo and Boyd(1999) ↓ Orientation to and evaluation of past present and future

Disposition

Adresses measurement issues

Figure 5 Layout of chapter three

Terminology

Before discussing the conceptual and measurement challenges surrounding time perspective, the position adopted in the review is as follows. Current practice is to treat time perspective and time orientation synonymously and interchangeably (Zimbardo &Boyd, 1999; Luyckx et al., 2010; Ely & Mercurio, 2011; de Bilde et al., 2011; Peetsma & van der Veen, 2011), and this practice is followed. The definition adopted of time perspective is as follows, "time perspective is defined as the often nonconscious process whereby the continual flows of personal and social experiences are assigned to temporal

categories, or time frames, that help to give order, coherence, and meaning to those events," (Zimbardo & Boyd,1999, p.1271).There is some confusion about the terms continuity and stability. Rank order stability is taken to imply the absence of change, which may be misleading (Roberts et al., 2008). Given the lack of research examining long term stability and change in time perspective, the term continuity will be used instead. The term continuity will be used in place of stability except when referring to the temporal research agenda advanced by Roe (2008).

3.1 CONCEPTUALIZATION AND MEASUREMENT

Time perspective was considered as a time related individual difference in chapter one. The purpose of the section is to demonstrate that researchers are divided on how to conceptualize and measure time perspective.

3.1.1 Conceptualization

The field of time perspective is characterized by diversity in measurement and conceptualization, and the lack of collaboration between researchers to create consensus is evident (Zimbardo & Boyd, 2008). Traditionally, the conceptualization debate centres on the use of different terms to imply the same construct such as time perception, time sense, time perspective, time orientation (Wallace, 1956) and time preference

(Chisholm, 1999) and these differences have led to criticism of construct validity. Although the field suffers from confusion in nomenclature, terms have different interpretations.

Time perception also refers to succession and duration and how we perceive change (Fraisse, 1963; Fraisse, 1984) rather than to an orientation to time. Time preference indicates an individual's choice of a reward now or at some point in the future. Time orientation reflects an orientation toward past, present and future but is used

interchangeably with a broader construct of time perspective.

Time perspective can be defined as "the totality of the individuals views of his psychological future and his psychological past existing at a given time"(Lewin, 1951, p. 75). It is described as a cognitive filter that parses or partitions human experience into temporal categories of past, present and future (Zimbardo & Boyd, 1999; Drake et al., 2008; Holman & Zimbardo, 2009) or it refers to "the composite cognitive structures that characterize the way the individual projects, collects, assesses, values and organizes events that reside in a distinct temporal foci."(Lasane & O'Donnell, 2005, p. 12).

It is also considered as a "cognitive-motivational concept that refers to thoughts and attitudes toward the past, present and future"(Mello et al., 2009, p.539). It is regarded as a higher level construct demonstrating different dimensions such as extension, density and realism (Greene & De Backer, 2004), valance, accessibility, content (Nurmi 1989; Nurmi 2005), structure and organisation (Lasane & O'Donnell, 2005), opportunities and focus on limitations (Cate & John, 2007), time orientation (De Volder, 1979), balance (Boniwell, 2009) and it may be regarded as a global or domain specific construct (Peetsma et al., 2005).

Extension describes the time span in which one makes plans (Husman & Lens, 1999) and a person can extend into the future and past. Valence describes the subjective evaluation by the individual of a life domain (Peetsma & van der Veen, 2011). Density refers to the volume of thoughts and a feeling a person has in relation to a specific time zone of past, present and future, such as having a nostalgic or pessimistic view of the past. Accessibility describes the ease with which a person can recall and use information taken from different regions of time. Content shows the medium through which we access the past, such as memory and demonstrates how individuals connect past, present and future. Some individuals may not see that their present is a result of their past action or inaction

while others use goal setting to shape their future.

Time perspective is also defined as a general orientation toward, and or, preoccupation with the past, present or future (Husman & Lens, 1999; Bartel &Milliken, 2004; Ballard & Seibold, 2004b; Worrell & Mello, 2007; Luyckx et al., 2010; Fieulaine & Martinez, 2010; Dunkel & Weber, 2010) or as an ability to plan and organize events beyond the present (Seijts, 1998), or as a reflection on the past and anticipation of the future (Lennings & Burns, 1998). The differing conceptualizations of time perspective have led to the development of projective techniques and direct measures.

3.1.2 Measurement-projective techniques

The thematic apperception test (TAT) (Murray 1938, cited in Lasane & O'Donnell, 2005, p.16), the incomplete thoughts test (ITT) (Ruiz & Krauss, 1968) and the story completion test (SCT) (Kandel et al., 1981) are described as projective techniques. To assess time orientation, TAT subjects are presented with five cards and asked to tell a story about the picture on the card. The stories are classified according to the percentage of references made to the past, present and future. In the incomplete thoughts test, a respondent completes sentences and the frequencies of future and present tenses included in the sentences are used as an index to classify individuals into past, present and future. The story completion test requires subjects to complete a story once they are given a root sentence and respondents are classified into past, present and future.

In Cottle's (1968) experiential inventory, individuals disclose the top 10 most important life experiences and these are classified into past, present and future. The total number of experiences is allotted to each time zone and the one with the most allotted experiences is indicative of one's time orientation. The density scores are used to measure the level of involvement with past, present and future i.e. time orientation (De Volder, 1979). In the time reference inventory (Roos & Albers, 1965), respondents are asked

questions and they choose a response of past, present, future and these responses are supposed to reflect the respondent's time orientation. The lines test (Cottle & Pleck, 1969) is used to categorize one's involvement with the past, present and future through the length of the lines drawn by the respondent. Projective techniques were criticized on the grounds of low reliability, scoring difficulties and on the basis that they measured different meanings of time perspective (Zimbardo & Boyd, 1999).

3.1.3 Measurement-direct measures

Surveys are also used to measure time orientation (Braely & Freed, 1971; Gjeseme, 1975). The time reference inventory (Roos & Albers, 1965) presents individuals with positive, neutral and negative statements relating to past, present and future and asks respondents to record the age at which they believe the statement applies e.g. I believe the happiest time in my life was in the past, present, future. Individual scores are found by totalling the number of items selected and average years projected into the future. The measure is used to calculate temporal extension.

Authors have developed inventories to directly measure time orientation which grew from efforts to link time orientation with motivation (Lasane & O'Donnell, 2005). Western cultures value achievement and place significant importance on the future as an arena for achievement. Early direct self-report measures include the Heimberg Future Time Perspective Inventory (Heimberg 1963, cited in Lessing, 1972). The measure consists of statements which were scored using a seven point likert scale and the scale score is indicative of the extent of a respondent's cognitive-motivational future time perspective. The inventory was shortened by Gjesme (1979) to create a four factor model of involvement, anticipation, occupation and speed.

Other direct measures of time orientation include: the time structure questionnaire (Bond & Feather, 1988) organisational members' experience of time (Ballard & Seibold,

2004b) and time styles (Usunier & Valette-Florence, 1994) and the temporal satisfaction with life scale (Pavot et al., 1998), which rates the extent of positive attitudes to past, present and future. To address the shortcomings of projective techniques and unidimensionality of direct measures, a broader range of time orientation dimensions was developed by (Zimbardo & Boyd, 1999; and Jones et al. 2004). Zimbardo and Boyd (1999) developed a 56 item inventory to measure time perspective as a disposition and they demonstrated five time perspectives: past positive, past negative, present fatalism, present hedonism and future time perspective. The three component model of future orientation (Seginer, 2009) demonstrates a motivation, cognitive representation and behavioural dimensions to future time perspective. This model draws on the future orientation questionnaire which asks respondents about their hopes and fears for the future, work, career and domains of marriage and family.

Recent developments in cognitive motivational schools using direct measures include the Adolescent Time Perspective Inventory-Time Attitudes (ATP-TA) (Worrell & Mello, 2009). This measure of time perspective is a state measure and it contains six time perspectives: future negative, future positive, present positive and negative, past positive and past negative. The inventory claims the following advantages over the ZTPI: higher reliabilities, stable factor structure using invariance testing between German and U.S. samples, satisfactory SEM fit indices and inclusion of positive and negative evaluation of the past, present and future (Worrell et al., 2011). The inventory demonstrated discriminant validity using GPA scores, school belonging, academic self-concept, future will work out, hope, perceived life chances, optimism, self-esteem and perceived stress. The inventory proposed by Worell and Mello (2009) was not considered because it is designed for adolescents aged between 12 and 19 years of age, is limited to educational settings, it is a state measure and does not have the set of relationships with relatively

broader outcomes relative to the ZTPI.

To summarize, the first section of chapter three outlined the conceptual and measurement concerns relating to time perspective which were noted by Wallace (1955) DeVolder (1979) and Lassane and O'Donnell (2005). The conceptual confusion has led to a pot pourri of measures. The main concern is that any comparison of studies about time perspective is erroneous because time perspective is measured differently and is conceptualized as an orientation toward past, present and future, temporal extension, and negative thoughts about the future, density, coherence and directionality.

The difficulty with projective measures such as TAT, SCT and ITT and drawing tasks is that they are used to measure extension, they are scored subjectively, address the cognitive dimensions of time orientation, but do not address the affective and behavioural dimensions (Lasane & O'Donnell, 2005) and they have been criticized on the ground of reliability and validity (Zimbardo & Boyd, 1999). Direct measures have been criticized on the grounds that they are unidimensional, (Seijts, 1998), they are regarded as bipolar constructs (Daltrey & Langer, 1984) and over emphasize the future at the expense of the present and past (Zimbardo & Boyd, 1999).

The different conceptualizations and measures of time perspective have been shaped by the diverse community of researchers who focus on different aspects of time perspective. The discussion on the schools of thought and conceptualization and measurement are used to (1) place boundaries on time perspective literature and (2) to locate time perspective in the continuity and change debate using the conceptualization and measurement of time perspective proposed by Zimbardo and Boyd (1999).

3.2 SCHOOLS OF THOUGHT

The aim of section two of chapter three is to show that there are different schools of thought examining time perspective in diverse ways.

The study of time perspective can be classified into different schools of thought such as identity based, cognitive perspectives, developmental approaches and dispositional views which adopt different interpretations of time perspective. A school of thought is defined as "small groups of mature scientists pursuing a reasonably coherent program of research side–by side with advanced students in the same institutional context and engaging in direct, continuous social and intellectual interaction, (Geison 1981, cited in Olesko, 1993, p.17). Schools of thought may be described as a theoretical framework that is associated with an active empirical research stream (McKinley et al., 1999).

3.2.1 Schools of thought-Cognitive Social Theory

The cognitive motivational school suggest that time perspective is conceptualized as a cognitive motivational concept linked with proximal and distal goals. The perspective focuses predominantly on the future and exploits the future-present link. Time perspective is operationalized as a distance or extension into the future. One's ability to perceive an instrumental relationship between long term goals and sub goals is essential to maintaining achievement motivation. The application of this perspective is in educational settings (De Volder & Lens, 1982; Husman & Lens, 1999; Simons et al., 2004; Lens, 2006; Lens et al., 2012). The perspective also encompasses self-regulation, cognitive, affective and behavioural approaches to time perspective (Seginer, 2009; Peetsma & van der Veen, 2011). Bandura (1991) suggests that we create cognitive representations of the future in our present and activities are converted to current motivators and regulators of behaviour. Individuals self-regulate within the context of goal setting and achievement,

and goal theory is consistent with cognitive social theory (Locke & Latham, 2002). In social cognitive theory, future time perspective refers the "degree to which and the way in which the chronological future is integrated in to the present life-space of an individual through motivational goal setting," (Husman & Lens, 1999: 114). Goals are a motivating factor in achievement, however, individuals can also be motivated to construct a future identity through identity based motivation (Oyserman & Destin, 2010).

3.2.2 Schools of thought-Identity based approaches

Identity based approaches to time perspective draw on the past and future as motivators to construct viable identities and avoid undesired identities. More generally, identity is "described as a complex system of self-definition, shaped within a social context that provides interpretation for life experiences and helps to guide life choices" (Erikson 1968, cited in Kerpelman et al., 2008, p.151)

When making decisions about what one would like to be, individuals explore and commit to an identity. The exploration and commitment to an identity is related to future, past and present time perspectives. Identity achievement reflects a commitment to an identity after a period of exploration. In Lukyxx and Lens (2010), time perspective and identity status demonstrated a reciprocal relationship. In a recent study (Laghi et al., 2013) examining the relationship between time perspective and identity status, the authors found that future time perspective and past positive were positively associated with an integrated identity status while a diffused status was correlated with present fatalism and lower future time perspective.

The second way in which identity literature informs time perspective literature is through identity based interventions which help to promote identity development (Schwartz, 2001). Identity based interventions such as possible selves are regarded as a mechanism for identity exploration and formation (Dunkel, 2000; Dunkel & Anthis,

2001). Scholars examining possible selves adopt a future time perspective to study individual hopes, fears and expectations relating to the future (Markus & Nurius, 1986; Oyserman et al., 2002; Oyserman et al., 2004; Oyserman and Fryberg, 2006; Oyserman, 2008; Lee & Oyserman, 2009a; Lee & Oyserman, 2009b; Oyserman & James, 2009; Oyserman et al., 2010; Destin & Oyserman, 2010). The possible self is expressed in the context of the ideal self toward which an individual strives, the real self-reflecting the potential to become, and the feared self is defined by the fears of becoming.

3.2.3 Schools of thought-Lifespan Development

Time perspective demonstrates plasticity in socioemotional selectivity theory through an expansive or contracting time perspective. Socioemotional selectivity theory (Carstensen et al., 1999) postulates that an individual's age related appraisal of time as expansive or contracting or their time perspective motivates them to choose between emotional or knowledge based goals (Lang & Carstensen, 2002). The theory is applied to the life span and shows that as people get older they perceive their futures as contracting, and choose social goals over knowledge-based goals. The perception that there is a limited time remaining acts as a motivator to pursue socially meaningful objectives rather than engaging in goal directed behaviour aimed at knowledge acquisition. Social goals focus on finding meaning in one's life, expanding one's social network and establishing "feelings of social embeddedness," (Carstensen et al., 1999, p.166).

Socioemotional selectivity theory also plays a role in the composition of personal networks when time is perceived as limited. When individuals perceive their future as restricted, they choose personal networks that can satisfy social and emotional goals while instrumental and knowledge based goals influence the choice of personal networks when time is appraised as expansive (Lang & Carstensen, 2002). Time perspective is viewed as an adaptable mechanism that is open to the influence of contextual factors (Löckenhoff &

Carstensen, 2004).

3.2.4 Schools of thought-Developmental Perspective

Developmental perspectives are more complex. Two strands of literature are linked to time perspective. The first literature examines how children adapt to the many facets of time such as learning about past, present and future, unidirectionality of time, recognition of temporal patterns and the development of temporal memory. The second area of research examines the content of future hopes, dreams and fears, which influences the formulation and achievement of future goals and decisions about life domains such as career, marriage and family (Seginer, 2009). The hopes and fears literature is more relevant to future time perspective. Future orientation is inherently connected with an individual's development (Nurmi, 2005) because we create our future through anticipation and goals, and we make plans to realize them. Children gradually learn about past, present and future through language development and conversations with mothers (Harner, 1981; Hudson, 2002), through socialization in school, through development of episodic memory and learning about time's arrow (Friedman, 2002; Friedman, 2003). Future time perspective develops from about 11 years onwards and prior to this age is entwined with fantasy (Peetsma, 2010).

The second context includes hopes and fears. Friedman (2008) argues that it is not until about 15 years of age that adolescents use imagery to represent time of the day, days of the week and months of the year. Developmental psychologists working with children and adolescents focus on the content of time perspective such as future hopes, dreams and fears and the content of time perspective can change as a function of the lifespan. Children's hopes and dreams are different from those of adolescents. Children's hopes and dreams for the future may focus on becoming an astronaut or racing car driver, while those of adolescents may be more realistic and defined in terms of career, marriage and

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family (Nurmi 1989; Seginer & Halabi-Kheir, 1998; Seginer & Lilach, 2004; Seginer & Mahajna, 2004; Nurmi 2005; Seginer, 2008; Peetsma & van der Veen, 2011). Adolescent time perspective research is largely future orientated. Adolescence is an important time for studying the development of time perspective because individuals acquire advanced cognitive abilities that permit them to consider the hypothetical (Keating 1990, cited in Mello et al., 2009).

The envisioning of a future is accompanied by hopes and fears which change as a function of the lifespan (Nurmi, 2005). At the age of 11, children contemplate future oriented topics such as career, marriage and family. The content of future time perspective in middle adulthood is defined around family and property related goals (Nurmi, 2005). He also argues that, as we age, the content of the future is defined in terms of health, leisure, lifestyle and religious topics. Developmentalists look at the changing content of future time perspective, but other researchers tend to focus more on time perspective as a disposition.

3.3 SCHOOLS OF THOUGHT-DISPOSITIONAL VIEW

The objective of section three of the chapter is to provide an introduction to the work of Zimbardo and Boyd (1999), who made a significant contribution to the time perspective literature by developing a valid and reliable measure.

3.3.1 Description

The dispositional approach to time perspective is regarded as context free and researchers in this stream regard time perspective as a stable individual difference or disposition (McGrath & Tschan, 2004; Seginer, 2009; Gupta et al., 2012). This perspective is central to the study because it fits within the theme of continuity and change. The dispositional approach to time perspective involves, thinking, appraisal and

action (Seginer, 2009). The thinking element is represented by the extent to which individuals weigh the future consequences of present actions (Strathman et al., 1994). Appraisal describes the extent to which individuals act to surmount obstacles blocking their pathway (Snyder et al., 1991) while action addresses planning, goal setting, and deadlines (Zimbardo & Boyd, 1999). Zimbardo and Boyd (1999), through a series of iterations, developed what is currently known as the Zimbardo Time Perspective Index or ZTPI.

3.3.2 Zimbardo and Boyd Time Perspective Index- overview

The Zimbardo Time Perspective Index, (ZTPI) originated with a study in Psychology Today which indicated a seven factor structure in Time Perspective (Gonzalez & Zimbardo, 1985). Using a 30 item survey, the authors found the following factors: (1) future, work motivation–perseverance, (2) present fatalistic, worry free, avoid planning, (3) present hedonistic, (4) future, goal seeking and planning, (5) time press, (6) future, pragmatic action for later gain and (7) future, specific, daily planning.

The Stanford Time Perspective Index (STPI), developed from Gonzalez and Zimbardo was referred to as a measure of time orientation (Lennings, 2000). The (STPI) contained 38 items across four scales (1) present hedonism (2) present fatalism (3) future and (4) past regret. Through scale revisions, the Stanford Time perspective Inventory expanded to a 56 item scale (Zimbardo & Boyd, 1999) and was renamed the Zimbardo Time Perspective Index.

The Zimbardo and Boyd Time Perspective Index was developed to measure time perspective in a valid and reliable way. Zimbardo and Boyd (1999) identified five time perspectives: future, present hedonism, present fatalism, past negative and past positive. The future time perspective is the most studied of all of the time perspectives (Boniwell, 2009).

Future oriented individuals, according to Zimbardo and Boyd (2008) tend to: obtain regular health and dental check-ups, be weight conscious, refrain from drinking, smoking and drug taking, have pensions and medical insurance, are depressed less and less likely to ruminate over past events, report higher levels of support from extended networks, take less risks, achieve higher grades, make more money, achieve higher education levels, make the best of difficult situations and focus on long term rather than short term gains.

Present hedonists tend to: live in the moment, crave excitement, take risks, and disregard the future consequences of present actions, develop addiction to drugs, and practice unsafe sex. They tend to be more aggressive, depressed, have more energy, and are less likely to wear a wrist watch. Present fatalists tend to believe they have little control over events and tend to be more: shy, anxious, lie more and have low self-esteem.

Past positive represents a nostalgic view of the past and is associated with friendliness, well-being, and low levels of depression, anxiousness and aggression. Past negative represents an aversive view of the past and is positively associated with gambling, lying and stealing.

Validation studies indicate that the factor structure replicates across different cultures and that research effort stresses construct, criterion and discriminant validity (Zimbardo & Boyd, 1999; Apostolidis & Fieulaine, 2004; Milfont and Gouveia, 2006; Worrell & Mello, 2007; Milfont et al., 2008; Liniauskaité·& Kairys, 2009; Shipp et al., 2009; Carelli & Wiberg, 2011). The 56 item scale has been translated into different languages and validated in various countries and it continues to be the most valid and reliable way of assessing individual time perspectives (Wakefield et al., 2010). Researchers have attempted to shorten the scale which resulted in poor psychometric properties (D'Alessio et al., 2003; Wakefield et al., 2010).

3.4 CHAPTER DISCUSSION AND CONCLUSIONS

Time perspective is examined from a: cognitive social theory, identity, life span, development psychology and dispositional perspectives. Time perspective, depending on the school of thought, is argued to be malleable or is considered to be a stable individual difference which predicts many outcomes. Time perspective is open to the influence of context using hopes and fears (Nurmi 2005; Seginer, 2008; Seginer, 2009), is adaptable in old age (Carstensen et al., 1999),provides a means of exploring and committing to identity through possible selves (Luyckx et al., 2010; Cadely et al., 2011) and is central to self-regulation and motivation to achieve distal outcomes through a goal hierarchy.

The different schools of thought use different ways of measuring time perspective, but they emphasise different aspects such as the content of future time perspective or the orientation aspect. Early measurement approaches such as projective techniques were criticised on the grounds of unreliability and construct validity. These approaches to measurement adopted different understandings of time perspective leading to inconsistent research findings.

The dispositional measure of time perspective was developed by Zimbardo and Boyd (1999) where time perspective is considered as an orientation to past present and future and it has proved popular because of its psychometric properties and its replicated factor structure. The measure provides a valid and reliable way to measure time perspectives and measures all three temporal categories. Despite the growth of time perspective, the entire field appears divided on philosophical, conceptual and measurement grounds.

Seginer (2009) characterized time orientation into thematic and athematic approaches. Athematic approaches reflect a generalized aptitude to think about temporal categories such as the future irrespective of context and these are considered as a

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personality. Thematic perspective addresses the role of events and experiences relating to the future i.e. future content. The theme of continuity and change is implicit in the thematic and athematic approaches. Athematic approaches, such as the dispositional view of time perspective, reflects stability in how one orients to the future, past and present.

This view has its roots in substance philosophy which suggests scientific laws are grounded in substance because it is unchanging. Substance denies change because it is unreal, but our experience unfolds from present to future and this experience has content such as hopes and fears and this content changes across the lifespan and in different domains of life. Changing future content echoes a process philosophy because as individuals age they move through different stages of life.

Time perspective has been conceptualized and measured differently which might be attributed to philosophical underpinnings. Life span development and development psychologists conceptualize time perspective as changing with life stages. Socioemotional selectivity theory shows that individuals can expand or contract their time perspectives in response to endings. Developmental approaches examine the content of future time perspective using hopes and fears, which unfold and perish with life stages. Implicitly these schools adopt a process approach to time perspective by their emphasis on life stages which shows changing content of future time perspective. Their focus is on events and how hopes and fears unfold. Cognitive and dispositional approaches adopt substance philosophies which emphasize fixed attributes of entities and variables. Currently, time perspectives are regarded as stable which reflects a short coming of the dispositional view of time perspective in that there is no defined boundary for change, and it is time to define that boundary.

To conclude the chapter, clearly there is no definitive view on conceptualizing and measuring time perspective. The schools of thought reviewed were cognitive

motivational, identity, life span, developmental and dispositional perspectives which attend to different aspects of time perspective such as extension (Simons et al., 2004) and content (Seginer & Halabi-Kheir, 1998; Seginer and Mahajna, 2004). The focus of attention is the model of time perspective espoused by Zimbardo and Boyd (1999). The model addresses the criticisms of reliability and validity raised and it represents a more balanced approach to time perspective in that past, present and future are considered. The scale has been validated in many cultures and demonstrates construct, criterion and discriminant validity and researchers have identified antecedents and outcomes.

CHAPTER 4

ANTECEDENTS AND OUTCOMES OF TIME PERSPECTIVE

INTRODUCTION

The central theme of interest is continuity and change in the dispositional view of time perspective. The aim of chapter four is to present the antecedents and outcomes of the five time perspectives identified by Zimbardo and Boyd (1999) to show that continuity and change are significantly under researched, which has implications for theory development. The chapter contains three sections. Section one overviews the literature to highlight areas of growth using the dispositional view of time perspective and it suggests that there is a strong commitment to creating consensus about the validity of the five time perspectives. Section two presents a discussion of the antecedents of time perspective and section three presents literature on the outcomes. The chapter follows the layout presented in Figure 6.

CHAPTER4 ANTECEDENTS AND OUTCOMES OF PERSPECTIVE

Chapter Introduction	→	Section one	→	Section two	→	Section three	→	Chapter Discussion and Conclusion

Timeless Research	Antecedents	Outcomes

Literature Classification Balanced time perspective Temporal therapy	Culture Demography Familly Attachment Life events Thinking about past, present and future Personality	Physical and mental health Wellbeing Aademic Organizations Sustainable behavour

Figure 6 Layout of chapter four

4.1 TIMELESS RESEARCH

The objective of section one of the chapter is to highlight that time perspective research is largely timeless and there is a continued commitment to validating the measure.

The literature using time perspective as a disposition has grown gradually since 1999 and output is diverse. The range of applications is evident in Figure 7. The most popular avenues are validation studies, substance abuse, health and academic arenas. Research has largely expanded using correlation and regression analysis. Research output has focused on growing time perspective's nomological network by relating it to other constructs. In his review of time in applied psychology, Roe (2008) classifies studies according to the sensitivity of their design to time. There are four classifications: (a) timeless (b) methodologically temporal, (c) conceptually temporal and (d) fully temporal. Timeless research is typified by cross sectional designs. Methodologically temporal research specifies the measurement occasions; usually a pre and post-test design, conceptually temporal designs consider various time concepts such as sequence and rhythms and fully temporal designs examine change over time, have multiple measurement occasions and emphasize dynamic features such as onset, duration and offset.

In the context of the current temporal research agenda, time perspective is largely timeless despite the opportunity to place it in at least a methodological category using the research on the balanced time perspective (BTP), which reflects an ability to switch between time perspectives depending on the prevailing circumstances. While the focus has been on examining the antecedents and outcomes of time perspective, there is a small literature on changing time perspectives which draws on the balanced time perspective.

4.1.1 Changing time perspective

The balanced time perspective BTP refers to one's ability to switch between different time perspectives depending on the situational demands (Zimbardo & Boyd, 1999; Zimbardo & Boniwell, 2004). Drake et al. (2008) indicated that respondents with a balanced time perspective showed higher average scores on the subjective happiness scale and the mindfulness scale relative to those with an unbalanced time perspective.

A balanced time perspective requires low scores on present fatalism and past negative and moderate to high scores on present hedonism and future time perspective. Boniwell et al. (2010) found that the BTP was positively related to higher life satisfaction higher positive effect, higher scores on actualization and time competence scale. The BTP is useful for monitoring time perspectives such as past negative and present fatalism because no good can come of these time perspectives (Zimbardo & Boyd 2008).The optimal score for future time perspective is 3.69, present hedonism 4.33, present fatalism 1.67, past positive 3.67 and past negative 2.1 (Zimbardo & Boyd, 2008).

The balancing of time perspectives implies that they demonstrate change. Research in the context of post-traumatic stress disorder showed that past negative, and present fatalism perspectives were lowered to minimal levels while future time perspective and past positive time perspectives were increased Sword et al., (2009), Zimbardo et al., (2012) and Sword et al.,(2013). Temporal therapy is a clinical intervention that seeks to achieve a balanced time perspective among those suffering from post-traumatic stress disorder (PTSD).
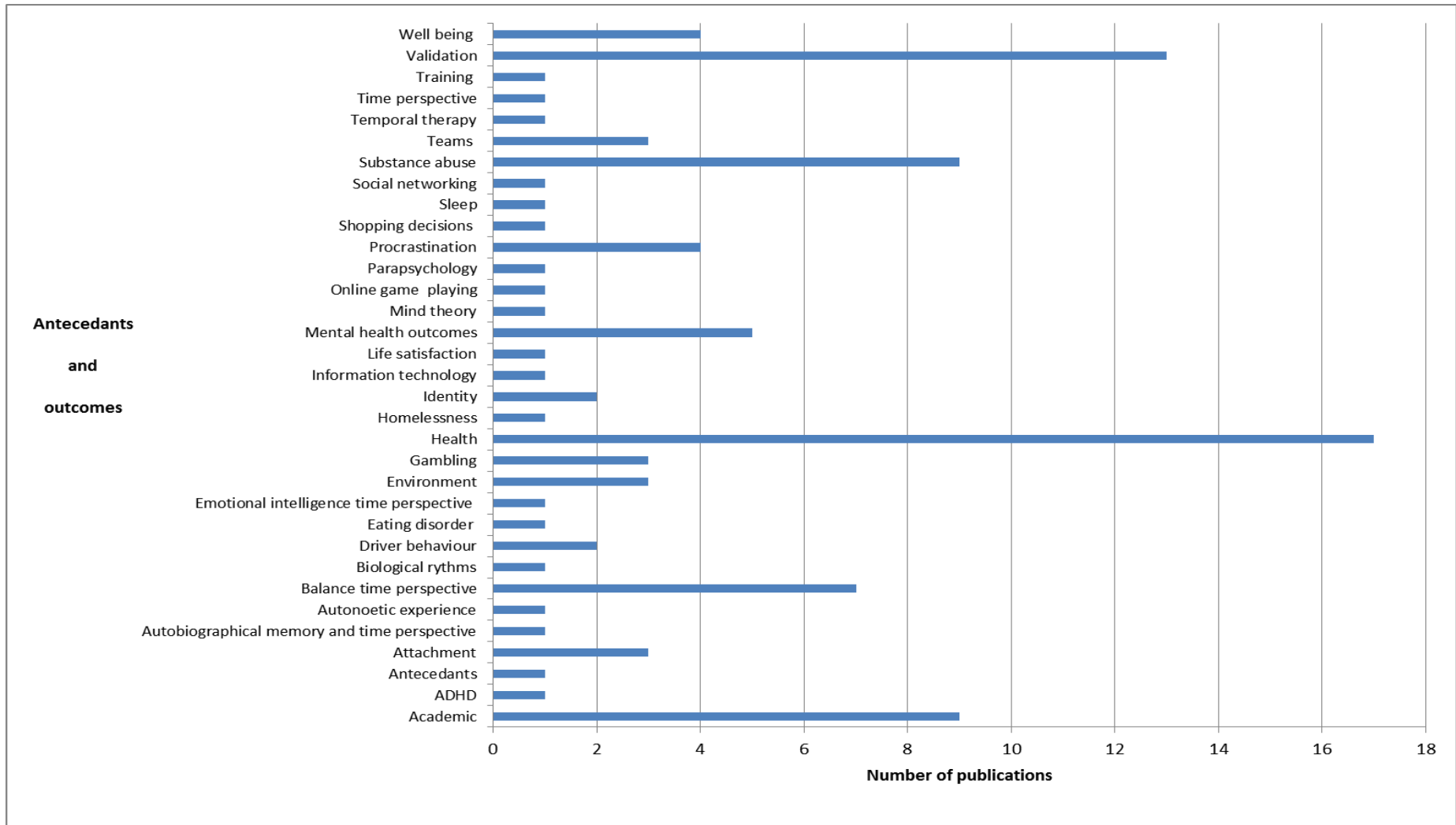
Figure 7 Summary of publications using the ZTPI from 1997-2013

The objective of this therapy is to reduce past negative and present fatalism and to increase future, past positive and present hedonism through reframing the events and experience that produced the PSTD (Zimbardo et al., 2012). Currently, the central focus on the BTP is how to calculate it rather than viewing the BTP as an opportunity to put time into time perspective. Clearly, researchers are not grasping this chance to investigate dynamic features such as the unfolding of changes in time perspectives as a result of temporal therapy.

4.1.2 Positioning the field

The diverse array of publications using the ZTPI is evidence of continuity, in that paradigmatic assumptions underpinning the dispositional view of time perspective may be described as maintaining a "consensus about the validity status of theory"(Mc Kinley, 2010, p.52). Continuity refers to the maintenance of linkages with intellectual frameworks that are recognized by researchers and the price of continuity is the cost of novel theoretical contributions (McKinley et al., 1999). McKinley (2010) argued that theory development in organizations is shifting away from consensus about validity toward theory development for its own sake.

He describes this shift in terms of movement away from replication and instrument standardization toward the development of theory as an end in itself. His comments have implications for time perspective research. For time perspective, the consensus emphasizes replication, instrumental and definitional standardization and new theory development reflects theory testing to create consensus about the validity or invalidity of theory. The most popular lines of research using the ZTPI include validation (replication) arising from cross cultural comparisons using the ZTPI. The validity of the measure is examined (instrument and definitional standardization) and new theory development occurs when a new antecedent, outcome, mediator or moderator is found which creates

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consensus that the dispositional view of time perspective is valid.

To summarize, the dispositional view of time perspective is situated within the current temporal research agenda, but it is silent on continuity and change. The growth in the literature since 1999 has occurred to bolster the consensus about the validity of the measure. This approach explains why time perspective research is timeless; the focus is not about time it is about creating consensus that time perspective is a stable individual difference. This consensus has been created through replication, new theory development and instrumental and definitional standardization.

4.2 ANTECEDENTS OF TIME PERSPECTIVE

Section two of the chapter presents the antecedents of time perspective. The antecedents are organized in a multilevel structure to show that time perspectives are shaped by macro and micro level factors such as culture, demographics, family and individual level factors. Figure 8 shows the nomological network with antecedents of time perspectives on the left and the outcomes on the right. The balanced time perspective and temporal therapy are shown in the centre because they deal with time perspective itself.

4.2.1 Antecedents - culture

Antecedents of time perspectives and differences in time perspectives are a function of national culture, social institutions, gender and location. Time perspective has also been applied to team settings (Waller et al., 2001; Bartel & Milliken, 2004) and teams work across different cultural environments and demonstrate time perspective heterogeneity (Gibson et al., 2008). The authors propose some antecedents of heterogeneity and homogeneity of time perspective such as national culture, firm level global integration and environmental volatility. Global teams may contain individuals from a variety of

different nationalities, backgrounds and cultures. Work by (Kluckhohn & Strodtbeck, 1961) showed that five US subcultures differed in their orientation toward past, present and future. Antecedents of future time perspective include: living in a temperate zone, being part of a stable family and society, religion, education, stage of life, having a job, technology, being successful, and having future oriented role models (Zimbardo & Boyd, 2008). Individuals who live in more temperate climate, such as that prevailing at the equator, see little variation in their day and tend to adopt a present time perspective (Zimbardo & Boyd, 2008). We are born as present-oriented infants and through socialization we learn future time perspective (Zimbardo & Boyd, 2008).

The demographic antecedents include: religion, culture and education, age and gender

4.2.1.1. Religion

Other antecedents to time perspective include religion. The protestant work ethic has been cited as an antecedent to future time perspective (Zimbardo & Boyd, 2008) on the grounds that materially successful individuals were predestined to enter an afterlife. Research conducted by Mudrack (1997) suggests that the Protestant Work Ethic (PWE) is a personality variable which has more to do with a work ethic rather than a religion. In Mudrack's study, the PWE is considered as a multidimensional construct consisting of hard work, asceticism, negative views arising from the absence of hard work, and anti-leisure. The results of the study showed that hard work dimension significantly correlated with the future and present dimensions of the time structure questionnaire (Bond and Feather, 1988) and, according to Zimbardo (2010), protestants are more future oriented than Catholics.
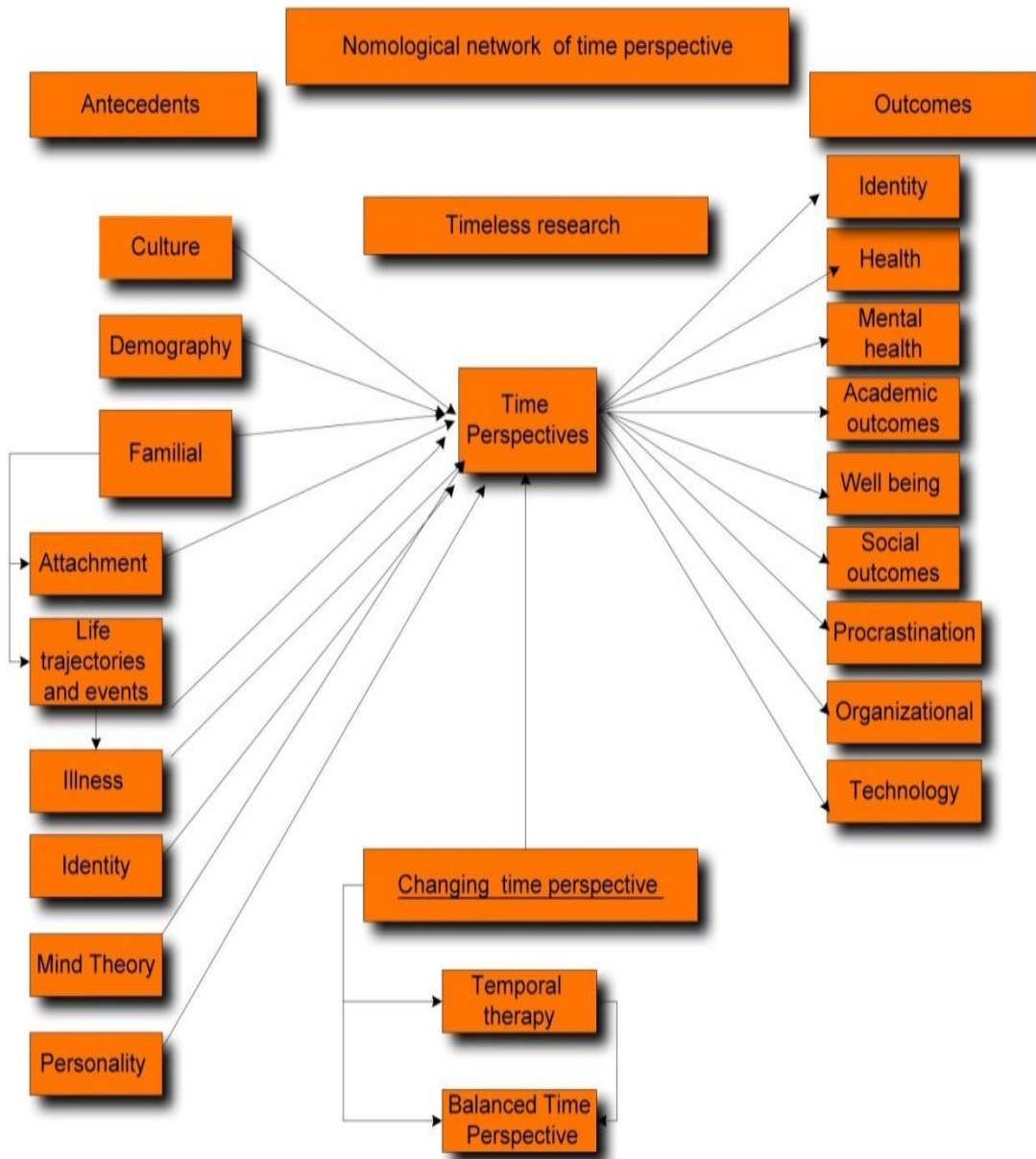
Figure 8 Time perspective's nomological network

4.2.1.2 Education

Education is an antecedent to future time perspective (Zimbardo & Boyd, 2008). Studies examining the relationship between education and time perspectives range from academically talented adolescents (Worrell & Mello, 2007) to university students (Zimbardo et al., 1997; Zimbardo & Boyd, 1999; Keough et al., 1999; Harber et al., 2003; Boyd & Zimbardo, 2005). The results of these studies show that education as indicated by grade point average is positively correlated with future time perspective and past positive time perspectives and negatively correlated with present hedonism, past negative and present fatalism. University students showed that hours spent preparing, academic application and academic orientation were negatively correlated with present fatalism, past negative, present hedonism and past negative (Horstmanshof & Zimitat, 2007). The authors found that future ime perspective is a correlate of academic achievement and positively correlated with hours spent preparing, academic application and academic orientation.

Studies examining the relationship between time perspective and education tend to use education as an outcome variable. Time perspective is also linked with occupation and years spent in education (Guthrie et al., 2009). In this study individuals of varying socio economic status showed that those who were in professional occupations and who had more formal education scored higher on future time perspective and obtained lower scores on present fatalism relative to those with less formal educations and non –professional jobs.

4.2.1.3 Age and Gender

Age and gender are both correlates and predictors of time perspective. The relationships between time perspective and age is ambiguous (Mello & Worrell, 2006;

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Milfont et al., 2008). Studies report a positive relationship between future time perspective and age (Zimbardo & Boyd, 1999; Hamilton et al., 2003; Holman & Silver, 2005; Mello & Worrell, 2006; Corral-Verdugo, 2006; Ferrari & Díaz-Morales, 2007), a negative relationship between age and present hedonism (Apostolidis et al., 2006a; Dunkel & Weber, 2010) and no relationship between age and time perspectives (Préau et al., 2007; Milfont et al., 2008).

Research examining the relationship between gender and time perspective appears inconclusive. Females score higher relative to males on past positive and future time perspectives (Zimbardo & Boyd 1999), while no gender differences in time perspectives were reported by Corral-Verdugo (2006) and Dunkel and Weber (2010). In a validation study using a Lithuanian sample (Liniauskaité & Kairys, 2009) found that males scored higher relative to females on across all five time perspectives.

4.2.2 Antecedents-life trajectories and life events

The role of context as a predictor of time perspective is examined in life history trajectories. "Life history theory is a mid-level theory derived from evolution" (Dunkel & Weber, 2010, p.96). Life history theory asserts that individuals will differ in life history strategies aimed at growth, parenting and reproduction (Belsky et al., 1991). Individuals may follow one of two types of trajectories, which describe the trade-offs between having many offspring and parental investment. Type one trajectories describe fast growth, many offspring and reduced parental investment and are characterized by: familial circumstances that emphasize relationships as self-serving, promote untrustworthiness, resource scarcity and environmental uncertainty.

Life history strategies adopted by individuals in these circumstances focus on the short term (Belsky et al., 1991) and such individuals will focus on their own growth and reproduction rather than on parenting. Type two trajectories involve gradual growth with

fewer offspring and higher levels of parental investment and these are described in terms of familial circumstances that emphasize trustworthiness, relationships are regarded as having mutual benefit, resources are readily available and environmental circumstances are relatively more stable (Belsky et al., 1991) and there is a focus on the long term. Individuals following type two trajectories tend to emphasize parental investment rather than growth and reproduction. Life history strategies positively predicted future time perspective and present hedonism while negatively predicting the past negative time perspective (Dunkel & Weber, 2010).

Living in a stable family environment supports the development of a future time perspective (Zimbardo & Boyd, 2008). Social development environments that were characterized by violence, proclivity for harassment and being victims of theft predicted present hedonism or a time perspective that emphasized the here and now (Kruger et al., 2008). Positive socio-developmental environments that: demonstrate help toward others, are safe, emphasize positive socialization and perceptions of friendly neighbours, positively predicted future time perspective and negatively predicted a present orientation.

Present hedonism was also predicted by aggression, while the availability of resources predicted future time perspective. Other researchers (Fieulaine & Apostolidis, 2007) studied the relationship between socioeconomic deprivation and time perspective and found that deprivation positively predicted past negative time perspective and negatively predicted past positive time perspective. Life trajectory theory also addresses attachment and its relationship with time perspective (Kruger & Fisher, 2008). Life history represents a context that shapes time perspectives, and life contexts such as serious illness can also predict time perspectives.

4.2.3 Antecedents-serious illness

Antecedents of time perspective can also be found in the context of life events such

as serious illness. In a study on traumatic reactions to chronic illness and disability arising from diabetes, sufferers found that denial, acknowledgement and adjustment predicted future time perspective (Martz & Livneh, 2007). Denial about the illness negatively predicted future time perspective in that the more sufferers were in denial; the less they focused on the future. Denial appears to form a protective block against exposing oneself to a perceived negative future filled with difficulties associated with the illness. Acknowledgement and adjustment were positive predictors of future time perspective in that they facilitated the future acceptance of the difficulties posed by diabetes. Life trajectories examine the impact of family settings which also raise issues of attachment and identity as time perspective antecedents.

4.2.4 Antecedents-attachment and identity development

Time perspective is also predicted by attachment relations (Belsky et al., 1991). Research conducted by Laghi et al. (2008) demonstrated that adolescents with low parental attachment predicted past negative time perspective while high parental attachment predicted past positive, present hedonism and future time perspectives. Research evidence suggests that attachment to parents and peers (Laghi et al., 2008), life history events, identity commitment and personality (Dunkel & Weber, 2010), the social development environment (Kruger et al., 2008) are predictors of time perspectives.

Attachment is related to identity development (Samuolis et al., 2001). Identity commitment positively predicted future time perspective and negatively predicted present hedonism and present fatalism (Luyckx et al., 2010). Identity styles also predicted different time perspectives. The information style positively predicted future time perspective and the diffuse avoidant style positively predicted present fatalism. Research relating the identity status model Marcia's (1966) with time perspective demonstrated that an achieved identity status reflected higher past positive and future time perspectives

relative to moratorium, foreclosure and diffusion statuses. The diffusion status reflected higher present hedonism, past negative and present fatalist time perspectives (Laghi et al., 2013). Building and committing to an identity involves thinking about the past and future, and such thinking is related to our time perspectives. While antecedents of time perspective are shaped by cultural, demographic and familial factors, there are individual level antecedents such as mind theory and personality.

4.2.5 Antecedents-mind theory

Individuals, through mental time travel (Suddendorf & Corballis, 1997) can use the present to plan for future events by drawing on past experience. Through evolution, human beings learned to mental time travel by (a) creating symbolic representations of reality (b) placing these symbolic representations into different locations and (c) creating relationships between these symbolic representations (Fortunato and Furey, 2010). These developments are reflected in the extent to which we think about the present, future and past (Fortunato & Furey, 2011).

Thinking about past, present and future has a relationship with time perspective (Fortunato & Furey, 2010). These researchers found that future time perspective and present hedonism were positively predicted by present thinking. Past positive time perspective was positively predicted by present and future thinking while past negative was positively predicted by past thinking and present fatalism was negatively predicted by present thinking and positively predicted by past thinking.

4.2.6 Antecedents-personality

Studies using the ZTPI show that it correlates significantly with many other psychological constructs. High correlations between time perspective and other constructs raise concerns about discriminant validity. In a validation study conducted by Zimbardo

and Boyd (1999) the authors tested the discriminant validity between conscientiousness and future time perspective, and they found evidence to support the discriminant validity of future time perspective. Conscientiousness and neuroticism were statistically significant predictors of future time perspective. Neuroticism, Extraversion and Conscientiousness predicted present fatalism and, present hedonism was significantly predicted by openness, extraversion and conscientiousness and agreeableness. Past negative was predicted by neuroticism and extraversion (Dunkel & Weber, 2010).

To summarize section two of the chapter, time perspective is predicted and shaped by a set of multilevel interlocking factors ranging from culture, social, family demographic and individual level factors. Cultural values inform time perspective by emphasizing what values are important, which set the agenda for temporal socialization through the educations system. The familial setting shapes future and present time perspectives by creating or denying access to resources, and supporting or limiting attachment relations. Individual level factors such as personality and thinking about past, present and future have predictive value. However, the relationships between time perspectives, age and gender appears unclear.

4.3 OUTCOMES OF TIME PERSPECTIVE

The purpose of the section is to review literature on the outcomes predicted by time perspectives.

4.3.1 Outcomes-physical health

For the purposes of brevity, literature on substance abuse, gambling and addiction can be synthesised under physical and mental health. Across this literature, the general trend indicates that future time perspective is a positive predictor of physical and mental health outcomes (Daugherty & Brase, 2009). Time perspective influences decisions about

health because health issues tend to manifest themselves in the future (Daugherty & Brase, 2009) as a result of our present actions or inactions. Future time perspective positively predicted health protective behaviours such as taking exercise (Henson et al., 2006). Future time perspective is instrumental in decisions to participate in diabetes screening (Crockett et al., 2009), taking up the flu vaccine (Fieulaine and Martinez, 2009), protection against contracting HIV (Rothspan & Read, 1996; Aronowitz et al., 2005) and it predicted social relations, psychological well-being and level of independence among HIV sufferers (Préau et al., 2007).

The present and past time perspectives are also related to health. Research on the relationship between present hedonism and health related behaviour indicates that present hedonism is positively related to tobacco use and alcohol consumption and a larger number of unprotected sexual encounters (MacKillop et al., 2007; Daugherty & Brase, 2009). Health research has incorporated past negative and present fatalism, and among HIV patients, present fatalism negatively predicted: quality of life (Préau et al., 2007), seat belt use, condom use and use of birth control (Henson et al., 2006) and positively predicted tobacco use and health concerns (Daugherty & Brase, 2009). HIV research has indicated that present fatalism is positively correlated with the number of life time sexual partners and the number of sexual partners over a six month period (Rothspan & Read, 1996). A recent study of HIV sufferers in rural areas found that present hedonism was negatively related to the frequency of calling to a support service (Tucker et al., 2011). Time perspectives also predict mental health outcomes.

4.3.2 Outcomes- mental health

The World Health Organization (2010) defines mental health as " a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community."

Researchers have investigated relationships between time perspective and a variety of mental health outcomes such as suicidal ideation (Laghi et al., 2009; van Beek et al., 2009), trait anxiety and depression (Wakefield et al., 2010; Anagnostopoulos and Griva, 2011), psychological distress (Holman & Silver, 2005; Fieulaine & Apostolidis, 2007) and psychopathology (van Beek et al., 2011). Research indicates that: depression and past positive time perspective are negatively related and that past negative time perspective and present fatalism are positively correlated with depression (Zimbardo & Boyd, 1999).

Investigations of suicidal ideation reveal that past negative and present fatalism predict suicidal ideation (Laghi et al., 2009) and, in the same study, a past positive time perspective negated suicidal ideation as it provided subjects with a stable sense of continuity or roots (Zimbardo & Boyd, 2008). Suicidal ideation is linked with a sense of hopelessness because individuals lack positivity about the future (Mac Leod et al. cited in Van Beek et al., 2009, p 2) and increasing future time perspective among this group may negate suicidal ideation. In a further study, van Beek et al. (2011) found that present fatalism and past negative correlated positively with depression and that past negative was indicative of psychopathology problems.

4.3.2.1 Addiction

Time perspective is related to substance misuse (Goldberg & Maslach, 1996; Petry et al., 1998; Keough et al., 1999; Wills et al., 2001; Apostolidis et al., 2006a; Apostolidis et

al., 2006b; Pluck et al., 2008; Fieulaine & Martinez, 2010), gambling (Hodgins & Engel, 2002; MacKillop et al., 2006a; MacKillop et al., 2006b) and addiction to online gaming (Lukavska, 2012). The predominant finding among researchers is that present hedonism is positively related to substance use and future time perspective is negatively related to use and consumption of drugs and alcohol (Wills et al., 2001; Apostolidis et al., 2006a; Daugherty & Brase, 2009). A study of alcoholics enrolled in an abstinence programme indicated that future   time perspective predicted long term abstinence from alcohol (Lennings, 1996).

Recent research has explored the relationship between time perspective and the amount of time spent playing online games (Lukavska, 2012). The research found that the number of hours per week (HPW) and the number of hours per session (HPS) spent in online gaming was positively correlated with present fatalism. Future time perspective was negatively related to (HPS) and (HPW). Surprisingly, present hedonism was unrelated to both (HPS) and (HPW). Time perspectives are also related to more positive health outcomes such as well-being.

4.3.2 Outcomes-well-being

Well-being can be defined in terms of life satisfaction, positive and negative effect, actualization potential (Boniwell et al., 2010), and in terms of subjective happiness and mindfulness (Drake et al., 2008). Investigators have examined relationships between time perspective and well-being (Zimbardo & Boniwell, 2004; Drake et al., 2008; Boniwell, 2009; Boniwell et al., 2010) and found that past positive was significantly and positively related to happiness. Well-being was negatively and significantly correlated with past negative, and present hedonism showed significant and positive correlations with subjective happiness, self-efficacy and optimism (Boniwell et al., 2010). Future time perspective was positively and significantly correlated with life satisfaction, purpose in

life and optimism while past positive was positively and significantly related to satisfaction with life, subjective happiness, purpose in life and optimism. Present fatalism correlated negatively and significantly with life satisfaction, subjective happiness, purpose in life self-efficacy and optimism.

4.3.3 Outcomes-academic

Education is a means of socializing individuals to think about the future. However in schools, pupils do not always see the present-future link in terms of completing their education. A statistically significant and positive correlation between delay discounting and academic attainment was found by Freeney and O'Connell (2011) in a study of early school leavers. The present-future link in academic settings is also found using present and future time perspectives.

In educational settings the ZTPI relates to academic outcomes such as academic achievement (Mello & Worrell, 2006; Adelabu, 2007; Barber et al., 2009), academic engagement (Horstmanshof & Zimitat, 2007), achievement goals and study strategies (Phan, 2009), signing up for experiments (Harber et al., 2003), procrastination (Ferrari & Díaz-Morales, 2007; Díaz-Morales et al., 2008) and the seriousness of academic cheating (Worrell & Mello, 2007). In general, future time perspective positively predicts academic outcomes and these outcomes are negatively predicted by present oriented time perspectives. The future time perspective is generally positively correlated with grade point average as a measure of academic achievement (Zimbardo & Boyd, 1999; Mello & Worrell, 2006; Barber et al., 2009) while present fatalism and present hedonism were significant and negative correlates of grade point average (Zimbardo & Boyd, 1999; Mello &Worrell, 2006; Worrell & Mello, 2007; Barber et al., 2009).

Obtaining an educational qualification requires the student to get involved in university studies or to engage academically. The relationship between time perspective

and academic engagement indicates that students with a future time perspective were more likely to spend more hours studying, were academically conscientious, adopted deep and surface level learning approaches and liked academic endeavours (Horstmanshof & Zimitat, 2007).

Goal setting is inherently connected with time (Fried & Slowik, 2004) and students achieve academic success through goal setting. Future time perspective predicted mastery goals, performance approach, performance avoidance goals, deep processing and effort among a sample of university students (Phan, 2009). Future time perspective also plays a role in school retention and academic engagement among African American adolescents by promoting acceptance of and a sense of belonging in school relative to a present hedonistic time perspective (Adelabu, 2007).

4.3.4 Outcome-procrastination

Risks to achieving academically include procrastination which "concerns a person's ability to meet deadlines"(Ferrari & Díaz-Morales, 2007) or as an" irrational tendency to delay beginning and/or completing tasks that should be completed" (Lay 1986, cited in Jackson et al., 2003, p 17). Studies examining the relationship between time perspective and procrastination indicate an ambiguous relationship (Jackson et al., 2003; Ferrari & Díaz-Morales, 2007; Díaz-Morales et al., 2008). Procrastination was positively and significantly correlated with past negative, present fatalism, present hedonism and negatively and significantly correlated with future time perspective. Past positive was unrelated to procrastination (Jackson et al., 2003).

Procrastination can be described in terms of avoidant procrastination and arousal procrastination (Lay, 1986). Avoidant procrastination refers to putting something off due to a dislike of the activity while arousal procrastinators delay due to other commitments (Ferrari & Díaz-Morales, 2007). These authors propose that different forms of

procrastination are related to time perspectives. Future time perspective was significantly and negatively related to avoidant procrastination while present hedonism and present fatalism were significantly negative correlates of avoidant procrastination. These results were also supported by Díaz-Morales et al. (2008).

Arousal procrastination had significant and positive relationships between present fatalism, present hedonism and past negative time perspectives. Future time perspective was positively and significantly related to avoidant procrastination. Indecision as a form of procrastination was studied by Díaz-Morales et al. (2008), who indicated positive and significant correlations between past negative, past positive and present fatalism. The research also indicated that future time perspective and indecision were significantly and negatively correlated.

The relationship between time perspective and procrastination has also been studied in the work place (Gupta et al., 2012) and this research found that procrastination was negatively predicted by future time perspective, present hedonism and past negative time perspectives. In the work place, procrastination was positively predicted by present fatalism. Time perspective is embedded in other work place outcomes, but this literature is theoretical and applied to teams.

4.3.5 Outcomes-organizations

Although much is written on time and organizations, research on time perspective is scant within an organizational context. The state of the literature relating the ZTPI to organizational settings examines time perspective or time orientation in the context of diversity within multinational teams. Research describes propositions between time perspective and deadlines (Waller et al., 2001), time perspective heterogeneity and its predictors and outcomes (Gibson et al., 2008), time orientation and multinational teams (Arman & Adair, 2012) and shared temporal cognitions in present and future time

perspectives (Bartel & Milliken, 2004). Bartel's research indicated that future time perspective was not shared among teams and remained an individual difference variable. Waller and colleagues (2001) considered relationships between time urgency and time perspective to create four team roles based on deadline perception: the visioner, the organizer, the relator and the crammer. Each role is based on the interaction of time urgency (low- high), present time perspective and future time perspective. Crammers and organizers are characterized by high time urgency, but the crammer is present oriented while the organizer is future oriented. The relator and the visioner are represented by low time urgency. The relator is present oriented and the visioner is future oriented. These different roles interplay to influence the perceptions of deadlines as an outcome.

Gibson et al. (2008) discuss the antecedents, outcomes and mediators of time perspective heterogeneity in global teams. The authors suggest that time perspective heterogeneity is an important aspect of teams who work across multicultural environments which experience environmental volatility. The theme of time perspective heterogeneity is also examined in Arman and Adair (2012) who theorize about the relationship between group processes and different time perspectives. The authors argue that groups described by a present time orientation will focus on immediate goals while those with a future time orientation will attend to distal goals.

Organizations are moving toward environmental sustainability where individuals and groups are encouraged to adopt pro environmental or greening behaviour (Andersson et al., 2013).The special issue on greening behaviour in the Journal of Organization Behaviour did not incorporate time perspective which has implications for sustainable behaviour.

4.3.6 Outcomes-sustainable behaviour

Studies of sustainable behaviour indicate that: future time perspective predicts water

conservation (Corral-Verdugo, 2006) is positively correlated with environmental preservation (Milfont & Gouveia, 2006) and future time perspective plays a key role in influencing attitudes and behaviours toward the environment (Milfont et al., 2012). In the same study past positive is positively correlated with environmental preservation while present fatalism demonstrated a negative correlation.

To conclude, section three of the chapter; it appears that the literature using time perspective as a predictor far outweighs research on antecedents. Future time perspective has predicted positive health and mental health outcomes and future time perspective has emerged as a health protector. Water conservation and sustainable behaviour shows a positive relationship with future time perspective. Within education settings student achievement and goal attainment are positively predicted by future time perspective. Present hedonism predicts risky health behaviours, addiction and substance misuse. Past negative and present fatalism predict suicidal ideation. There is a virtual absence of temporal research when time perspective is contrasted against the prevailing temporal research agenda.

4.4 CHAPTER DISCUSSION AND CONCLUSION

Research on the dispositional view of time perspective appears diverse and unconnected. This research is largely timeless which is evident from the discussion on antecedents and outcomes of the different time perspectives, and it lacks a temporal research agenda. The predominant conceptualization of time perspective is that of a stable individual difference variable (Zimbardo & Boyd, 1999; Waller et al., 2001; Gibson et al., 2008), and is described as a personality trait (Levy & Earleywine, 2004; Milfont et al., 2008; Boniwell, 2009; Ely & Mercurio, 2011; Carelli & Wiberg, 2011) or disposition

(Mischel, 2004) which demonstrate relatively little change over time and across situations.

It appears that researchers are highly invested in expanding time perspective's nomological network, which is described as an interlocking system of laws that constitutes a theory where theoretical constructs are related to other theoretical constructs and observed variables (Cronbach & Meehl, 1955). The purpose of expanding time perspective's nomological network is to learn more about the construct (Cronbach & Meehl, 1955). The network indicates an increasing interest in establishing criterion validity, it has grown over time, but we know very little about time in the network. Building the nomological network is based on finding significant correlations between a number of theoretical constructs and observed variables (Van Erde, 2003). Time perspective continues to demonstrate methodological misfit (Edmondson & McManus, 2007) by defining it as a process on one hand and on the other, using variables to make predictions about processes and a similar observation was made in the team literature (Roe et al., 2012).

From Figure 8 it is clear that time perspective researchers have ignored a persistent issue which is the stability and malleability of time perspective (Seijts, 1998). Research output reflects substantial growth in individual differences which is supported by retest designs. Clearly, there is a lack of research examining rank order consistency over longer time periods where changes in temporal stability can be tested. Current time perspective, is preoccupied with prediction, and assumes that rank order consistency rules out the possibility of change. Time perspective research has evolved on the assumption that continuity and change is not multilevel and that time perspectives are stable or not.

Studying continuity and change requires longitudinal designs of more than two occasions so that individual records can capture continuity and change and cyclical

patterns (McGrath & Tschan, 2004). The few longitudinal studies available (Holman & Zimbardo, 2009; Luyckx et al., 2010; Holman, 2011) indicate mean level changes in time perspective as well as rank order consistency. Despite this small literature, investigators have not connected continuity and change with levels of analysis and assume to generalize continuity indicated by rank order continuity to other levels. Investigators need to know about the duration over which a theory is valid i.e. the long term stability and change of time perspectives and there is little research advancing knowledge on this topic. Continuity and change in time perspective remains under researched. To examine questions of stability and change, the field should shift its focus to longitudinal designs (Seijts, 1998).

Chapter 5

Continuity and change

INTRODUCTION

The aim of chapter five is to introduce the research questions by problematizing the dispositional view of time perspective espoused by Zimbardo and Boyd, (1999) in terms of in-house, paradigmatic and ideological assumptions and to place time perspective within discussions on continuity and change taken from personality development research.

Section one of the chapter highlights important assumptions that need surfacing: in-house assumptions, paradigmatic assumptions and ideological assumptions. Section two examines paradigmatic and ideological assumptions in more detail, and introduces an idealized framework for the study of change. Section three argues the case for continuity and change in time perspective using evidence from personality development and other dispositional constructs that demonstrate both continuity and change. The chapter closes with discussions and conclusions, and outlines the research questions.

The chapter concludes by suggesting that the present understanding of continuity and change in time perspective is limited and a broader understanding is possible if time perspective is placed within a multifaceted and multilevel view of continuity and change. The chapter follows the layout shown in Figure 9.

CHAPTER 5 CONTINUITY AND CHANGE

| Chapter Introduction | → | Section one | → | Section two | → | Section three | → | Chapter Discussion and Conclusion |

Problematize

Continuity or Change

Paradigmatic and Ideological Assumptions

Continuity and change in traits and dispositions

Inhouse assumptions

Continuity or change

Continuity and change multifaceted

Paradigmatic

Differential thinking and Ideological assumptions Moral imperative

Continuity and change

Personality and dispositional constructs

Research questions

Figure 9 Layout of chapter five

5.1 PROBLEMATIZING CONTINUITY OR CHANGE

The objective of the section one of the chapter is to suggest that researchers should focus on the coexistence of continuity and change as a theme rather than on their mutual exclusivity by acknowledging that continuity and change are multifaceted and multilevel.

5.1.1 Problematization

Problematization is an "endeavour to know how, and to what extent it might be possible to think differently about what is already known" (Foucault 1985, p.9 cited in Alvesson & Sandberg, 2011, p.253). To rally support for problematization, a typology of assumptions underpinning a field such as: in-house assumptions, root metaphor assumptions, paradigmatic assumptions, ideological assumptions and field assumptions is presented in (Alvesson & Sandberg, 2011).

In-house assumptions apply to a specific school of thought such as trait theories i.e. constructs are assumed to be trait like. Root metaphors are used to describe the boarder images of a topic and are used to conceptualize reality (Morgan, 1980). Ontological, epistemological and methodological assumptions underpin specific literatures and these assumptions define the nature of reality and the methods of inquiry to study that reality i.e. these assumptions are paradigmatic in that they define a world view (Morgan, 1980). Ideological assumptions refer to political, moral and gender-related assumptions relating to the subject matter. Field assumptions reflect wider beliefs about the subject matter that are held by a variety of different school of thought within and occasionally across paradigms. By challenging a select assumptions underpinning a view, it may have a larger payoff relative to questioning a wide array of assumptions (Sandberg & Alvesson, 2011) and the assumptions selected for discussion in section one are: in-house, paradigmatic and ideological.

5.1.2 In-house assumptions

5.1.2.1 Current thinking

In house assumptions focus on conceptualizations of continuity or change and assumptions about the measurement of change and continuity. The dispositional view of time perspective appears to hold that continuity and change are opposite ends of a spectrum and are mutually exclusive and that they are generalizable from a group to an individual. The dispositional view of time perspective suggests that it is stable (Waller et al., 2001; Gibson et al., 2008), is described as a personality trait (Levy & Earleywine, 2004; Milfont et al., 2008; Boniwell, 2009), is considered as a dispositional style or individual difference variable (Zimbardo & Boyd, 1999) and as such "represents a tendency to behave in certain kinds of ways if in certain kinds of situations ,"(Caspi & Shiner, 2006, p 301). The dispositional approach involves measuring personal attributes to explain behaviour and dispositions, and terms such as traits, personality, and individual characteristics are often used interchangeably (Staw & Ross, 1985), and these terms describe enduring and stable psychological differences between persons and are regarded as static (Davis-Blake & Pfeffer, 1989; Caspi & Shiner, 2006).

Stability has a number of different meanings within the psychology literature, (Taris et al., 1998); it refers to an enduring pattern of behaviour that is inflexible and stable over time, (Lozenweger et al., 2004). It is described as consistent which reflect "enduring qualities that contribute to personal tendencies and stable individual differences," (Cervone, 2004, p 184). Stability is also described in terms of different labels such as consistency versus discriminativeness (Funder, 1994), invariance and variability (Mischel, 2004), consistency versus change (Cervone, 2004), disposition versus dynamics (Mischel, 1973) and the person versus the situation (Davis-Blake & Pfeffer, 1989). Other

interpretations outlined by Rogosa (1995) include (a) the consistency over time of an individual (b) the consistency over time of the average individual, (c) the consistency over time of individual differences. The term stability is argued to be misleading and ambiguous because it denotes something that does not change (Roberts et al., 2008). A common practice among individual difference researchers is to assume that the presence of rank order continuity is the gold standard for asserting continuity. This unidimensional view has been challenged in personality development (Watson & Humrichouse, 2006; Blonigen et al., 2008; Vaidya et al., 2008a) and in literature examining achievement goals (Fryer & Elliot, 2007; Muis & Edwards, 2009). This confusion can be resolved by taking a multifaceted and multilevel approach to continuity and change.

5.1.2.2 Continuity and change as multifaceted

Problematizing continuity or change shows that there is an opportunity to embrace an alternative position that suggests the coexistence of continuity and change. Coexistence of continuity and change presents alternative views in addition to rank order consistency and helps to dispel the myth that the presence of rank order consistency excludes other forms of continuity and change. The dispositional view of time perspective fails to consider that continuity and change have a variety of meanings and can be operationalized differently (Vaidya et al., 2008a).

Roberts et al. (2008) classified continuity and change into (1) differential continuity, (2) mean level change (3) individual differences in change (4) ipsative continuity and (5) structural continuity and this is outlined in Table 5. To illustrate the point a boat analogy is used by (Edmonds et al., 2008). The analogy indicates that each form of continuity and change is independent. From the perspective of rank order consistency, each boat has a place to dock relative to other boats and this position is retained over time. Mean level change is reflected by the rise and fall of boats with the tide. Individual differences in

Table 5

Typology of continuity and change

	Relative	Absolute
Population	Rank order consistency	Mean-level change
Individual	Ipsative consistency	Individual differences in change
	Structural consistency	

Source (Robers,Caspi and Wood 2008,p 376)

change regard each boat as having different sizes and weights. Although the classification of continuity and change outlined is based on personality, it can provide some insights into clarifications in time perspective research. Table 5 highlights a rigorous approach to the study of continuity and change. The study of continuity and change has historically been problematic (Bereiter, 1963; Cronbach & Furby, 1970; Edwards & Parry, 1993). Early measures of change such as the difference score were criticised on the grounds of unreliability (Willett, 1994). However, clinical researchers have developed measures of individual change to correct for the unreliability of difference scores such as the reliable change index (Jacobson & Truax, 1991; Wise, 2004).

Investigations examining change and continuity have led researchers to adopt approaches such as latent growth modeling and rigorous invariance testing procedures to rule out the sources of error that might contribute to spurious change (Golembiewski et al., 1976; Vandenberg & Lance, 2000; Lance et al., 2000). Table 5 can be used to direct research effort to examine trait like properties for continuity and change using the group and individual level of analysis.

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5.1.2.3 Continuity and change as multifaceted-differential continuity

Differential continuity appears to receive most attention among time perspective researchers. Test-retest reliability is a measure of sample stability over time, (Nunnally & Bernstein, 1994; Terracciano et al., 2010) and is assessed by administering the same test to the same subjects at two points in time (Cronbach & Furby,1970). Large retest coefficients are believed to indicate greater continuity, or lack of change across time or that all individuals changed in the same way because they all experienced a normative event, but the size of the coefficient is not informative about the underlying processes of stability and change. Test-retest correlations of 0 indicate that a construct does not demonstrate rank order consistency while a value of 1 indicates strong rank order consistency , and values in between represent a grey area "where implications of the data for theory become elusive,"(Fraley & Roberts, 2005, p 62).

Test–retest correlations have received much criticism (Nunnally & Bernstein, 1994). Firstly, the appropriate length of the interval between test and re-test depends on the stability of the variables selected, for example, a year might be too long for an opinion item but appropriate for a psychological measure. The test-retest correlation value depends on the space between test and retest and, in general, the longer the interval between testing the lower the temporal stability coefficient (Watson, 2004).

Secondly, an assumption made about test-retest reliability is that test takers do not or have not changed over the time period of the two administrations. Correlations and covariances in a sample are collective measures that provide population information (Danziger, 1990; Grice, 2004; Lamiell 2004, cited in Hamaker et al., 2005, p. 209) and for a researcher to generalize from a sample to the individual assumes that there is homology across levels. The presence of practice or carryover effects enables respondents to solve problems more quickly the second time which can make the test-retest correlation between responses

spuriously high. Watson (2004) suggested that scholars have adopted an uncritical use of test-retest designs.

Under the test-retest design, stability is framed as a dichotomous outcome where something is considered stable or not. Significant retest correlations cannot be accepted as evidence of stability because they only indicate one's relative position within the group (Davis-Blake & Pfeffer, 1989; Newton & Keenan, 1991) and cannot be used to confirm the presence of absolute change or stability of dispositional effects. Claims of continuity require support from mean continuity and continuity at the individual level. Differential continuity is limited in its capacity to capture growth and maturity unlike mean level continuity (Vaidya et al., 2008b).

5.1.2.4 Continuity and change as multifaceted- mean level continuity

The second type of continuity refers to mean level continuity. Mean level change describes the extent to which the average amount of the construct changes over time within a population (Trzesniewski et al., 2004; Fryer & Elliot, 2007, p 702) or the extent to which personality scores change over time (De Fruyt et al., 2006), and is equated with normative change (Ludtke et al., 2009). Normative change suggests that people show the same changes during a specific time in the lifespan and are thought to occur from maturational or historical processes shared by a population (Helson & Moane 1997 cited in Roberts & Wood, 2006, p.20). Mean level change is analysed by comparing means across measurement occasions and is distinct from rank order continuity (Trzesniewski et al., 2004). Studies by Roberts and Del Vecchio, (2000); Roberts et al., (2006b) demonstrated both mean level change and rank order consistency in personality, which indicates that the two types of continuity can coexist.

5.1.2.5 Continuity and change as multifaceted-ipsative continuity

Ipsative continuity represents "the level of stability and change in an individual's configuration of constructs over time" (Fryer & Elliot, 2007, p. 702). Ipsative continuity can be described in terms of the level, pattern and scatter of scores. Changes in profile shape are measured using person level Q correlations. A high Q correlation indicates stability across time in the individual's configuration of constructs. Scatter is measured using the within person standard deviation and a positive scatter coefficient indicates dispersal over time while a negative coefficient indicates the profile dispersion declines over time.

5.1.2.6 Continuity and change as multifaceted- structural continuity

Structural continuity describes the researcher's interest in the factor structure and pattern of correlations that persists among a set of variables. Cross cultural studies using the five time perspectives appears to support structural continuity. Some studies appear to indicate 4-6 factor solutions (Worrell & Mello, 2007; Anagnostopoulos & Griva, 2011; Carelli & Wiberg, 2011) and attempts to shorten the ZTPI scale have resulted in three factor solution (D'Alessio et al., 2003).

5.1.2.7 Continuity and change as multifaceted-Individual differences in change

Change and continuity can be examined at the level of the individual and change is defined as an absence of continuity (Caspi, 1998). Individual level change describes increases or decreases in the trait by a person (De Fruyt et al., 2006). Within personality literature, individual change in a construct over time is measured using the reliable change index (RCI) and growth modeling. The reliable change index RCI emerged from the psychotherapy literature and indicates whether meaningful individual change has occurred by gauging the actual change resulting from an intervention against what could be

expected, given the measure's reliability (Roberts et al., 2008). Studies using the RCI have indicated reliable change in personality traits that are not attributed to measurement error at different life stages (Roberts et al., 2008). The RCI demonstrated that individual level changes coincided with mean level changes (Vaidya et al., 2008b) in personality studies. The different facets of continuity and change are used to examine research on time perspective using the ZTPI and the comparisons are outlined in Table 6.

The table indicates that researchers over emphasize rank order consistency over other facets of continuity and they appear to assume that group level measures of continuity are generalizable to the individual level of analysis. Researchers continue to use two period designs and focus on group level measures of continuity. The table highlights the methodological decisions underpinning the dispositional view of time perspective which are largely informed by paradigmatic and ideological assumptions. The three aspects of continuity and change that are of interest to the present research are rank order continuity, mean level continuity and individual differences in change.

To summarize, continuity and change are multilevel and have different interpretations and a broad brush approach to continuity provides an unbalanced description without consideration of alternative views.

5.2 PARADIGMATIC AND IDEOLOGICAL ASSUMPTIONS.

The aim of section two is to examine paradigmatic and ideological assumptions underpinning the dispositional view of time perspective. The section shows that these assumptions are challenged by adopting multiwave designs and methodologies that examine individual and group level change and continuity.

Table 6

Continuity and change in time perspective

Study	Study Design	No of Waves	Intervals between waves	Method of analysis	Differential Stability indicated	Mean level change indicated	Individual Change	Ipsative change	Structural Stability investigated
Zimbardo & Boyd (1999)	Pre and post test	2 waves	14 days	Correlation	Yes	Not reported	No	No	No
Apostolidis, & Fieulaine,. (2004).	Pre and post test	2 waves	14 days	Correlation	Yes	Not reported	No	No	No
Holman,& Silver, (2005)	Longitudinal	5 waves	3 years	Regression	Results not presented in paper	Yes	No	No	No
Holman, & Zimbardo, (2009)	Longitudinal	2 waves	3 months	Regression	Results not presented in paper	Results not presented in paper	No	No	No
Liniauskaité·, & Kairys, (2009).	Pre and post test	2 waves	14 days	Correlation	Yes	Not reported	No	No	No
Luyckx et al. (2010)	Longitudinal	2 waves	4 months	Correlation and Regression	Yes	Not reported	No	No	Yes
Wakefield, et al. (2010).	Pre and post test	2 waves	14 days	Correlation	Yes	Not reported	No	No	No
Anagnostopoulos. & Griva (2011)	Pre and post test	2 waves	4 weeks	Correlation	Yes	Not reported	No	No	No

Paradigmatic assumptions address ontological, epistemological and methodological assumptions underpinning an existing literature (Alvesson & Sandberg, 2011). Research paradigms represent different ways of thinking about the world (Blaikie, 2007) and research paradigms inform the logic of enquiry and choice of research methods. The section offers a critique of the paradigmatic assumptions behind the dispositional approach to time perspective such differential thinking and its associated research methods and designs, and argues that continuity and change in time perspective should be considered at the individual level and group level. The section also presents ideological assumptions which question the preoccupation with continuity.

5.2.1.1 Paradigmatic assumptions -differential thinking

Differential thinking is examined from a research methods and research design perspective. The study of individual differences occurs through differential psychology which

> comprises the psychometric assessments of abilities, personality, and vocational interests, with special emphasis devoted to their real world significance and their developmental antecedents. Topics of interest included educational , interpersonal and vocational behaviours, especially those relevant to facilitating optimal adjustment to life and work and tailoring opportunities for positive growth,(Lubinski, 2000, p. 406).

A standard approach in psychology is the study of interindividual variation or individual differences (Nesselroade, 2002). Central to differential psychology is correlational research which focuses on "the structure of associations between variables on which people differ" (Borsboom et al., 2009, p. 5). Continuity and change are often considered as dichotomous outcomes. This view has been criticized because the emphasis on stability deemphasizes change and vice versa (Funder, 1994).

Researchers have used the two period design to examine continuity and change but

the two wave design has been critiqued extensively in favour of multiwave designs (Willett, 1994). Rather than contend with just group level analysis, some commentators have switched attention to individual differences in change to suggest that some individuals may demonstrate change in a construct over time while others do not (Mroczek and Spiro, 2003). According to Nesselroade (2002), researchers identify differences by making comparisons: (a) among kinds of entities, (b) among homogenous entities (inter individual differences-IEV) and (c) within the same entities across different measurement occasions (intraindividual differences -IAV). Nesselroade (2002, p. 545) suggests that "a change is inferred to have occurred when a difference is sustained across a series of comparisons of the same entity and only comparisons within the same entity over different occasions (intraindividual differences) contain information about the change processes".

The individual differences approach describes change and continuity among persons, and it is the standard approach to conceptualizing individual differences (Mroczek et al., 2003). To provide a more informative description of individual differences life span development psychologists such as Baltes et al. (1980) suggested that assumptions of trait like properties should be accompanied by an examination of intra individual variability and issues of continuity and change must contain information on the average level of a construct and individual variability in the level of that construct. This suggestion is embedded in research that investigates interindividual differences in intraindividual change.

5.2.1.2 Problematizing paradigmatic assumptions –toward continuity and change

Within differential psychology, more temporally suited approaches to the study of continuity and change is to examine it from the perspective of the group, individual or both, using methodological advances such as latent growth models and random

coefficient modeling (Mitchell & James, 2001; Little et al., 2006). Current perspectives examining continuity and change view them as coexisting rather than mutually exclusive. These methods integrate both intra individual change and inter individual differences in intra individual change (Nesselroade, 2002).

Growth models provide an intersection between individual and group attributes (Curran & Hussong, 2003). In their review, Curran and Wirth, (2004) argue in favour of the suitability of IEV methods to investigate interindividual differences in intraindividual change. This view uses a pair of statistical models: (a) a model for individual growth and (b) a model for how individual growth parameters vary across individuals (Rogosa, 1987). Growth models and hierarchical linear models are used to study time embedded data (Mitchell & James, 2001) and "these techniques can tell us if and when a variable changes" (Mitchell & James, 2001, p.542) thereby making time central to theory and falsification of that theory. The key to understanding individual change over time is the trajectory and multiple measurement occasions across many subjects to obtain information on the homogeneity and heterogeneity of individual and group trajectories (Mitchell & James, 2001).

The use of statistical methods such as growth modeling require longitudinal designs to describe an individual's trajectory and an individual trajectory explicitly models different approximations of chronological time such as age or measurement occasions (Singer & Willet, 2003). Trajectories are described as smooth curves that describe individual change (Raudenbush, 2001) and these trajectories are then used to examine individual differences in change by summarizing evidence across individual trajectories. Trajectories move the study of change away from dichotomous conceptualization of continuity and change toward richer descriptions, where individuals may be changing at increasing or decreasing rates or individuals may demonstrate differences in continuity.

The logical foundation for all longitudinal analysis is thus a statistical model defining parameters of change for the trajectory of a single participant. The task of comparing people then becomes the task of comparing the parameters of these personal trajectories. A model is thus needed for the population distribution of the parameters for personal change, (Raudenbush, 2001, p. 502).

Approaches to the study of change such as growth modeling arose from the contentious debate on the measurement of change. The study of change measurement has been controversial (Bereiter, 1963; Cronbach & Furby, 1970; Rogosa et al., 1982; Rogosa, 1995; Lance et al., 2000; Edwards, 2002). Scholars have tried to measure change using descriptive statistics, change scores, t-tests, Anova or Manova regression, lagged regressions, and survival analysis (Lance et al., 2000). Lance et al (2000) have critiqued these approaches and argued that change can be measured successfully using latent growth modeling and the authors develop an idealized approach to individual and group change.

To investigate interindividual differences in intraindividual change, Chan (1998) and Lance et al. (2000) developed frameworks to guide researchers on conceptualizing individual change in much broader terms. The origins of these frameworks emerged from development psychology where the study of change is the rule and not the exception (Chan, 1998). This idealized approach is presented in Table 7 which guides researchers on identifying interindividual differences in intraindividual change in constructs that demonstrated rank order and mean level consistency. The framework will be used in section three of this chapter to illustrate some examples of research investigating interindividual differences in intra individual change in personality (Mroczek & Spiro, 2003), temperament, self-esteem (Partridge & Lerner, 2007), self-concept (Scheier et al., 2000) and procrastination (Moon & Illingworth, 2005) and it will be used to shape the research questions for time perspective.

Table 7

Idealized approach to the study of change

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1 The ability to model change at the individual level of analysis, as well as mean change at aggregate (sub) group level, that is, the ability to track individual's pattern of change as well as mean change patterns averaged across subjects.

2. Assessment of the extent of individual differences in initial status and rate of change over time, and in relation to group averages, that is, assessment of the degree of homogeneity or heterogeneity in individual's change pattern.

3 Measurement of change on (estimates) true scores rather than on fallible scores containing measurement error.

4 Estimation of various patterns of change (e.g. linear, quadratic, cubic or some "optimal "change trajectory).

5. Estimation of concomitant change on multiple critical variables simultaneously.

6 Prediction of initial status and change on multiple critical study variables on the basis of other factors that is modeling aspects of individuals' change trajectories as functions of some set of explanatory variables.

Source (Lance ,Meade and Williamson 2000, p 208)

5.2.3 Ideological assumptions

Section two of chapter five suggests that ideological assumptions blind researchers to the study of continuity and change. Ideological assumptions emphasize a moral perspective which is used to evaluate the kind of research that is acceptable to a research community.

5.2.3.1. Ideological assumptions -current thinking

The ideological assumption underpinning time perspective is that the purpose of science, in the positivist sense, is to generate invariant laws and a "science" that cannot generate invariant laws may not be viewed as a science at all. These laws are laid out in time perspectives nomological network governing the relationship between constructs. If indeed it is "better science" to establish invariant laws, research efforts will focus on establishing continuity rather than change. There is a difficulty with establishing invariant laws in that they require time to test. The time interval chosen is central to the test of invariance of these laws, but time perspective researchers have not embraced the view

that the study of change is as equally important. There is the possibility that temporal research may criticize the validity of the relationships based on these laws by questioning the duration over which they hold.

To summarize, in-house, paradigmatic and ideological assumptions have shaped the dispositional view of time perspective. These assumptions have been challenged to show that continuity and change are evident in personality by showing that they are multilevel and independent rather than mutually exclusive at the group and the individual levels of analysis.

The study of individual differences has traditionally focused on population indices at the cost of examining individual differences in intra individual change (Mroczek et al., 2006). Time perspective continues to follow this route by emphasising the continued preference for continuity or change, cross sectional designs and correlational research. This perspective stems from in-house, paradigmatic and ideological assumptions which reinforce technical certainty and consensus within differential thinking. Questions of continuity and change are legitimate under the current temporal research agenda.

5.3 CONTINUITY AND CHANGE IN TRAITS AND DISPOSITIONS

The purpose of section three of the chapter is to build the logic for the research questions which examine the coexistence of continuity and change in time perspective. The section draws on debates in continuity and change in other literatures which can offer insights into change and continuity in time perspective. The discussion of continuity and change in chapter one shows that it is multilevel and ranges from the strategic to the individual level of analysis. Sections one and two of this chapter showed that researchers have moved away from considering continuity and change as mutually exclusive to

acknowledging their coexistence. Support for the view that time perspective may demonstrate continuity and change at the group and individual level is drawn mainly from personality development which is used to build a case for continuity and change time in perspective.

5.3.1 Continuity and change -personality development principles

Personality traits can be conceptualized as enduring attributes of an individual and personality can be described in terms of state or transitory personal attributes. The focus of the research is on continuity and change in time perspective and, to achieve this objective, a comparable debate is required using personality traits. At a population level, personality increases in rank order consistency with age, demonstrates normative or mean level change and is capable of demonstrating individual differences in change (Edmonds et al., 2008). Roberts et al. (2008) suggest that the benefit of studying the coexistence of continuity and change in personality is that it forces researchers to seek explanations for continuity and change. Personality development occurs according to number principles (Roberts et al., 2006) outlined in Table 8 which illustrates the variety of principles which provide a rationale for continuity and change in personality. Personality demonstrates continuity and change and highlights the current deficit within the theory of time perspective developed by Zimbardo and Boyd (1999).

5.3.1.1 Cumulative continuity principle

The cumulative continuity principle appears to be well supported across the lifespan. Personality increases in rank order consistency from childhood to adulthood and then plateaus between age 50 and 70 (Roberts & Del Vecchio, 2000).

5.3.1.2 Maturity principle

The maturity principle suggests that as people age they become more socially dominant,

agreeable, conscientious and emotionally stable between the ages of 20 and 40 (Caspi &

Roberts, 1999; Roberts & Wood, 2006). The maturity principle is reflected in mean level

changes in personality. Personality development among a sample of 18-26 year olds

indicated that transition to young adulthood from adolescence is marked by personality

continuity and change in favour of greater maturity (Roberts et al., 2001). A study among

21-60 year olds highlighted mean level increases in conscientiousness and agreeableness

across early and middle adulthood but women indicated mean level declines in

neuroticism, relative to men (Srivastava et al., 2003).

Table 8 Personality development principles.

Principle	Explanation
Cumulative continuity principle	Personality traits increase in rank order stability through the life span.
Maturity principle	People become more socially dominant, agreeable, and conscientious and emotionally stable with age.
Plasticity principle	Personality traits are open to systems that can be influenced by the environment at any age.
Role continuity principle	Consistent roles rather than consistent environments are the cause of continuity in personality over time.
Identity development principle	With age, the process of developing, committing to, and maintaining an identity leads to greater personality consistency over time.
Social investment principle	Investing in social institutions, such as age-graded social roles, outside of the self is one of the driving mechanisms of personality development, in general, and greater maturity, in particular.
Corresponsive principle	The effects of life experience on personality development is to deepen the characteristics that lead people to those experiences in the first place.

Source (Roberts ,Wood &Caspi 2008 p 376)

Mature people become more liked and respected within their community and these qualities serve societal functioning (Hogan & Roberts, 2004). In terms of functioning, mature people tend to be more successful in their careers (Judge et al., 1999) have better health (Spiro et al., 1995) and live longer (Danner et al., 2001).

5.3.1.3 Social investment principle

Adulthood is a time where individuals commit to roles as parents, in careers and family and in the community. Midlife represents a period when one is preoccupied with family , marital relationships and child rearing (MacDermid & Crouter 1995, cited in van Aken et al., 2006, p 498). Although much of the work on personality change involves young adults, adulthood represents a time where individuals are going through important changes in life goals, resources and coping styles which are influenced by changing environments (Helson et al., 2002) and midlife is often mistakenly taken as a period of stability and consolidation, however individual personality adapts to midlife concerns (Neyer, 2006). Individual difference in personality change may arise because individuals are exposed to a wide variety of environmental influences (Roberts, 1997) such as life events which we experience in the normative course of development. Mean increases in agreeableness may reflect greater social reward rather than rejection (Caspi & Roberts, 1999) while aging is accompanied by mean level declines in social vitality and openness (Roberts et al., 2006b).

Social investment theory has been used to explain personality change in midlife (van Aken et al., 2006) and in young adulthood (Roberts et al., 2005; Lehnart et al., 2010). Social investment theory (Roberts et al., 2005; Roberts et al., 2006a; Lodi-Smith & Roberts, 2007) is defined as "investment in, and psychological commitment to, adult social roles" and focuses on the transactional and stochastic factors that might explain personality development. Roles represent a social context, and roles prescribe and

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facilitate "behaviour through norms and scripted relationships (Roberts & Donahue, 1994, p 201). The implications for personality development arising from the social investment principle indicates that dominance, conscientiousness and agreeableness and emotional stability increase over time i.e. people mature as they get older (Wood & Roberts, 2006). The social investment principle is also supported among young adults who experienced declines in neuroticism when they first enter long term romantic relationships (Lehnart et al., 2010)

5.3.1.4 Correspondence principle

The correspondence principle links social selection and social influence (Caspi et al., 2005). The corresponsive principle suggests that individuals choose roles or jobs because they correspond to particular personality traits which changes as a result of occupying the position. "Life experiences are corresponsive if they elicit behaviour consistent with their disposition"(Roberts & Wood, 2006,p.22). By way of illustration, a person who is more socially dominant chooses roles with more power which, in turn, is associated with increases in social dominance. In a longitudinal study of university students, individuals who were less agreeable and emotionally stable tended to fit within the competitive university environment, and individuals who fitted into that environment tended to be less agreeable and more emotionally stable (Roberts & Robins, 2004).

Another study conducted among young adults aged between 18 and 26 found that that traits that predicted work related outcomes were the ones that changed in relation to those work experiences (Roberts et al., 2003). Further empirical support for the corresponsive principle is argued by Harms et al., (2006), who found a relationship between person –environment fit and openness to experience among a sample of Harvard students. Research conducted by Roberts et al. (2004) supported the corresponsive principle among a sample of young adults investigating the relationship between life goal

domains and personality. The results indicated that the relationship between life goals and personality was corresponsive.

5.3.1.5 Identity development principle

Personality development is also counterbalanced by theories of continuity such as identity development, role continuity and genetic factors. Genetic factors are regarded as important influences on personality consistency (McGue et al., 1993; Roberts & Wood, 2006). Research evidence suggest that heritability coefficients for personality traits using cross cultural research can reach approximately 50% for some of the Big Five (Munafo, 2008). Longitudinal research using monozygotic (MZ) and dizygotic (DZ) twins shows that there are greater similarities in personality among MZ twins relative to DZ twins (Munafo, 2009). Research by Heath et al. (1994) supported a genetic link between harm avoidance, novelty seeking and reward dependence and the investigators found that genetics explained between 54 and 61 percent of stable variation in these traits.

The identity development principle supports both continuity and change in personality (Roberts and Caspi, 2003). According to Marcia (1980, p.159) identity is understood " as a self- structure – an internal self constructed, dynamic organization of drives, abilities, beliefs and individual history." From the perspective of personality continuity, identity development is linked to personality consistency in a number of ways. Firstly, an individual's identity becomes known to others through reputation. If a person has a reputation for being extrovert, they may be invited to social gatherings because they are outgoing and engaging. Secondly, role identities, are both complex and differentiated (Roberts & Caspi, 2003). Differentiation refers to the number of role identities a person has. Complexity describes the set of identities, where individuals can obtain different needs and these identities can be tied to different domains such as work, family or friends. Complexity facilitates personality consistency by providing multiple outlets for the same

trait rather than just a single route .Thirdly, individuals commit to and maintain identities with age and identities support personality consistency by providing reference points for making life decisions (Caspi et al., 2005).

5.3.1.6 Role continuity and plasticity

The role continuity principle suggests that personality becomes consistent because individuals occupy consistent environments. However, there is no empirical evidence supporting the idea (Roberts & Wood, 2006) as environments may be considered as physical or in a subjective manner. The plasticity principle suggests that personality is capable of change across the lifespan (Mroczek & Spiro, 2003; Trzesniewski et al., 2004; Mroczek et al., 2006). However, there are others who suggest that continuity is maintained through developing consistency in their thinking, patterns, activity profiles and social relationships over time which arise from an accumulation of experience that relies more on past experience (Atchley, 2006).

Table 9 categorizes studies of change in personality and other constructs using the idealized approach to change developed by Lance et al (2000). The following studies are used as illustrations. In a study of young adults (Vaidya et al., 2008b) collected three waves of data at average age 18, 21 and 24 to examine continuity and change in personality. The study found that personality demonstrated rank order continuity across the three waves and growth modeling indicated participants showed mean level increases in Conscientiousness, Extraversion, Openness and Agreeableness and the sample indicated a mean level decline in Neuroticism. The sample also showed interindividual differences in intraindividual change in the Big Five. Research conducted by Branje et al. (2007) examined changes in personality for adolescence and middle adulthood in 285 Dutch families.

Table 9
Individual differences literature mapped to idealized approach to change.

Studies	Research area	Idealized change criteria					
		1	2	3	4	5	6
		The ability to model change at the individual level of analysis, as well as mean change at aggregate (sub) group level, that is, the ability to track individual's pattern of change as well as mean change patterns averaged across subjects.	Assessment of the extent of individual differences in initial status and rate of change over time, and in relation to group averages, that is, assessment of the degree of homogeneity or heterogeneity in individual's change pattern	Measurement of change on (estimates) true scores rather than on fallible scores containing measurement error	Estimation of various patterns of change (e.g. linear, quadratic, cubic or some "optimal "change trajectory).	Estimation of concomitant change on multiple critical variables simultaneously.	Prediction of initial status and change on multiple critical study variables on the basis of other factors that is modeling aspects of individuals' change trajectories as functions of some set of explanatory variables
Vaidya, et al. (2008).	Personality	X	X		X		
Mroczek & Spiro (2003)	Personality	X	X		X		X
Jones & Meredith 1996	Personality	X	X	X	X		
Bleidorn, et al. (2009)	Personality	X	X	X	X	X	X
Branje et al. (2007)	Personality	X	X	X	X		X
Scollon, & Diener (2006).	Personality	X	X	X	X	X	X
Branje, et al. (2004)	Personality	X	X	X	X	X	X

Table 9 continued   idealized change criteria

Studies	Research area	1	2	3	4	5	6
		The ability to model change at the individual level of analysis, as wells mean change at aggregate (sub) group level, that is, the ability to track individual's pattern of change as well as mean change patterns averaged across subjects.	Assessment of the extent of individual differences in initial status and rate of change over time, and in relation to group averages, that is, assessment of the degree of homogeneity or heterogeneity in individual's change pattern	Measurement of change on (estimates) true scores rather than on fallible scores containing measurement error	Estimation of various patterns of change (e.g. linear, quadratic, cubic or some "optimal "change trajectory).	Estimation of concomitant change on multiple critical variables simultaneously.	Prediction of initial status and change on multiple critical study variables on the basis of other factors that is modeling aspects of individuals' change trajectories as functions of some set of explanatory variables
Young,& Mroczek, (2003)	Self concept	X	X		X		X
Baldwin &Hoffmann (2002)	Self esteem	X	X		X		X
Whitesell et al. (2009)	Self esteem	X	X	X	X	X	X
Scheier, et al. (2000)	Self esteem	X	X	X	X	X	X
Partridge & Lerner (2007	Temperament	X	X	X	X		
Moon & Illingworth (2005)	Procrastination	X	X	X			X
Lenzenweger, & Johnson, (2004)	Personality disorder	X	X		X		X

The findings highlighted that "for boys, Extraversion and Openness decreased and for girls, Extraversion, Agreeableness, Conscientiousness, and Openness increased. Whereas mothers' Emotional Stability and Conscientiousness increased, fathers' Extraversion, Agreeableness, and Emotional Stability decreased" (Branje et al., 2007, p.45).

5.4 CHAPTER DISCUSSIONS AND CONCLUSION

In –house assumptions –continuity

Researchers often conclude that change is not present with high to moderate test – retest reliability (Prinzie & Dekovic, 2008). Researchers, (Fraley & Roberts, 2005; Roberts et al., 2006b; Fryer & Elliot, 2007; Prinzie & Dekovic, 2008) argue that a common mistake researchers conclude about differential continuity is that a construct does not change over time and that this conclusion is both premature and incorrect. Continuity and change can happen simultaneously and are independent (Block 1971, cited in Roberts et al. 2006). Retest correlations do not support change and continuity at the individual level of analysis and mask intraindividual variation in stability (Asendorpf, 1992).

An analysis of the different types of continuity and change using the ZTPI was presented in Table 5. It is clear that dispositional research on time perspective has demonstrated mean level change, structural continuity and differential continuity. There is an overreliance on differential continuity without placing it in the context of other approaches to continuity .Test –retest reliabilities after four week period (Zimbardo and Boyd, 1999) showed a value of .8 for future,.76 for present fatalistic, past positive .76, present hedonism .72 and past negative.70.

Retest periods of four months used by Luyckx et al. (2010) indicate that the test

retest reliability for present hedonism is .68, present fatalism .58 and future time perspective .70. Test retest correlations using a two week interval for the scales used in a Lithuanian version: (Liniauskaité·& Kairys, 2009) showed future time perspective .89, past positive, .72, present fatalistic .89, present hedonism .83 and past negative .93. Retest correlations for the five scales in (Anagnostopoulos & Griva, 2011) ranged from .70-.80 after a four week period.

Mean level decline in future time perspective was demonstrated by (Holman & Silver, 2005) and in Luyckx et al. (2010), present fatalism and present hedonism demonstrated significant mean level decline while future time perspective indicated a significant mean increase over a four month period, despite showing statistically significant differential stability. The study of Holman and Silver (2005) used adults while Lukyxx et al. (2010) surveyed young adults at university. However, measurement invariance testing, using item parcels formed from the ZTPI scales, was conducted by Luyckx et al. (2010). Research on TP profiles mainly addresses approaches to calculating cutoffs for a balanced time perspective (Drake et al., 2008; Boniwell et al., 2010) rather than examining ipsative continuity.

Paradigmatic and ideological assumptions.

Paradigmatic assumptions underpinning the dispositional view of time perspective focus on differences rather than change. The two period design appears well embedded in the time perspective studies and these designs limit opportunities for the study of change and continuity because the design is uninformative about the shape of change and continuity beyond linearity (Rogosa, 1995). Critics of differential psychology (Lamiell, 1981; Molenaar, 2004; Hamaker et al., 2005; Lamiell, 2007; Molenaar, 2007) suggest that correlational research provides information on between person relationships rather than

individuals.

To understand change, a hybrid approach focuses on the individual level and the group is proposed by Curran and Wirth, (2004) where we obtain idiographic and nomothetic information (Jones & Meredith, 1996). Idiographic information provides a picture of individual change while nomothetic information demonstrates change across all individuals (Lamiell, 2007). Time perspective researchers do not generally adopt multiwave designs to study continuity and change and there is an over reliance on temporally insensitive methods and designs which denies time its place in time perspective. Ideologically, it would appear that the preoccupation with continuity holds more kudos for time perspective given the lack of attention to change and the time intervals chosen in the establishment of continuity. Both in-house and paradigmatic assumptions have been challenged by a growing body of literature in personality development which highlights the lack of present theorizing about continuity and change in time perspective which constraints its study.

Personality development

Personality studies have moved from positions regarding it as purely trait like or as purely determined by context. There is broad recognition that personality develops. In the context of personality development across the lifespan, research studies have indicated that some people will demonstrate change in personality dimensions while others do not. Change and continuity in personality has been supported through studies using work, social investment, and plasticity where individuals have demonstrated interindividual differences in intra individual change over time, using current approaches to the study of change.

It is clear that the current description of continuity or change in time perspective under present in-house assumptions is inadequate and problematization has shown that

continuity and change are multifaceted, multilevel and require different methodological approaches to show that continuity and change can co-exist and they are independent. Currently, researchers appear to have settled for a narrower view of continuity in time perspective and broader understanding of continuity and change is required and this objective is addressed by formulating a set of research questions that can move time perspective in a different direction.

5.4.1 Research questions

Given the significant lack of longitudinal studies on of continuity and change in time perspective, no formal hypotheses addressing the specific functional forms of change trajectories are suggested. Instead the following research questions are presented:

1. Do time perspectives demonstrate differential continuity?

2. Do time perspectives demonstrate mean level continuity and change?

3. Do time perspectives demonstrate inter individual difference in intraindividual changein their time perspectives?

4. Do individuals demonstrate reliable change in their time perspectives?

5.4.2 Justification for research questions

There is a virtual absence of empirical evidence examining change in time perspective. Anecdotal evidence taken from clinical settings shows that therapy alters time perspectives (Zimbardo et al., 2012). The objective of therapy in this setting is to reduce past negative and present fatalism and increase future time perspective, past positive and present hedonism to levels that provide improvements in well-being, functioning and which ameliorates PSTD symptoms. The evidence for change in time perspective claimed by Zimbardo et al. (2012) cannot tell us if time perspectives changed

slowly, if they changed at the same rate for all participants and which time perspectives were the least/most difficult to change. The authors do not discuss the shape of any change trajectory despite having longitudinal data. Present theorizing about continuity and change in time perspective is inadequate because researchers think mainly in terms of continuity and not change.

Time perspective is regarded as a process, and psychological processes "develop, change and evolve over time" (Pitariu & Ployhart, 2009, p.405). To study change over time, one should have a theory of change, an appropriate statistical model and a suitable temporal design (Collins & Graham, 2002; Collins, 2006). Personality development researchers have developed theoretical guidance on why personality demonstrates continuity and change, but such theorizing is not sufficiently developed in the dispositional view of time perspective. Clearly, these features are absent in time perspective research, however there is ample evidence of rank order continuity.

Alternative perspectives, such as temporalism, critique differential thinking which is subsumed into current methodological decisions. Differential thinking does not lend itself to modeling and measurement in a temporalist sense because there is an over-reliance on variables to measure processes which does not describe what happens. Time perspective as a disposition addresses the conceptualization and measurement debate, but does not reflect a measure of time perspective that is sensitive to change. The question of individual change is an important one in that group level indices such as rank order stability can mask individual change. Latent growth models have become central to the study of individual change by describing change in terms of a trajectory. In this approach, a single trajectory is fitted to the sample. The latent growth model was developed within differential thinking and represents a top down rather than a bottom up description of change while the temporalist perspective begins with the trajectory and adopts a bottom

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up approach. The research questions and methods address what is, rather than what happens, but this is an important first step in placing time perspective in a temporal research agenda by offering a critique of the way that time perspective is viewed by researchers.

The guiding principle underpinning the present research is drawn from Baltes et al., (1980), who suggest that assumptions of trait like properties should be accompanied by an examination of intra individual variability and those issues of continuity and change must contain information on the average level of a construct and individual variability in the level of that construct. Questions of change and continuity are often raised against the background of little or no previous theory about individual change and in these cases, previous authors (Chan et al., 2000; Fryer & Elliot, 2007; Vaidya et al., 2008b) do not formulate hypothesis, but instead advocate a set of research questions.

CHAPTER 6

RESEARCH PARADIGMS AND METHODS

INTRODUCTION

The purpose of the chapter is to outline the philosophical stance, research design and methods adopted and to detail the survey design and development procedures.

The chapter is divided into three sections shown in Figure 10. Section one outlines the philosophical position and methods adopted in the research. Section two introduces the research design, its rationale and its advantages and disadvantages. Section three highlights the research strategy, method of data collection, the challenges of longitudinal research and the design and development of the research instrument. The chapter concludes by arguing for a longitudinal fixed occasion panel design where survey data are collected over three measurement occasions and analysed using a multimethod approach to answer the research questions.
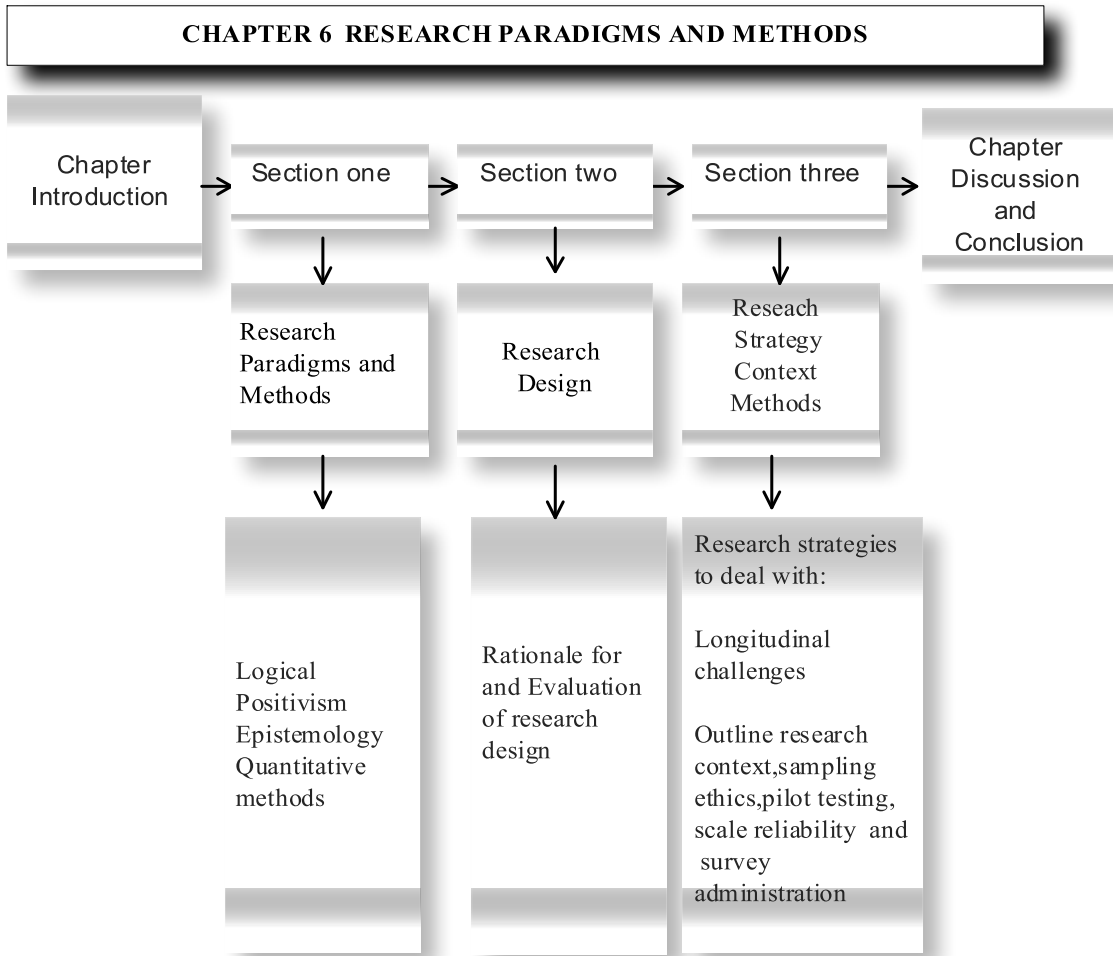
CHAPTER 6 RESEARCH PARADIGMS AND METHODS

Chapter
Introduction → Section one → Section two → Section three → Chapter
Discussion
and
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Research
Paradigms and
Methods

Research
Design

Reseach
Strategy
Context
Methods

Logical
Positivism
Epistemology
Quantitative
methods

Rationale for
and Evaluation
of research
design

Research strategies
to deal with:

Longitudinal
challenges

Outline research
context,sampling
ethics,pilot testing,
scale reliability and
 survey
administration

Figure 10 Layout chapter six

6.1 RESEARCH PARADIGMS AND METHODS

The aim of section one of chapter six is to present the choice of philosophical stance, epistemology and methods.

6.1.1 Logical Positivism

The philosophical position chosen is logical positivism, which guides research in the management and organizational field (Hunt, 1994; Chia, 1997; Johnson & Duberly 2000). Investigators undertake social science research within a set of paradigms. A paradigm "is a set of propositions that explain how the world is perceived; it contains a world view, a way of breaking down the complexity of the real world, telling researchers and social scientists in general what is important, what is legitimate, and what is reasonable" (Patton, 1990, p. 37).

6.1.2 Epistemology- hypothetetico deductive approach

The research strategy is based on deduction which is shown in Figure 11.

Researcher tests or verifies a theory
Researcher tests hypothesis or research questions from the theory
Researcher defines and operationalises variables derived from theory
Researcher measures or observes variables using an instrument to obtain scores

Source (Creswell 2003, p.125)
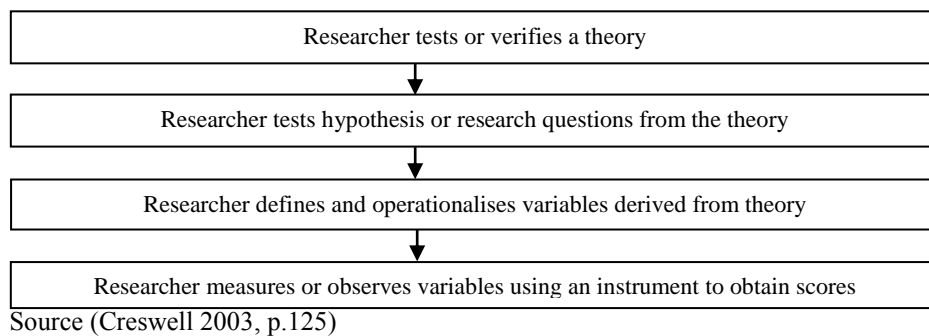
Figure 11 Hypothetetico deductive approach

Ontological and epistemological assumptions inform the research strategy and the choice of methods adopted (Findlay & Lin, 1999). The epistemological and ontological tenets of logical positivism are outlined in Table 10.

Table 10

Tenets of logical positivism

Ontology	There is a single divisible and tangible reality which is external and whose existence is independent of our knowledge of it
Epistemology	Generation of time-free, context independent, nomothetic laws
Aims of research	Generation of laws
	The aim of research should be to identify explanations and fundamental laws that explain regularities in human social behaviour
Research approach	Unity of natural and social science
	The method of the natural sciences is the only rational source of knowledge and should therefore be the adopted methods in the social sciences.
	This implies a preoccupation with:
	Internal reliability
	External validity
	Operationalization
	Science is based on strict protocols, is deductive and based on sense impressions
Relationship of the researcher with the researched	The observer is independent of what is being observed
	The researcher observes the world objectively
	Value freedom
	The choice of what is to be studied and how to study it can be determined by objective criteria rather than by human beliefs and interests
Correspondence theory of truth.	Theory can be tested against irreducible statement of observation- 'facts of the situation'

Source (Johnson & Duberly 2000)

6.1.3 Strategy of enquiry

The thesis adopts quantitative methods to answer the research questions. Quantitative methods permit the researcher to understand social facts through observation and measurement (Firestone, 1987). Table 11 describes the process of quantitative research.

Table 11

Elements of the quantitative research process

Process of research	Elements of quantitative research tend toward:
Intent of research	Testing a theory deductively to support or refute it
How literature is used	Justifying problem, identifying questions and hypothesis
How intent is focused	Asking closed ended questions or
	Testing specific variables that form hypothesis
	questions
How data are collected	Numbers
	From many participants
	Sending or administering instruments to participants
How data are analysed	Numerical statistical analysis
	Rejecting hypothesis or determining effect size
Role of the researcher	Remains in the background
	Takes steps to remove bias
How data are validated	Using validity procedures based on external standards,
	such as judges, past research and statistics

Source (Creswell & Plano-Clarke, 2007, p. 29)

Quantitative methods have strengths and weaknesses (Johnson et al., 2007). The strengths of quantitative methods include: testing and validating already constructed theories about how phenomena occur, generalizing a research finding when it has been replicated on many different populations and subpopulations, useful for obtaining data that allow quantitative predictions to be made, elimination of confounding relationships and research results are relatively independent of the researcher.

The weaknesses of quantitative methods entail: the failure of constituents to understand categories created by the researcher, the generation of abstract knowledge which may not be directly applicable to settings or individuals and the researcher's preoccupation with hypothesis testing may blind them to alterative avenues of investigation.Researchers use a variety of quantitative methods to study time perspective such as correlation, regression and structural equation modeling. A review of the literature using the ZTPI identified 105 papers and book chapters. Out of the 105 studies, 91% were cross sectional, 2.8% were longitudinal and the remainder were theoretical papers. Seventy five percent adopted regression and correlation, 14% adopted CFA and SEM and the reminder adopted EFA, discriminant function analysis and cluster analysis.

To summarize, the present research chose: the philosophical stance of logical positivism, a hypothetico-deductive approach and quantitative methods to answer the research questions.

6.2 RESEARCH DESIGN

The objective of section two of the chapter is to present and evaluate the research design. Section two of the chapter outlines and justifies the research design and presents the advantages and disadvantages of longitudinal designs. The philosophical position underpins the research design which is described as a "plan that provides the underlying

structure to integrate all elements of a quantitative study so that the results are credible, free from bias, and maximally generalizable (Dannels, 2010,p. 343).

A study's design can be considered using Catell's data box (Cattell, 1952). The data box is a three dimensional cube of persons, variables and occasions and it is a useful way for examining within and between person variation (Mroczek et al., 2003) and individual change. To answer the research questions, a prospective longitudinal panel design was chosen where the same individuals are followed across a set of measurement occasions, the same data are collected and relationships can be examined at the individual and the group level of analysis (Taris, 2000; Menard, 2002). The minimum requirement for a longitudinal design is three waves (Chan, 1998; Ployhart & Vandenberg, 2010; Ployhart & Ward, 2011).

6.2.1 Evaluation of and rationale for the chosen design

Longitudinal designs have their advantages, disadvantages and challenges. The advantages include: the suitability of the design to study continuity and change at the group and individual level of analysis, longitudinal designs are central to decomposing rank order consistency into individual stability coefficients and examining changes in rank order continuity. The challenges include: attrition, deciding on the temporal design, missing data and panel conditioning. Disadvantages of longitudinal designs include additional financial costs and the requirement for more complex analysis. Table 12 outlines the criteria used to guide the study's design. Table 12 is used to map the research problem to its theoretical drivers, design and methods and research questions. Figure 12 situates the present study of continuity and change in time perspective within the temporal research agenda by emphasizing that continuity and change have different

Table 12

Criteria used to support choice design and analysis decisions.

Criteria	Decision	Rationale
Theoretical perspective	Ground study in current temporal research agenda	Begin the study of long term continuity and change in time. perspective
Objectives of longitudinal research	Examine questions of Continuity and change in time perspective at group and individual level of analysis	To test various forms of continuity and change in time perspective
Temporal design	Three equally spaced measures	Growth model requirements
Statistical approaches	Repeated Analysis Of Variance Intraindividual variation in continuity Latent Growth Model Reliable change index	Provide a more rigorous study of continuity and change in time perspective
Time metric	Measurement occasion	Time perspectives may demonstrate both continuity and change over the interval at group and individual level of analysis
Implications for theory	Advancing temporal research agenda	Revising our understanding of continuity and change in time perspective

	Relative	Absolute
Population	Rank order consistency	Mean-level change
Individual	Ipsative consistency	**Individual differences in change**
Structural consistency		

Continuity *and* change in time perspective

Longitudinal Research Design

Quantitative Methods

Correlations	RANOVA	Latent Growth Model	Reliable Change Index
Do time perspectives demonstrate differential continuity?	Do time perspectives demonstrate mean level continuity?	Do time perspectives demonstrate inter individual difference in intraindividual change?	Do individuals demonstrate reliable change in their time perspectives?

Figure 12 Integration of theory design and statistical approaches

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interpretations depending on the unit of analysis.

To summarize, section two of the chapter, continuity and change are part of the temporalist research agenda which requires multiwave designs. The design chosen in the present study is a three wave prospective longitudinal panel design spanning a 12 month period. The study of continuity and change is guided by a framework developed by Roberts et al. (2008), which guides the interpretation of continuity and change, and this framework emphasizes the choices of different quantitative approaches. The longitudinal research presents challenges which the design must manage, using the appropriate research strategy. The advantages and disadvantages of the statistical approaches chosen in Figure 12 are outlined in section three.

6.3. RESEARCH STRATEGY CONTEXT AND METHODS

The aim of section three is to outline the research strategy adopted to manage the challenges presented by longitudinal research, the statistical approaches adopted in the study, the research context and sampling choice.

The research strategy adopted in the thesis is quantitative methods. However, a broader research strategy is outlined in section three that deals with some challenges of longitudinal research that impact the study of continuity and change. Section three outlines the research context and good practice guidance to aid the study's design, data collection, and strategies needed to manage the main challenges of longitudinal research.

6.3.1 Research strategy: good practice

The research strategy details how the data were collected and the approaches used to manage some of the main challenges posed by longitudinal research such as minimizing non response and attrition, dealing with missing data, the choice of temporal design and

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choice of time metric. The good practice guidance highlights the key issues that should be considered in longitudinal designs examining individual change and continuity and they form the basis for methodological decisions made in the chapter.

6.3.2 Research strategy: evaluation of data collection approaches

Consistent with the objectives of longitudinal research and the research questions, data were collected using a panel design to study individual change over time (Firebuagh, 1997). The measures used in the study were included in a paper based questionnaire utilizing previously validated self report measure.

Surveys have a number of benefits and disadvantages (de Leeuw & Hox, 2008). The benefits include: an effective way of collecting good quality data when resources are limited, mail surveys are less intrusive which is vital in a panel design and surveys provide easier access to a large geographical area and larger samples (Bourque & Fielder, 2003). Unfortunately mail surveys suffer from high levels of non-response and alternative ways of collecting data such as internet or mixed mode approaches were not considered for the following reasons:

1 Respondents at the research sites had limited access to computers and declined to provide email addresses.

2 Use of an internet survey could produce sample bias because views of the wider population who do not have access to internet are not be captured (Ilieva et al., 2002).

3 The use of internet surveys would require individuals to have a username and password and respondents were reluctant to provide email addresses to which a password and username could be delivered.

4 Splitting the sample into those that want a survey electronically and those who prefer a paper based copy introduces questions of measurement invariance. Tests of measurement invariance between the two modes need to be conducted before data can

be combined to rule out measurement biases, and this activity adds additional levels of complexity to the analysis (De Beuckelaer & Lievens, 2009; de Leeuw & Hox, 2011). Longitudinal designs represent additional challenges such as: method variance, non-response, missing data, temporal design and choice of time metric. It was decided to adopt good practice in the methods adopted in order to manage these challenges.

6.3.3 Research strategy: method variance and panel conditioning

To manage method variance, good practice advocates a temporal separation of measures, which is easily managed in longitudinal designs. To manage panel conditioning, it was decided to alter the structure of the survey on each measurement occasion.

Surveys collect self-report measures, which have received some criticism due to the belief that such measures contain common method variance (Chan, 2009). Common method variance is described as variance that arises from the method by which data were collected rather than from the constructs under study (Podsakoff et al., 2003). Method effects may arise because of a common measurement context, a common item context, or from item characteristics themselves. Method effects are especially potent where data from predictor and criterion variable are measured from the same measurement context, using the same items. The temporal separation of measurement occasions helps to reduce the influence of responses, transient moods and response styles across data collection periods (Rindfleisch et al., 2008). However, concerns such as response bias and acquiescence may not be ameliorated by longitudinal research designs (Steenkamp and Baumgartner, 1998).

Another challenge posed in longitudinal designs is panel conditioning or carryover effects. Panel conditioning may enhance the quality of responses at a later date (Lynn 2010) and is considered to be a form of measurement error (Cantor, 2008). According to

Waterton and Lievesley (1989, cited in Cantor, 2008, p.123), panel conditioning occurs because changing behaviour or attitudes reflects more honest reporting of socially desirable behaviour and improved understanding of interviewing rules. The evidence for panel conditioning suggests that it is a function of the survey content and questions (Lynn, 2010) but the evidence is mixed for attitudes, opinions and subjective reports (Cantor, 2008). In their longitudinal study of parent control of subsidiaries, Selmer and deLeon (2002) cite Menard (1991), who suggests that to ameliorate against panel conditioning the structure of surveys should be altered in longitudinal studies.

6.3.4 Research strategy: temporal design

One very important aspect of the study of change and continuity is the temporal design (Collins & Graham, 2002; Collins, 2006). The temporal design refers to the timing and spacing of data collection and there is little guidance in the literature on the precise function of how slowly or quickly time perspective changes. The decision to use three measurement occasions over a 12 month period was based on theoretical and practical reasons. Firstly, three measurement occasions permit a more sophisticated description of individual change relative to a two period design (Willet, 1989; Singer and Willet, 2003; Duncan et al., 2006). The analysis adopts latent growth modeling which requires a minimum of three measurement occasions (Mroczek et al., 2006; Mroczek & Griffin, 2006b; Byrne et al., 2008).The data collection interval ranged from September 2009-September 2010.

Secondly, the temporal design raises questions about duration of the longitudinal study such that it is sufficient to capture the phenomenon of interest, and it attends to the interval between measurement occasions (Collins & Graham, 2002). The measurement occasions chosen in the study and its duration were based on existing literature. Previous research by Luyckx et al. (2010) found mean level changes in time perspective using two

measurement occasions separated by four months, and because time perspective is depicted as a disposition, any change over time may happen more slowly which requires wider time intervals.

Wider spaced measurement occasions in excess of four months were not chosen because of concerns about attrition. It is advised in any longitudinal study to start with a large sample to offset the risk of attrition (Taris, 2000). Unfortunately in organizational research, large longitudinal samples are an exception rather than the rule. The choice of wider spaced intervals would have extended the duration of data collection, which raised concerns about risk of increased attrition (Taris, 2000).

Practical considerations also shaped the choice of interval adopted in the study, such as a desire to avoid intrusiveness (Dillman, 2000). The choice of time interval attempted to achieve balance between answering the research questions and minimizing the risk of attrition. At the research site, it became apparent that respondents were tiring of completing the survey at round three. Attrition between time one and time three was approx. 16% of the sample, and contact with respondents after round three indicated that only 50% of sample were prepared to complete the fourth round survey. A decision was made not to proceed with the fourth round on the basis that it would not yield a reasonable sample size. Furthermore, the research context was also complicated by the demands of an organizational change programme which impacted the willingness of respondents to complete a fourth survey.

6.3.5 Research strategy: measuring time

The coding of time is an important decision in a latent growth model.
Time was measured using the measurement occasion adopted in the study. Continuity and change are a feature of the time interval, measurement occasions and units of analysis chosen by the researcher. Data gathered from longitudinal designs are said to be time

structured (Block 1979, cited in Preacher et al., 2008, p.13) and there are a variety of ways in which time is coded (Little et al., 2006; McArdle, 2010). According to Grimm and Ram, (2012), time can be calibrated in different ways and these are shown in Table 13.

Table 13   Options for coding time in Latent Growth Models

Time coded as	Explanation
Age in year ,months or days	Normally used to examine development as a function of time
Time from death	Used to examine developmental functioning
Episodic time	Time before and after an event , used to capture onset duration and offset
Experienced time	Period of time in which a person has experienced an event e.g. grade in school
Measurement occasions	Individuals are measured at equal, individual and unequal time intervals, but it is unsuitable for development processes
Not coded	A basis function is estimated where data is fit to a model and the time metric is estimated from the model

Adapted from (Little et al., 2006)

Studies of individual change within organizational context (Lance & Vandenberg, 2000; Chan & Schmitt, 2000; Bentein et al., 2005; Jokisaari & Nurmi, 2009) normally use measurement occasion as the time metric (Lance & Vandenberg, 2000; Chan & Schmitt, 2000; Jokisaari and Nurmi, 2009). Researchers studying continuity and change in personality in adulthood have adopted the measurement occasion as the time metric or respondent age (Branje et al., 2004; Scollon & Diener, 2006; Vaidya et al., 2008b; Bleidorn et al., 2009).

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6.3.6 Research strategy: managing non-response

The approach adopted to manage non response was based on principles of survey design, tracking respondents, maintaining follow up and adopting a missing data strategy. The strategy adopted for managing non response draws on good practice in survey design and implementation advocated by numerous researchers (e.g. Dillman, 2000; de Leeuw et al., 2003; Boys et al., 2003; Lynn, 2008) such as adopting a user friendly design, providing advanced letters, written reminders, use of replacement questionnaire, provision of return addressed envelopes, maintaining appropriate length of the study to minimise attrition, presentation of the survey in booklet form, assuring confidentiality, gaining and maintaining access, implementation of the survey and using a system of checks and follow-ups with respondents.

The non-response and attrition management process followed in the research is outlined in Figure 13 and is based on guidance from Boys et al. (2003, .p 367). Prior to survey administration, respondents were given advanced notice of the data collection schedule for the three rounds and in addition, a two week advance notice was sent advising respondents of the survey's arrival. Participants were given three weeks to return the survey. Respondents who did not return the survey after this time entered the non-response process and received two reminders followed by a phone call. Those who did not respond after three attempts to contact them were placed in the missing data process. These respondents were not supplied with any further surveys, but were contacted to ascertain their reasons for withdrawal from the study. The flow chart demonstrates the activities used to maximize responses and the role of statistical analysis. Respondents who failed to return the survey after the final attempt to contact them were placed in the statistical strategy for dealing with missing data which is detailed in chapter seven.
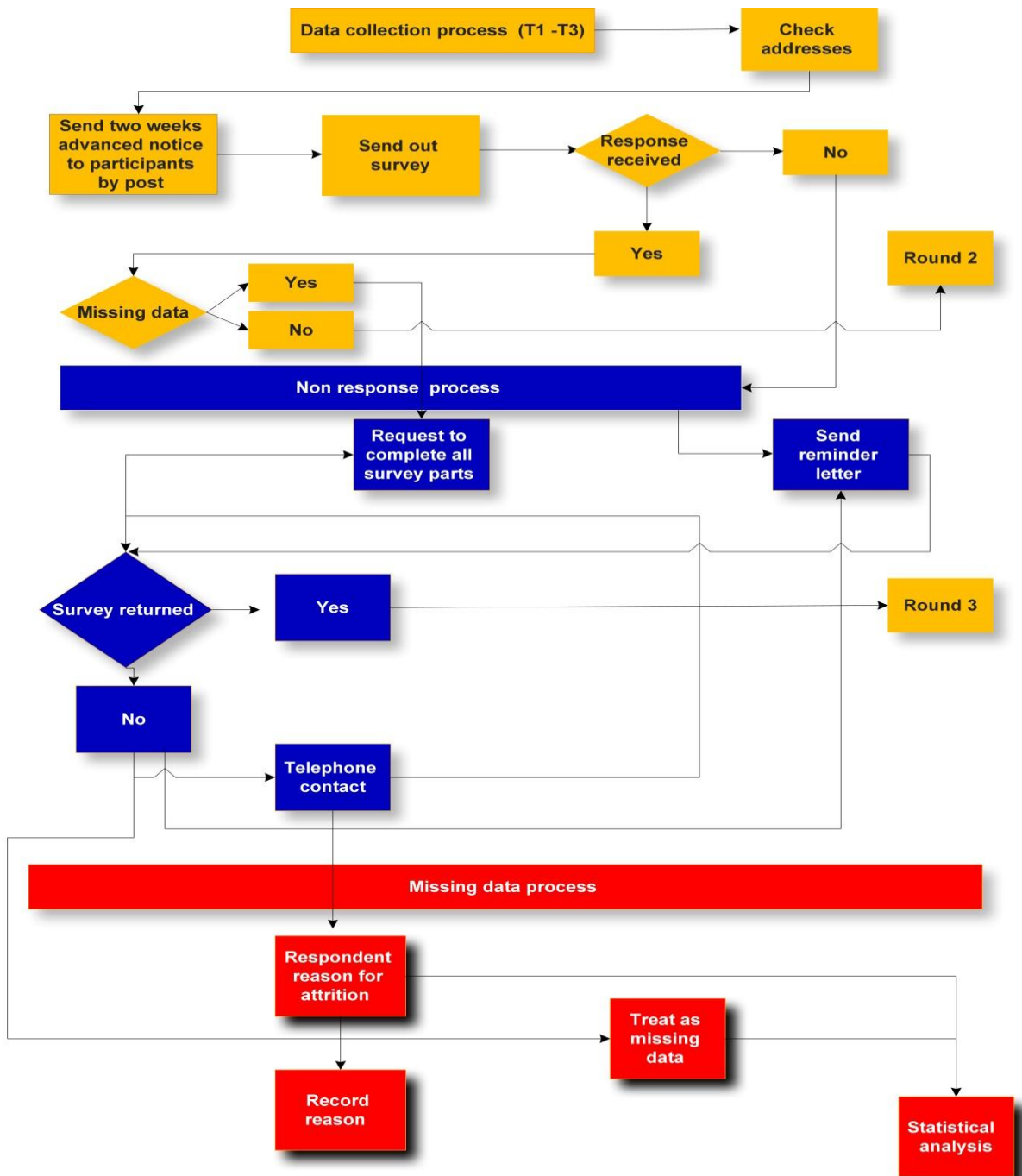
Figure 13 Managing non response and missing data

6.3.7 The research context and methods

The population of interest are youth workers and boards of management who are contracted to train early school leavers within a network of training organizations across the Republic of Ireland. The research sites were selected because current research using the ZTPI relies disproportionally on university students and a longitudinal field study using working adults provides an advantage over existing studies.

The research sites were chosen to maximize attitudinal diversity to time through geographical spread, as members of attitudinally congruent social networks are likely to resist attitude change relative to those in less attitudinally congruent settings (Visser & Mirabile, 2004).

The network of training organizations was established in Ireland in the 1980's as a community based response to support early school leavers, and there are currently 39 training organizations in existence. Youth workers and boards of management obtain funding on the basis of a business plan, which stipulates the achievement of learner outcomes. Youth workers train the early school leaver to develop a skill, place them on work experience and progress them to employment or further study.

The task of training and placing early school leavers invokes a variety of time perspectives. Past negative can be invoked because of a bad experience with a learner, who caused embarrassment to a youth worker while on work experience. Past positive can emerge because an early school leaver who managed to gain employment and change their life visits a youth worker and they reminisce about old times. Future time perspective is engaged when trying to place the learner in employment. Present fatalism manifests in the realization that no matter what you do as a youth worker, the learners will inevitably put short term distractions above long term achievement, and often to their own detriment. It is in this context that the study of continuity and change in youth worker

time perspective is examined.

6.3.8 Sampling

Data were collected across three measurement occasions from a sample of youth workers using a network of 39 training organizations in the Republic of Ireland. The sampling approach adopted in the research is multistage sampling, which involves the selection of primary level units at stage one followed by sampling of lower level units at stage two (Hox, 1995; Stapelton, 2010). A sampling frame of 39 research sites across the Irish Republic containing approx. 350 employees and 160 voluntary boards of management were selected. There was no sampling frame available for the individuals nested within the training companies.

To build a sampling frame of individuals, the entire population of training companies was asked to participate in the study (N=39). The primary unit sampled was the training company and individuals within that company were the secondary unit. Training organizations received a letter and consent forms from the researcher asking them to support the study. The final sampling frame of individuals (N=130 individuals) was based on those who responded from companies with consent forms from 25 out of the 39 training organizations.

6.3.9 Design and development of the research instrument

6.3.9.1 Time perspective measures

Time perspective was measured using the Zimbardo and Boyd Time Perspective Index (1999) which is a 56 item scale. International investigations using the ZTPI have predominantly supported a five factor model in: Brazil (Milfont et al., 2008), Portugal (Ortuna & Gamboa, 2010), France (Apostolidis & Fieulaine, 2004), UK and Russia (Boniwell et al., 2010), Spain (Díaz-Morales, 2006), Lithuania (Liniauskaité·& Kairys,

2009) and the USA (Zimbardo & Boyd, 1999). Questionnaires were distributed to respondents across three measurement occasions. Research evidence suggests that response rates may be increased once questionnaire content is presented in a logical order relevant to the respondent (Roberson & Sundstrom, 1990). By presenting relevant items in a logical order, respondents are "hooked into completing part of the questionnaire and he or she is more likely to finish and return it" (Roberson & Sundstrom, 1990, p.357). Based on concerns of panel conditioning, it was decided to scramble the survey questions on different occasions.

6.3.9. 2 Rationale for the chosen measure, scale reliabilities and sample items

The measure of time perspective was chosen because it has been used in over 105 scientific papers and has undergone extensive revisions by the scale developers. The measure addresses the past, present and future time perspectives, is regarded as a valid and reliable measure and the scale has demonstrated acceptable psychometric properties (Zimbardo & Boyd, 1999). An important psychometric property is scale reliability which refers to "the proportion of variance attributable to the true score of the latent variable, "(DeVellis, 2003, p. 27). The homogeneity of the items within a scale is known as internal consistency reliability and is measured using Cronbach's alpha (Schmitt, 1996), and it is the most popular measure used in all studies using the ZTPI. Scale reliabilities from existing studies for the full version of the ZTPI, are shown inTable 14. Items on the ZTPI are scored according to a five point likert scale ranging from very uncharacteristic to very characteristic. Sample items from each of the ZTPI scales are shown inTable 15.

Table 14 Sample scale reliabilities from current research

Sample scale reliabilities from current research

Scales	Alpha	Study
Future	.77	(Zimbardo & Boyd 1999)
Present hedonism	.85	(Livneh & Martz, 2007)
Present fatalism	.79	(Shipp et al., 2009)
Past positive	.80	(Zimbardo et al., 1997)
Past negative	.82	(Ortuna & Gamboa, 2010)

Table 15 Sample survey items

Sample survey items

Time Perspective Scale	Sample items
Future	Meeting tomorrow's deadline and doing other necessary work comes before tonight's play
Past Negative	I think about the bad things that have happened to me in the past
Present Hedonistic	I take risks to put excitement in my life
Past Positive	It gives me pleasure to think about my past
Present Fatalistic	My life path is controlled by forces I cannot influence

6.3.9.3 Pilot study

Pretesting surveys is a vital first step prior to administration and it is used to ascertain if the questions work well (Hunt et al., 1982). Pretesting helps to identify problems with the: survey layout, formatting of the survey, sequence of questions and

difficulties with individual questions. In sum pretesting determines a questionnaire's effectiveness (Reynolds et al., 1993). Pretesting facilitates the refinement of the questionnaire design and identifies errors in the questions which are only apparent to the population concerned (Reynolds et al., 1993). There are a variety of ways to pre-test a questionnaire: (a) personal interviews, (b) telephone interviews and (c) mail self reports. The personal interview approach helps to identify respondents reactions to the survey first hand (Hunt et al., 1982). The survey respondent is encouraged to think aloud while completing the questionnaire which is followed by a debriefing of the respondents by the interviewer. The debriefing may occur in the presence of the interviewer or by phone. In the mail self-report approach, the respondent is asked to complete the questionnaire and provide written feedback to the investigator. The pre-test sample should be a close fit to the actual sample when pre-testing the questionnaire. Pre-test samples should generally be small ranging from 13- 30 (Hunt et al., 1982).

The survey used in the research followed pre-testing guidance above. In total, 13 people were used to pre-test the survey. These individuals were employed by a large training company, who had similar job responsibilities to those in the target population. Four individuals completed the survey and agreed to provide feedback by telephone and four agreed to complete the survey and provide written feedback. All respondents found the layout and structure of the survey to be satisfactory and completed it in 15-20 minutes. However, they expressed some concern with two items on the Zimbardo and Boyd time perspective index. The items included (1) "Meeting tomorrow's deadline and doing other necessary work comes before tonight's play" and (2) "It is more important for me to enjoy life's journey than to focus only on the destination." After consultation, respondents expressed some confusion at the word "play" in item (1) which was replaced by the word "entertainment." The item was changed to read as follows "Meeting tomorrow's deadline

and doing other necessary work comes before tonight's entertainment." Respondents were also confused about the meaning of "destination" in item (2). The word destination in the minds of pre-testers was not equated with outcomes and the word "destination" was replaced with the words "end result" so that the item read "It is more important for me to enjoy life's journey than to focus only on the end result." The remaining five pre-testers received the amended survey by post and they completed it in 15-20 minutes. These respondents did not report any additional problems with length, layout, structure, and survey items. Respondents were asked about whether they wanted to create a respondent I.D. from their personal details or be given one by the researcher. It was decided that the researcher should provide the I.D because individuals would either forget to write it in the survey or may not remember the I.D they created.

6.4 Ethics, consent and access

Prior to survey administration the questionnaire and research questions were submitted to Dublin City University's Research Ethics Committee. Attrition is a concern in longitudinal research and it was decided to offer a cash incentive to participants in the form of a 500 euro draw that would take place at the end of the data collection phase .The ethics committee did not approve the proposal for an incentive on the grounds that it may encourage individuals to participate in the study who might not ordinarily do so. The incentive was subsequently withdrawn prior to survey administration. A copy of the DCU Research Ethics Committee approval letter is in APPENDIX A.

To access the research sites, a request was made to the Executive of the umbrella body of training organizations to support the research initiative in January 2009. Following agreement by the Executive in February 2009 to support the research, each training company manager and boards of management received a letter informing them about the research in March 2009. Each training centre usually holds a monthly board

meeting in which the request to participate in the research was raised. Consent forms were disseminated in April 2009 to give boards and managers sufficient time to consider the request. Consent forms took approximately 6-8 weeks to return. In September 2009, 130 individuals from 25 out 39 training companies returned consent forms and agreed to participate in the study. Before sending out surveys, each respondent received an advanced letter indicating the schedule of data collection and key dates.

6.5 Survey administration

Following the return of the consent forms each respondent was allocated a unique identifier and a survey was posted. Surveys were sent by post to each participant between September 2009 and September 2010 using a four month window. After round one, two respondents out of the 130 were excluded from further measurement occasions because they had missing data on all ZTPI items in the first round and did not respond to the researchers attempts to contact them. On the first round of data collection each individual received a pack containing: a self-addressed envelope, a copy of the survey with a unique identifier and a cover letter. Respondents received follow up reminders two weeks after the survey was posted. The same administration process was followed in the second and third rounds of data collection. A spread sheet was used to track respondent replies and to manage non-response. Those who failed to return the survey received a reminder and a copy of the survey to complete and were subsequently followed up by phone. To assess systematic missing data across surveys, data were entered into SPSS following each round and a missing data report was created. The report checked for any survey items that were being omitted purposefully by the respondent or clusters of respondents within and across training organizations. A copy of the survey is in APPENDIX B. To prevent respondents from resubmitting a previous survey, the second and third round surveys were scrambled

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and a time stamp was placed on all surveys at rounds one, two and three.

To summarize, the ZTPI was chosen to measure time perspective, it outlined the sample scale reliabilities and sample items from the ZTPI, it discussed the ethical considerations raised and it presented the pilot testing procedure followed by a description of the survey administration process. Data were collected using a paper based survey which was posted to respondents. The survey was designed in booklet form and followed the principle of good design to obtain the maximum response rate, to minimise missing data, and to militate against panel conditioning (Dillman, 2000; de Leeuw & Hox, 2008; de Leeuw & Hox, 2011). Electronic copies were not designed because respondents at the research sites declined to provide email addresses to which a user name and password could be sent. Questionnaires were distributed to respondents across three measurement occasions. Research evidence suggests that response rates may be increased once questionnaire content is presented in a logical order relevant to the respondent (Roberson & Sundstrom, 1990). By presenting relevant items in a logical order, respondents are "hooked into completing part of the questionnaire and he or she is more likely to finish and return it" (Roberson & Sundstrom, 1990,p.357). Based on concerns of panel conditioning, it was decided to scramble the survey questions on different occasions.

6.6 CHAPTER CONCLUSIONS

The chapter presented the philosophical position taken, the associated design and the process of instrument development and testing. The philosophy of science guiding the research is logical empiricism and the research adopted quantitative methods to analyse survey data.

To summarize, the study of continuity and change requires prospective longitudinal

design with a minimum of three waves. The study design was used to address panel conditioning and testing effects by altering the structure of the survey across different measurement occasions. The temporal separation of measurement occasions helps to reduce the influence of responses, transient moods and response styles across data collection periods (Rindfleisch et al., 2008). Non response was managed using a process that provided advanced notice, follow up and a series of contacts with respondents. The potential for missing data is managed through a follow up process with respondents and a statistical strategy. The temporal design and time intervals were chosen based on existing time perspective literature. The choice of a three month window was grounded in the view that time perspective would not demonstrate rapid mean level and individual change. The length of the study was based on practical reasons such as challenging times encountered at the research sites and concerns about attrition.

Following ethics approval for the study a survey containing measures of demographics and time perspective was administered to a sample of 128 youth workers across three measurement occasions after pilot testing. Youth workers were sampled from a network of training organizations contracted to train early school leavers. Pilot testing revealed that respondents had some concerns with items on the ZTPI and these were corrected.

The research questions and research design inform the choice of statistical approaches and the research design underpins the four quadrant diagram developed by Roberts et al. (2008) shown in Figure 12 which presents the different types of continuity and change. Continuity and change at the different units of analysis requires different statistical approaches. For example rank order continuity at the group level is assessed using a correlation coefficient, but retest correlations are not informative about individual stability. Mean level continuity can be assessed using repeated analysis of variance, but it

focuses on group level and not on the individual level. Latent growth modeling considers both the individual level and the group levels of analysis. Individual differences in change are also examined using the reliable change index which identifies those who changed and those who did not using two measurement occasions.

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CHAPTER 7

DATA ANALYSIS AND RESULTS

INTRODUCTION

The purpose of the chapter is to present the statistical approaches adopted in the study to answer the research question, to analyze the data collected across three measurement occasions using good practice outlined in chapter six and to answer the research questions. The chapter layout is shown in Figure 14.

The chapter is divided into three sections. Section one describes and critically evaluates the statistical approaches chosen. Section two presents data preparation and outlines adherence to distributional assumptions, managing missing data, outliers, floor and ceiling effects, testing for multilevel structure in the data arising from sampling process, and verifies the reliability of measures. Section three presents some preliminary descriptive statistics and the results of the study.

CHAPTER 7 DATA ANALYSIS AND RESULTS

| Chapter Introduction | → | Section one | → | Section two | → | Section three | → | Chapter Discussion and Conclusion |

Statistical approaches adopted in the research

Data Analysis

Results

Evalute statistical approaches trajectory and non trajectory

Distributional assumptions
Multilevel structure
Missing data analysis and reporting
Attrition
Validity and reliability of measures

Descriptive Statistics

Research Questions

Question 1
Question 2
Question 3
Question 4

Figure 14 Layout chapter seven

7.1 STATISTICAL APPROACHES ADOPTED IN THE RESEARCH

7.1.1 Statistical approaches adopted in the research

Continuity and change require longitudinal designs and the framework provided by Roberts et al. (2006) outlining the different conceptualizations of continuity and change directs attention to the choices of empirical approaches. The present research draws on a range of statistical analysis techniques to measure continuity and change such as: retest correlations to assess rank order continuity, RANOVA (Repeated Measures ANOVA) to examine mean level change, Latent Growth Models to investigate interindividual differences in intra individual change and the reliable change index to test for reliable individual differences in change over two periods. In addition to these approaches, the present study examines intraindividual variation in stability using a stability coefficient developed by Asendorpf, (1992). Figure 15 categorizes the statistical approaches adopted in the present research into trajectory based and non-trajectory based. Trajectory based approaches describe continuity and change in terms of a trajectory using means and variances such as a latent growth models. Trajectory based approaches examine continuity and change across multiple waves and fits a trajectory for the group and individual.

7.1.1.1 Non trajectory: intraindividual stability coefficient

Non trajectory based approaches describe continuity and change using a two period design i.e. they describe continuity and change from the first to second measurement occasions or from the first to the third. Retest correlations describe rank order consistency at the group level, but are not informative about continuity and change at the individual level. Non trajectory approaches for exploring continuity and change at the individual level include the reliable change index and intraindividual differences in stability.

Asendorpf (1992) demonstrates that despite moderate to high rank order consistency, individuals may demonstrate intraindividual variation in their stability coefficients.

The decomposition of the re-test correlation into individual contributions can show individuals who retain high levels of individual continuity across measurement occasions and those that do not. By decomposing re-test correlations into individual contributions, a more informative description of continuity can be provided. The formula for decomposing a re-test correlation into individual stability coefficients (i_{12}) is taken from (Asendorpf 1992) and is shown in Equation1.

Equation 1 $i_{12} = 1 - \dfrac{(Z1-Z2)^2}{2}$

where Z1 and Z2 are the standardized z scores corresponding to individuals scale score and i_{12} is the individual stability coefficient between time 1 and time 2.

7.1.1.2 Non trajectory: Reliable change index

The reliable change index is used extensively in clinical research and in studies of personality development. The index assesses the clinical significance of an intervention indicating that individuals moved from a dysfunctional to functional distributions. The concern about movement from a dysfunctional to a functional distributional is that it is clinically significant, but the measure of change can be unreliable (Jacobson, Follette, and Revenstorf 1984, cited in Wise, 2004, p. 52). The reliable change index has attempted to definitively indicate that reliable change has occurred by setting cutoffs for the index at +/_ 1.96 showing that change was reliable. The RCI has evolved to control for measurement error of pre test scores (Christensen & Mendoza 1986, cited inWise, 2004, p. 53). There are a variety of indices which measure reliable individual change such as the reliable change index (Wise, 2004), but the RCI chosen in the research is based on

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Jacobson and Truax, (1991). The approach advocated by Jacobson and Traux is easy to use and has received support among personality researchers (Roberts et al., 2001; Donnellan et al., 2007; Ludtke et al., 2009).

Figure 15 Categorization of statistical approaches

The formula for the RCI is taken from Jacobson and Traux (1991) and is shown in Equation 2.

$$\text{Equation 2} \qquad \frac{X_2 - X_1}{\sqrt{\sqrt{2\,s1(1-rxx)}^{\ 2}}}$$

and where here X1 and X2 are individual scale scores from different measurement occasions, where $s1\sqrt{1-rxx}$; indicates that s1 is standard deviation of a pre-treatment group, rxx is the test retest reliability of the measure administered at different occasions.

Reliable change indices were computed in excel using an RCI calculator (Zahra, 2010). The calculator was tested using the example in Jacobson and Truax (1991). The

index is based on classical test theory (Robins et al., 2001), where index values greater than +1.96 and smaller than -1.96 are indicative of reliable change at the individual level of analysis. Respondents are classified into the percentage of the sample demonstrating reliable change (increases or decreases) and percentage remaining the same. The statistical approaches adopted to answer the research questions are compared and contrasted in Table 16 which is based on Lance et al. (2000).

7.1.1.3 Trajectory based approaches: Ranova and Latent Growth Models

Table 16 presents an evaluation of the approaches used to examine continuity and change, and latent growth modeling represents a significant improvement over competing alternatives because it simultaneously considers both continuity and change at the group and individual levels of analysis (Curran et al., 2010). Repeated analysis of variance (RANOVA) is also a trajectory based approach but attends to the group level change or continuity. Regression based approaches such as (R)ANOVA require complete data. Latent growth models (LGM) have been instrumental in the study of continuity and change at the group and individual level (Mroczek et al., 2003; Mroczek & Spiro, 2003; Scollon & Diener, 2006; Mroczek & Griffin, 2006a; Mroczek et al., 2006; Branje et al., 2007; Mroczek, 2007; Bleidorn et al., 2009; Mroczek et al., 2009).The specification of the Latent Growth Model, LGM is shown in Figure 16 and the model parameters for the LGM are shown in Table 17 and the structural equation modeling framework is shown in Figure 17 which guides estimation and testing.

Table 16

Comparisons among analytical approaches against idealized change components

Modeling	Descriptive Statistics	Change scores	t-tests	Anova	Manova	Lagged Regression Yt-1 Covariate	Longitudinal Factor Analysis	Latent growth model
Individual and group level change	No	Yes	No	No	No	Yes	Limited	Yes
Individual differences in change	No	Yes	Limited	Limited	Limited	Yes	Limited	Yes
Change at true score level	No	No	No	No	No	No	Yes	Yes
Various forms of change	No	No	No	Yes	Yes	No	No	Yes
Commitant change	Yes	Yes	No	No	Yes	No	Yes	Yes
Prediction of Change	No	Yes	No	No	No	Yes	Limited	Yes

Source (Lance & Meade et al p 209)
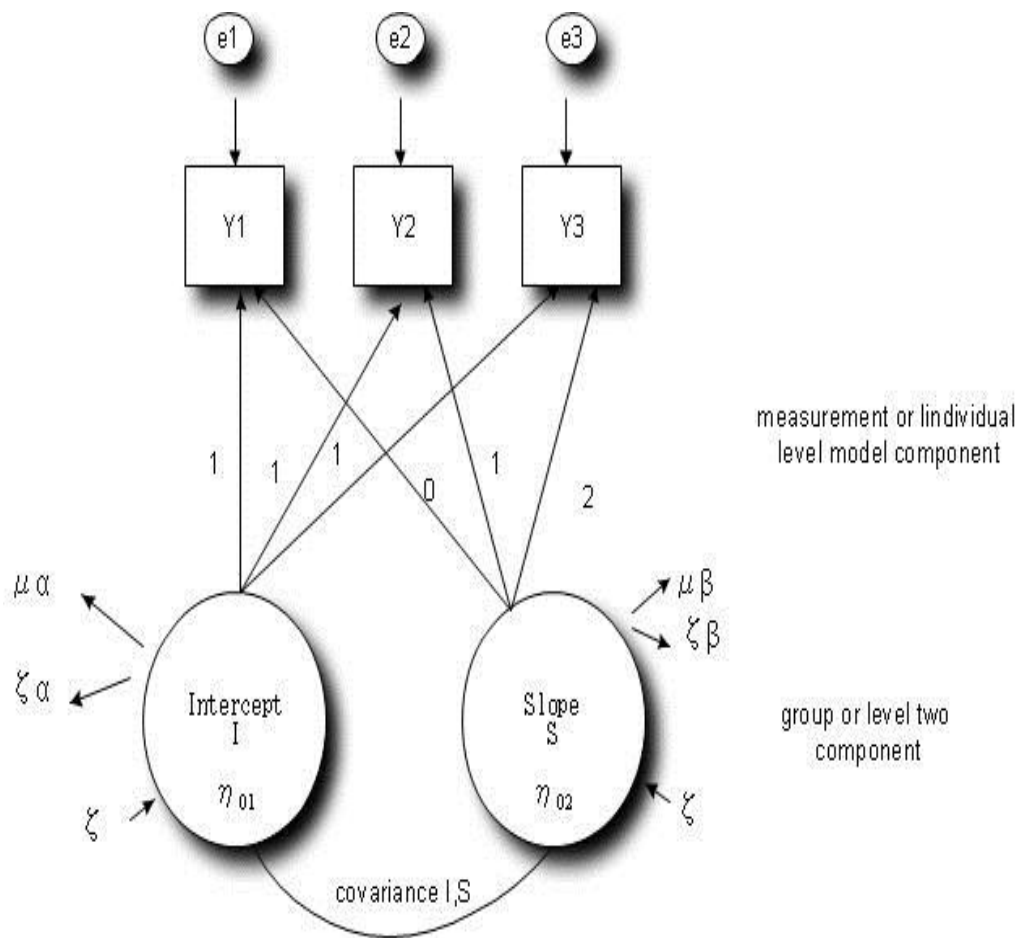
Figure 16 Latent growth model specification

Table 17

Model parametres of interest in the LGM

Parametre	Symbol	Explanation
Intercept	η_{01}	Describes the individual's initial status on the construct measured on the first wave.
Slope	η_{02}	Demonstrate individual change over time.
Intercept mean	$\mu\alpha$	Represents the average initial level of each time perspective.
Intercept variance	$\zeta\alpha$	Shows interindividual differences in the average initial level at time 1.
Slope mean	$\mu\beta$	Represents the average rate of change.
Slope Variance	$\zeta\beta$	Demonstrates interindividual differences in intraindividual change.
Covariance Int Slope	Cov int slope	Indicates the relationship between the initial status of a time perspective and change in that time perspective across occasions.
Time metric 0,1,2		Value of the trend variable.
Survey item	Y	Observed indicators.
Residual error variances	e	Residual error variances in repeated measures.
Latent variable disturbance term	ζ	Represent unexplained variability in endogenous variables.

Figure 17 outlines the steps involved to obtain model parameter estimates in a Latent Growth Model under structural equation modeling.

Flow chart of SEM steps
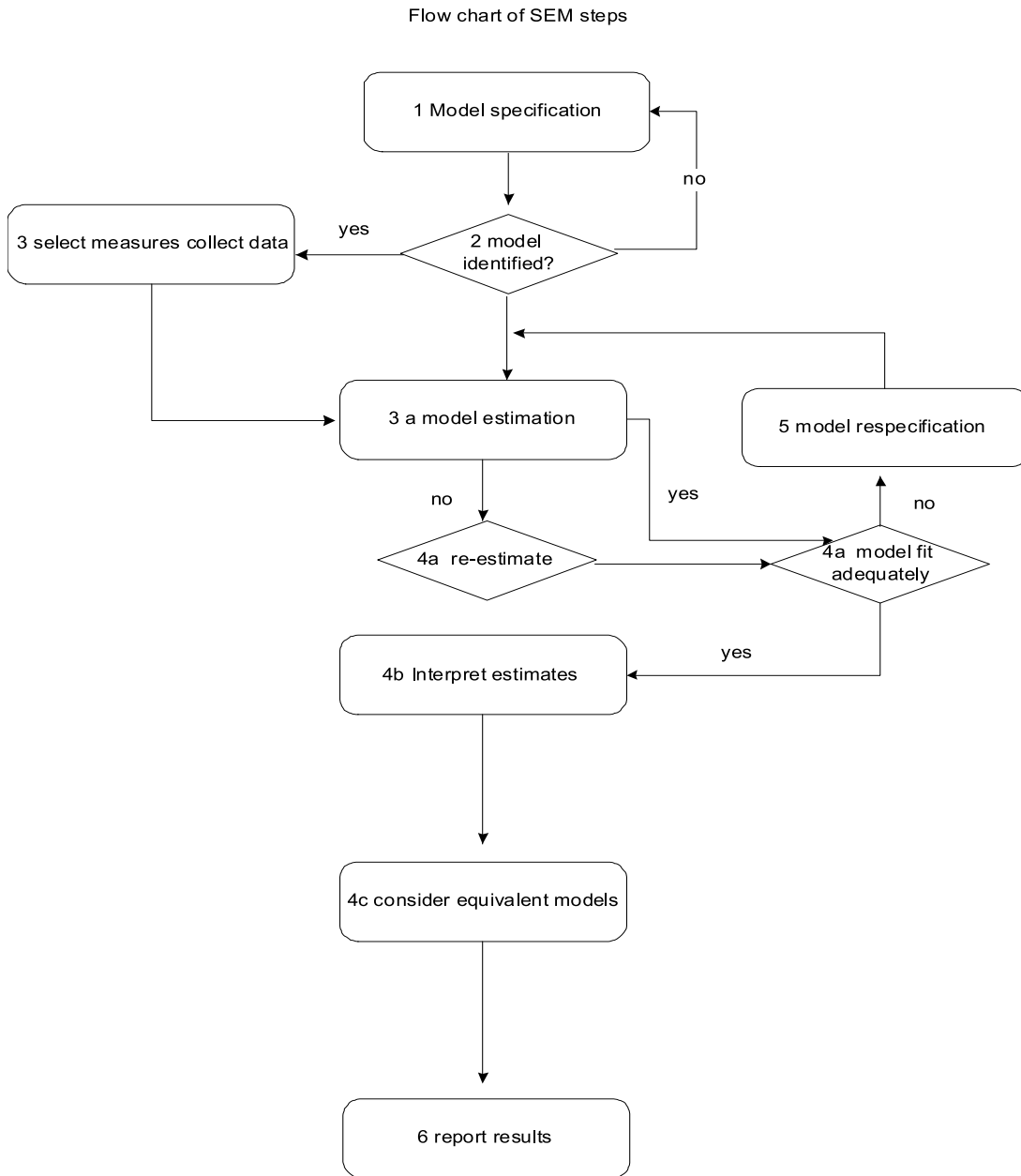
Source Kline (2010)

Figure 17 SEM process guiding LGM analysis

Model specification involves the designation of variables, relations among the variables and the status of parameters in the model (Hoyle, 2012a).The growth model was specified in Figure 16 and Figure 17outlined the process for specification, estimation and testing of a Latent growth model. Model identification involves moving from "known information to model parameters"(Kenny & Milan 2012,p.145). An identified model means that there are unique values for the model parameters and that the number of known parameters is either equal to or exceeds the number of unknown parameters (Hoyle, 2012b). Model identification is considered in the context of model constraints. In the specification of the LGM in Figure 16, the time metric is constrained to be equal to specific values to model linear change and the specification assumed is that error variances are uncorrelated.

Model estimation involves obtaining estimates of unknown parameters by minimising the discrepancy between the sample covariance matrix and a model implied covariance matrix (Lei & Wu, 2012). Maximum likelihood estimation uses an iterative process to minimize the discrepancy between the sample variances and covariance and the model implied variances and covariance using convergence criteria. The LGM uses Maximum likelihood estimation to estimate the model parameters when data are normally distributed. After estimation and assuming no improper solutions or out of range values, the model is examined for fit using fit statistics and fit indices. The assessment of fit and theoretical considerations prompt development of alternative models such as using different time metrics or including residual patterns. Finally, results of each model are reported and the appropriate model is chosen.

To summarize, the research questions and research design inform the choice of statistical approaches and the research design underpins the four quadrant diagram developed by Roberts et al. (2008) shown in Figure 12 which presents the different types

of continuity and change. Continuity and change at the different units of analysis requires different statistical approaches. For example rank order continuity at the group level is assessed using a correlation coefficient, but retest correlations are not informative about individual stability. Mean level continuity can be assessed using repeated analysis of variance, but it focuses on group level and not on the individual level. Latent growth modeling considers both the individual level and the group levels of analysis. Individual differences in change are also examined using the reliable change index which identifies those who changed and those who did not using two measurement occasions. The limitations of these approaches are outlined in chapter nine.

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7.2 DATA PREPARATION

Section two presents the treatment of data, coding, multivariate outliers, and distributional assumptions, missing data, testing for multilevel structure, floor and ceiling effects and attrition.

7.2.1 Data coding

Data were pre-processed in SPSS version 20 and MPLUS v7 was used to conduct the latent growth models and tests of multilevel structure. Following data entry, a random sample of 40 surveys was taken for each measurement occasion to check for data entry errors. Errors were found in data entry and all surveys across the three rounds were rechecked and the errors were corrected. Missing data were coded using minus 999 and negatively worded items were reversed scored according to Zimbardo and Boyd (2010). Sample items included: if things don't get done on time I don't worry about it, I take each day as it is rather than plan it out, there will always be time to catch up on my work, the past has too many unpleasant memories that I prefer not to think about, and I find myself tuning out when family members talk about how things used to be.

7.2.2 Multivariate outliers

Outliers are observations that have a unique combination of characteristics which makes them different from other observations (Hair et al., 2006). Data were checked for multivariate outliers using Mahalobis Distance D^2 in SPSS. Higher values of D^2 indicate the presence of multivariate outliers. The largest D^2 was 13.59 with two independent variables which is less than the critical value of 13.82 (Tabachnick & Fidell, 2007). It was decided that multivariate outliers were not a cause for concern.

7.2.3 Distributional assumptions

Structural equation modeling requires that observed variables follow multivariate

and univariate normal distributions (Curran et al., 1996). There is some debate about the cut offs regarding non-normality (West et al., 1995) and, in general, standardized kurtosis ranges from +/-2 (Muthén & Kaplan, 1985) to +/- 7 (West et al., 1995) which indicate departures from non-normality. Individual survey items were not normally distributed. One solution to non-normality is to use the scale scores from each time perspective (Byrne, 2012) and this was adopted in the research. Table 18 reports the univariate skewness and kurtosis for each of the time perspective scales obtained from MPLUS version 7 and these do not indicate departures from normality that may raise concerns.

Table 18

Analysis of skewness and kurtosis across three waves

TP scale	Skewness			Kurtosis		
	T1	T2	T3	T1	T2	T3
[a]FTP	-0.72	-0.40	-0.91	-0.16	0.92	0.64
[a]PH	0.25	-0.10	0.02	-0.03	0.73	0.70
[a]PF	0.24	0.01	-0.13	-0.16	0.92	-0.64
[a]PN	0.34	0.29	0.00	-0.55	0.33	0.55
[a]PP	-0.20	-0.15	-0.18	0.33	-0.57	0.92

Note. FTP=Future time perspective, PH=Present hedonism, PF=Present fatalism, PP=Past positive, PN=Past negative

7.2.4 Multilevel structure

The sampling approach adopted in the research is multistage sampling which involves the selection of primary units (organizations) at stage one followed by sampling of lower level units (individuals) at stage two (Hox, 1995; Stapelton, 2010). Multistage sampling was chosen because the primary unit sampled was the organization and the second stage of sampling used individuals. This sampling approach gives rise to nested data i.e. individuals nested within organizations.

Multistage sampling gives rise to a hierarchically structured data set and implies that observations are not identically distributed and independent (Kaplan & Elliott, 1997) and so estimated model parameters such as standard errors tend to be small, yielding spuriously significant results (Hox, 1995). The independence assumption is violated because responses from the same group are more similar than observations from different groups and the lack of independence can be demonstrated using an intraclass correlation (Hox, 1995). Ignoring a multilevel data structure can present problems such as negatively biased standard errors which results in spurious effects (Hox & Maas, 2004). Testing of multilevel structure was handled in MPLUS 7 by estimating a series of multilevel latent growth models and examining the intraclass correlations.

The approach adopted in MPLUS is to handle three levels of analysis using a two level approach. Time is included in the level one model, individual is at level two, and cluster is the third level (Muthén & Muthén, 1998-2010). The task is to decide if variance in time perspective measures arises from clustering in which case a multilevel analysis is required. The intraclass correlation (ICC) measures the amount of variability that can be accounted for by clustering (Hox, 2010). Although there are conflicting cutoffs for (ICC), (ICCs) close to zero indicate that it is pointless to model a multilevel structure in the data (Byrne, 2012). In research conducted by Julian (2001) multilevel data structure with

minimal intraclass correlations produced relatively unbiased chi square test statistics, model parameters and standard errors. To exclude multilevel structure intra class correlations were generated in MPLUS for each of the time perspectives. Intra class correlations ranged from .004 to .042 for the five time perspectives which would indicate that a multilevel model is inappropriate and analysis should proceed using conventional SEM approaches (Julian, 2001). It was decided not to pursue a multilevel analysis based on the intraclass correlation.

7.2.5 Floor and ceiling effects

Floor and ceiling effects refer to extreme scores on a test and are likely to occur with older individuals (Andresen et al., 1998; Andresen et al., 1999). Ceiling effects refer to situations where test participants reach the highest possible score on the test and ceiling effects are known to produce spurious relations in growth models (Lijuan et al., 2008). Scales were judged to have floor and ceiling effects if 20% of respondents had the highest or lowest score on each of the scales (Andresen et al., 1998). Data did not exhibit floor and ceiling effects, and this analysis is presented in Table 19.

7.2.6 Missing data analysis

The sample of 130 respondents gathered contained two individuals with missing data on all time perspective measures. It was decided to drop these individuals from the remaining measurement occasions because they failed to complete the time perspective measures and did not complete the second and third wave of measurement. The effective sample size after round one was 128 individuals. Missing data are defined as a "statistical difficulty (i.e. a partially incomplete data matrix) resulting from a decision by one or more sampled individuals to not respond to a survey or a survey item," (Newman 2009,p. 8).

Table 19

Floor and ceiling effects

Scale	Sample	Mean	Std Dev	Min	Max	Floor	Ceiling
						at 1%	at 5%
Future Time Perspective T1	128/130	3.61	.502	1.62	4.77	0	0
Present Hedonism T1	128/130	3.28	.466	2.13	4.17	0	0
Present FatalismT1	128/130	2.38	.580	1	3.89	.8	0
Past Negative T1	128/130	2.54	.698	1	4.7	.8	0
Past Positive T1	128/130	3.67	.519	1.89	4.78	0	0
Future Time Perspective T2	118/130	3.65	.429	2.15	4.77	0	0
Present Hedonism T2	118/130	3.29	.442	1.93	4.42	0	0
Present FatalismT2	118/130	2.46	.560	1.11	4.56	0	0
Past Negative T2	118/130	2.55	.60	1.2	4.3	0	0
Past Positive T2	118/130	3.65	.487	2.33	4.56	0	0
Future Time Perspective T3	108/130	3.65	.454	1.77	4.62	0	0
Present Hedonism T3	109/130	3.33	.533	1.53	5.00	0	.8
Present FatalismT3	109/130	2.41	.537	1	3.44	.8	0
Past Negative T3	109/130	2.47	.607	1	4.00	1.5	0
Past PositiveT3	109/130	3.65	.508	1.89	4.89	0	0

Data may be missing at the item level on a survey, at a scale level, at the survey level or at a wave or measurement occasion level according to different missingness processes (de Leeuw et al., 2003). Missing data are a fact of life for any researcher, especially for longitudinal research and it can limit the generalizability of research findings (McKnight et al., 2007) and the statistical power of the analysis is reduced because of a smaller pool of items, (Newman 2009). A smaller sample size can make the sample less representative of the population (Boys et al., 2003) and it can inflate type I and II error rates (Roth, 1994; Collins et al., 2001) and bias parameters estimates such as correlation coefficients (Roth, 1994). Given the seriousness of missing data, a strategy is required to retain as many participants and responses across the study which must be supported by an appropriate statistical response.

7.2.6.1 Reporting missing data

The non-response and attrition management process was previously outlined in Figure 13 and was adapted from (Boys et al., 2003, p.367). Respondents who failed to return the survey after the final attempt to contact them were placed in the statistical strategy for dealing with missing data. The statistical strategy adopted to manage missing data is to first examine missing data patterns, assumptions and then implement appropriate solutions.

There is no inherently correct methodological procedure for handling missing data (Enders, 2010). Missing data are treated according to guidelines presented in Bodner, (2006), Schlomer et al. (2010) and Enders, (2010). The following guidelines were used to manage missing data. Missing data reporting should include an acknowledgement of missing data, the range of missing data per scale, attrition analysis, differences between stayers and leavers, reports of attrition at each wave and over all attrition, a decision on the missing data mechanism, a presentation of missing data with scale reliability and the

approach used to handle missing data should be discussed. Table 20 reports the percentage of missing data.

Table 20

Complete and incomplete case analysis

	T1	T2	T3
Sample	128 cases	113 cases	107 cases
	T1	T2	T3
Complete	106 cases (81.5%)	96 cases (73.8%)	94 cases (72.3%)
Incomplete	22 cases	17 cases	13 cases

In total, missing data on each time perspective scale ranges from approximately 24 % to 25% across all waves which arose from sample attrition.

7.2.6.2 Missing data mechanism

To propose a solution to missing data, a missing data mechanism must be identified. Missing data mechanisms describe the missingness in three ways: missing completely at random (MCAR), missing at random (MAR) and missing not at random (MNAR). Data can be missing according to these classifications on the variable, individual and occasion levels (McKnight et al., 2007) and the authors provide a description of each of the mechanisms. Missing completely at random refers to missing data that arises because respondents randomly omit responses, or respondent data is missing at random or a respondent fails to show up at a data collection session.

Data missing according to MAR at the item level means that missing data may be linked to other responses on the respondent level where missing data may be linked to

demographics at the respondent and at the occasion level. MAR may arise on one occasion because of poor performance on a prior occasion. Missing not at random at the item level can arise because a person refuses to answer incriminating items, at the variable level. MNAR arises because missing data is related to unmeasured demographic data, and MNAR at the occasion level occurs because respondents refuse to participate in the study as a direct result of the study. Missing completely at random is testable while MAR and MNAR are not directly testable. A test of MCAR was conducted in SPSS 20 and Table 21 indicates that data are missing completely at random. The results are based on item level analysis.

Table 21

Test of missing completely at random

Time perspective	Little's test		pvalue
Measures			
Wave 1	Chi-Square = 1047.51,	DF = 1034,	Sig. = .37
Wave 2	Chi-Square = 1272.31,	DF = 1202,	Sig. = .07
Wave 3	Chi-Square = 719.86	DF = 715,	Sig. = .44

Following the confirmation of the missing data mechanism, it is recommended to examine the data for correlates of missingness which include demographic factors (Lance and Vandenberg, 2000). Variance tables can be used to identify correlates of missing data by conducting individual t-tests between observed variables, but the more tests conducted can result in Type1 errors (Enders 2011). Instead of variance tests, logistic regression analysis was conducted to identify the correlates of attrition (Given et al., 1985). Attrition was chosen as the dependent variable and it was coded as 0 for no attrition and 1 for attrition. Independent variables included age, gender; organizational role, education and

the time perspective scale scores for time one. The analysis indicated that the full model containing all predictors was not statistically significant χ^2 (6, N=127) = 8.02, p= .23.

In longitudinal research, for MCAR to hold, observed data must be unrelated to scores on previous occasions and unrelated to missing data (Enders, 2011). In longitudinal studies, attrition is usually MAR in that missing scores in one measurement occasion are correlated with their observed scores on a previous occasions (Newman 2009). The MAR assumption allows attrition to depend on the responses at any or all occasions prior to dropout (Schafer and Graham, 2002). In this case, respondents with incomplete data differ from participants with missing data, but the missingness is a function of other observed variables in the data set (Bennett, 2001).

Missing data mechanisms such as MAR and MNAR are not testable (Bennett, 2001) and deciding between MAR and MNAR is a process of judgment between theory and empirical approaches (Sterner, 2011). Data that are MNAR are related to missing values of the observed variables themselves. Two approaches are outlined in the literature, for dealing with MAR and MNAR; double sampling and statistical models such as pattern mixture models and selection models. Schafer (1997, cited in McKight 2007) suggests that double sampling be used to ascertain the reasons for missing data.

Double sampling involves collecting additional information from non-respondents through follow up. Respondents who left the study were subsequently followed up and were asked if: the survey was difficult for them to understand, the survey questions prompted them to leave the study and whether other reasons impacted their decision not to respond. Individuals who left the study did so for different reasons such as retirement, job change, maternity leave and career break. Missing data is regarded as ignorable if the mechanism that created the missing data is either random or the reasons for missing data are given in double sampling (McKnight et al., 2007). Schafer (1997) questions the

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tenability of MAR if there is no evidence of follow up for non-respondents.

7.2.6.3 Attrition by gender

Cross tabulation between attrition and gender was conducted to test for a relationship between attrition and gender. Attrition was coded as 1 for attrition and 0 for no attrition. Cross tabulation shows that 21 individuals left the study of which 9 were females and 12 were males. A chi square test for independence (with Yates correction) showed no significant association between gender and attrition across the three waves, χ^2 (1, $N=$ 128) =.30, $p=$ .57, phi=.7

7.2.6.4 Attrition by measurement occasion

A two-way Anova was used to analyse mean differences between stayers and leavers. To examine the impact of attrition on each of the time perspective scales, participant status was coded into three groups as follows: 1= participants who completed all three waves, (n=107 or 83.59%), 2= those who completed T1 and T2 but not T3 (n=11 or 8.4%) and 3= participants who completed T1 but not T2 and not T3, (n=10 or 7.8%). (Vaidya et al., 2008b). The dependent variable entered was the time perspective scale score for the first measurement occasion (Lance & Vandenberg, 2000). The ANOVA indicated that there were no statistically significant differences between stayers and leavers for future time perspective $F(2,125)=.421, p=.63$, $eta^2=.007$, present hedonism $F(2,125)=1.55, p=0.21$ $eta^2=.024$, present fatalism, $F(2,125)=.045. p=0.95, eta^2=.001$, past positive $F(2,125)=.922, p=.40$, $eta^2=.01$ and past negative $F(2,125)=0.96, p=.38$, $eta^2= .015$. The solutions for missing data under MCAR is to choose between traditional approaches such as case wise deletion or more state of the art approaches such as imputation and full information maximum likelihood (Schafer & Graham, 2002). Maximum likelihood estimation was chosen because it uses all available data and traditional approaches to

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handling missing data are flawed (Enders, 2010). The alternative state of the art approach is multiple imputation which was not used because it produces the same results as Maximum likelihood (C.Enders, personal communication, February 15 2012).

7.2.6.5 Establishing the validity and reliability of the measures

Internal consistency reliability is concerned with item homogeneity within a scale and is demonstrated through high item intercorrelations (DeVellis, 2003). Construct validity considers the extent to which a measurement instrument measures a latent construct that it was designed to measure in the first place (Raykov & Marcoulides, 2011). Cronbach's alpha is a standard indicator of internal consistency, which reflects the proportion of a scale's total variance, which can be attributed to a common source. Construct validity is normally examined through confirmatory factor analysis. Table 22 presents Cronbach's alpha for each of the time perspective scales across the three time periods.

Assessment of construct validity normally proceeds with confirmatory factor analysis to examine the factor structure and factor loadings of the measures. Confirmatory factor analysis posed difficulties which invoked a number of judgment calls (McGrath, 1982) where the researcher must choose between a lesser among evils. The relatively small sample size (N=128) posed some challenges and was handled using three approaches in the literature.

7.2.6.6 Confirmatory factor analysis

The first option is to estimate a CFA for all five time perspectives using all items which uses a higher number of indicators per factor to compensate for smaller sample sizes (Marsh et al., 1998; Marsh & Hau, 1999). A second approach suggests trimming the number of indicators for established scales and a third option is to estimate a single factor

models for each time perspective.

7.2.6.7 Scale reliability of time perspective

Table 22

Cronbach's alpha for each of the five time perspective scales over three measurement occasions.

Time perspective	t1	t2	t3	no of items
Present Hedonism	**.74**	**.74**	**.80**	15
% of missing data	6	16	20	
Future	**.76**	**.61**	**.71**	13
% missing data	3	13.	12	
Present Fatalism	**.74**	**.74**	**.69**	9
% missing data	9	10	18	
Past Positive	**.70**	**.66**	**.70**	9
% missing data	11	10	13	
Past Negative	**.83**	**.77**	**.80**	10
% missing data	6	10	20	

Given the sample size of 128, and that there are 168 items across three occasions, MPLUS could not estimate a CFA for the five time perspectives simultaneously because the model would not converge on a set of model parameters.

Option two

Run CFA with a reduced number of items per factor. In this case scales may be refined using rules of thumb such as adopting a cut off of .5 and cross loading of .25 based on (Bartel& Milliken, 2004) and scale reliabilities are shown in Table 23 for the time perspective measures when the rule of thumb is applied. Measure refinement "refers to any set of procedures performed on an instrument designed to improve its representation of a construct" (Smith & McCarthy, 1995,p. 301). The scales were

shortened using the guidance provided in Bartel and Milliken (2004) but yielded unsatisfactory scale reliabilities shown in Table 23. The approach presents other concerns such as production of highly redundant items, low numbers of items and potentially low validity (Boyle 1991 cited in Stanton et al., 2002) and difficulties with consistent factor structure (Catell 1978 cited in Stanton et al., 2002).

Table 23

Cronbach's alpha for modified scales

Time 1	Alpha	full scale	Alpha reduced scale	number of items
13 items [a]	FTP	.76	.50	
15 items [a]	PH	.74	.57	4
9 items	[a] PF	.73	.52	3
9 items	[a] PP	.68	.44	4
10 items [a]	PN	.83	.81	5
Time 2	Alpha	full scale	Alpha reduced scale	
	[a] FTP	.61	.60	
	[a] PH	.74	.59	
	[a] PF	.74	.43	
	[a] PP	.66	.58	
	[a] PN	.75	.70	
Time 3 Alpha	full scale		Alpha reduced scale	
	[a] FTP	.71	.63	
	[a] PH	.80	.65	
	[a] PF	.71	.49	
	[a] PP	.70	.50	
	[a] PN	.80	.75	

Note. a FTP =Future time perspective, PH =Present hedonism, PF= Present fatalism, PP=Past positive, PN=Past negative

The use of any modified scale should be tested on an independent sample and examined for discriminant validity (Smith & McCarthy, 1995). Finally, any attempt to reduce the number of items on the ZTPI has led to poor psychometric properties (Wakefield et al., 2010). It was decided not to proceed with the alternative on the grounds of poor reliability and validity concerns because the modified scales were not pretested in their modified state. This option was not pursued further.

Option three

Conduct CFA with smaller sample sizes using one factor models and all scale items. Rather than reduce the number of items, it was decided to run a set of individual CFAs. A CFA was chosen over EFA because the factor structure of the ZTPI is well established. Missing data was handled using Full Information Maximum Likelihood (FIML), which is superior to approaches such as case wise deletion (Enders & Bandalos, 2001). The results of each of the CFAs are shown in Table 24. Given that high reliability is a condition for validity (Raykov, 2004); the decision was taken not to shorten the scale for CFA on the grounds that any comparison between research using a reduced scale and a full scale is problematic (Stanton et al., 2002). The results have implications for structural continuity identified in the framework developed by Roberts et al (2008). The impact of this decision is that invariance testing was not conducted in the analysis which is essential for any discussion of continuity and change (Golembiewski et al., 1976) and the assumption of invariance in measurement and factor structure was made.

Table 24 indicates that three of the time perspectives demonstrated significant chi square tests: present hedonism, past negative and past positive. Cut offs for the various fit indices are based on Hu and Bentler (1999), where CFI at .95 or above is considered as a good fitting model , SRMR close to 0.8 and RMSEA close to .06 are considered as well fitting models. The fit indices show mixed results. The fit of present fatalism and future

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time perspectives appears satisfactory using the chi square test. The results are not surprising as previous validation studies have also shown significant poor fit using both chi square test and fit indices.

Table 24

Confirmatory factor analysis results

Time Perspective	Chi Sq	df	p value	CFI	SRMR	RMSEA
Present Fatalism	23.03	27	.68	1.00	.04	.000
Present Hedonism	197.72	90	.00	.54	.09	.097
Past Negative	58.05	35	.00	.91	.05	.072
Past Positive	100.05	27	.00	.56	.14	.145
Future	75.77	65	.16	.93	.06	.036

Instead of modelling the latent variables for each time perspective, the average of the scale items was used to measure the observed variables using a first order latent growth model (Byrne, 2012). The option to examine method variance longitudinally by adding correlated residuals or a method factor was also ruled out because it added even more parametres to be estimated relative to a basic CFA.

To summarize, the section indicated that data met distributional assumptions appropriate to the techniques adopted. It was decided to retain as much of the sample as possible and 128 cases were used. Attrition resulted in loss of 16.4% of the sample and there were no statistically significant differences between completers and non-completers across the three measurement occasions, and there were no gender differences in attrition.

The missing data strategy adopted helped to prevent additional attrition and reasons for attrition indicated that they were unrelated to the study. Time perspective scales demonstrated reliabilities consistent with current literature and CFAs conducted in the

extant literature indicated poor fit to the data. The sample of 128 individuals did not permit invariance testing to be carried out using the entire set of scale items. Attempts to shorten the scales using factor loadings at .5 and above and cross loadings less than .25 yielded unsatisfactory scale reliabilities and this procedure was not adopted. Therefore the assumption of invariance was made across measurement occasions.

7.3 DATA ANALYSIS AND RESULTS

The purpose of section three is to describe the sample characteristics, report correlations between measures and to provide answers to the research questions.

7.3.1 Sample characteristics

Table 25 presents sample statistic and indicates that the average age of males was higher than females and males had longer organizational tenure than females. The average age for males in the sample is 47 and 42 for females, and both males and females have worked in the organizations sampled for approximately 8 years. Females showed marginally higher scores on present fatalism, past positive and past negative time perspectives relative to males.

A series of cross sectional independent sample t-tests were conducted to examine gender differences in time perspectives. Females showed higher mean levels of present fatalism at across all waves: T1 females (M=2.57, SD=.49, N= 65) relative to males (M =2.19, SD=.60.,N=63), t (126)=3.92, p<.001 two tailed test , T2: females (M= 2.62, SD=.57, N=60) relative to males (M =2.49, SD=.57.,N=60), t (115)= 3.39, p=.001 two tailed test and at T3, females maintained their higher scores on present fatalism (M= 2.55, SD=.53.,N=57) relative to males (M =2.25, SD=49.,N=51), t (106)= 3.01, p=.003 two tailed test. Two way ANOVAS were conducted to examine relationships with age, education level and organizational role, but there were no significant differences

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Table 25

Descriptive statistics

	Total 128		Ed level			cOrg tenure	dAge	Time 1 (Means) N=128					Time 2 (Means) N=117					Time 3(Means) N=107				
		aSec	Trade	Third Level	bProf			FT	PH	PF	PP	PN	FT	PH	PF	PP	PN	FT	PH	PF	PP	PN
Gender																						
Males %	63	3 5	3 5	50 79	7 11	10.14	47.74	3.59	3.23	2.19	3.62	2.51	3.69	3.24	2.19	3.60	2.48	3.67	3.23	2.55	3.62	3.60
SD	-	-	-	-	-	**8.1**	**10.3**	**.53**	**.45**	**.49**	**.46**	**.56**	**.47**	**.42**	**.48**	**.45**	**.52**	**.49**	**.48**	**.64**	**.46**	**.43**
Females %	65	2 3	4 6	47 72	12 19	8.72	42.18	3.64	3.33	2.57	3.73	2.58	3.61	3.35	2.57	3.73	2.58	3.64	3.39	2.54	3.70	3.73
SD	-	-	-	-	-	**6.2**	**9.6**	**.48**	**.48**	**.60**	**.57**	**.63**	**.39**	**.46**	**.54**	**.57**	**.67**	**.43**	**.48**	**.51**	**.57**	**.57**
% Sample	-	3.9	5.5	75.8	14.8																	
Sample Mean						9.42	44.92	3.61	3.28	2.38	3.67	2.54	3.65	3.29	2.4	3.65	2.54	3.65	3.30	2.41	3.65	2.46
Sample SD						**7.25**	**10.3**	**.50**	**.46**	**.58**	**.51**	**.69**	**.43**	**.44**	**.56**	**.48**	**.59**	**.45**	**.53**	**.53**	**.51**	**.60**

Note: FT=Future time perspective, PH=Present hedonism, PF=Present Fatalism, PP=Past positive, PN= Past negative

a refers to secondary education

b refers to professional qualifications

c and d measured in years.

between age categories and any of the time perspectives.

The analysis revealed the presence of role differences on present fatalism where instructor roles showed higher levels of present fatalism relative managerial roles F $(3,121)= 2.74$, p=.046, $eta^2 = .064$. The findings relating gender to time perspective are not unique and are supported by results from Corral-Verdugo (2006). The correlation matrix, shown in Table 26 indicates that future and present fatalism are negatively related, present hedonism and present fatalism are positively related, past positive and present hedonism shows a positive relationship and past negative and present fatalism are positively related. Organizational tenure was omitted because it was unrelated to any of the time perspectives. Longitudinal Pearson correlations indicate a statistically significant and negative relationship between past positive and age. By way of commentary, the relationship between age and time perspectives is not a surprising finding. The time perspective literature indicates that the relationship between age and time perspective demonstrates mixed results (Mello & Worrell, 2006; Milfont et al., 2008).

7 3.2 Results

The section presents analysis of continuity and change in the five time perspectives by addressing the research questions which are based on the framework developed by Roberts et al. (2008).The results section is guided by the following research questions.

1.Do time perspectives demonstrate differential continuity?   Yes

2.Do time perspectives demonstrate mean level continuity?   Yes

3.Do time perspectives demonstrate interindividual

differences in intraindividual change?   No

4.Do individuals demonstrate individual change in their time perspectives? Yes

Table 26

Longitudinal correlation matrix

	Age	FT1	FT2	FT3	PHT1	PHT2	PHT3	PFT1	PFT2	PFT3	PNT1	PNT2	PNT3	PPT1	PPT2	PPT3
Age	1															
FT1	.100	1														
FT2	.041	**.653****	1													
FT3	.043	**.645****	**.664****	1												
PHT1	-.047	-.144	-.252**	-.069	1											
PHT2	.012	-.135	-.135	-.026	**.674****	1										
PHT3	-.138	-.087	**-.196***	-.075	**.629****	**.695****	1									
PFT1	**-.184***	**-.280****	**-.351****	**-.242***	**.236****	.028	.043	1								
PFT2	-.171	**-.275****	**-.191***	**-.197***	.172	**.303****	**.219***	**.612****	1							
PFT3	-.141	**-.267****	**-.258****	**-.264****	**.203***	**.211***	**.276****	**.592****	**.647****	1						
PNT1	.026	-.067	-.080	-.173	.086	-.064	.022	**.273****	.140	**.258****	1					
PNT2	.021	-.174	.035	-.076	.010	.081	.043	**.299****	**.398****	**.268****	**.692****	1				
PNT3	.034	-.173	.076	-.076	-.007	.027	.090	**.285****	**.329****	**.424****	**.644****	**.710****	1			
PPT1	-.118	.048	-.099	.029	**.299****	**.197***	.186	.090	.026	.083	-.147	-.172	-.139	1		
PPT2	-.129	.009	.084	.089	**.206***	**.219***	.167	.004	-.050	.037	**-.276****	**-.237****	-.184	**.704****	1	
PPT3	**-.223***	-.026	-.030	.035	**.242***	**.254****	**.288****	-.002	.023	.109	-.073	-.144	-.160	**.549****	**.620****	1

Note *. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
Non-significant correlations not included

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7.3.3 Do time perspectives demonstrate differential continuity?

The results of differential and mean level continuity are shown in Table 27. The table indicates that retest correlations are statistically significant, but different from unity. All time perspectives demonstrate rank order continuity, but past negative and present fatalism demonstrate the lowest retest correlations from the first to the third measurement occasions. Retest correlations for each time perspective were examined for changes in rank order consistency across time (Vaidya et al., 2008a). It appears that time perspective scales show declines in rank order consistency from T1-T3, but this decline using the Williams modification of the Hotelling test did not indicate statistically significant differences in rank order consistency for each time perspective.

Retest correlations were decomposed into individual stability coefficients using Asendorpf (1992) to examine individual variation in stability between the first and last measurement occasions. The stability coefficients show the individual contribution to the group level retest correlation. The analysis indicated that 50% of the sample had stability coefficients of .8 and above for each of the time perspectives. Intraindividual stability coefficients have a ceiling of one, but may also be negative (J.Asendorpf, personal comm unication, August 16 2012) and negative stability coefficients were rounded to zero for ease of interpretation (A.Terraciano personal communication, February 2013). The vast majority of individual stability coefficients cluster near one.

These stability coefficients are presented in Figure 18 for all individuals in the sample. The five graphs show the decomposition of retest correlations into individual stability coefficients to show the variation in individual stability between the first and third measurement occasions. Given consistently moderate retest correlations for each of the time perspectives, there is obvious intraindividual variation in stability across the five time perspectives.

Individual stability coefficients are presented in Figure 18 for the all individuals in the sample. The coefficients are measured on the vertical axis and age is on the horizontal axis.

Table 27

Mean level and differential continuity

Scale	Sample Means (N 128)			Sample Retest correlations (N128)		
	T1	T2	T3	T1 –T2	T2-T3	T1-T3
Future	3.61	3.65	3.65	.65**	.66**	.64**
Std Dev	**(.50)**	**(.42)**	**(.45)**			
Present Hedonism	3.28	3.29	3.31	.67**	.69**	.62**
Std Dev	**(.46)**	**(.44)**	**(.53)**			
Present Fatalism	2.38	2.46	2.41	.61**	.67**	.59**
Std Dev	**(.58)**	**(.56)**	**(.53)**			
Past Positive	3.67	3.65	3.65	.69**	.71**	.64**
Std Dev	**(.51)**	**(.48)**	**(.50)**			
Past negative	2.54	2.54	2.46	.70**	.62**	.54**
Std Dev	(.69)	(.60)	(.60)			

Note. ** Correlation is significant at $p < .01$ level (2-tailed).
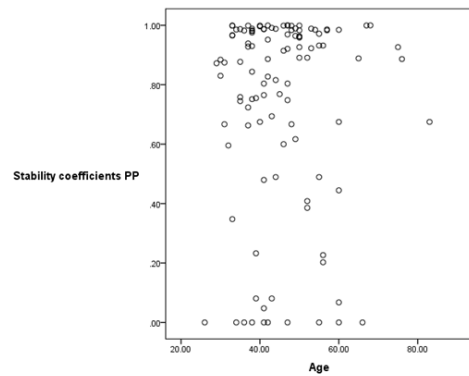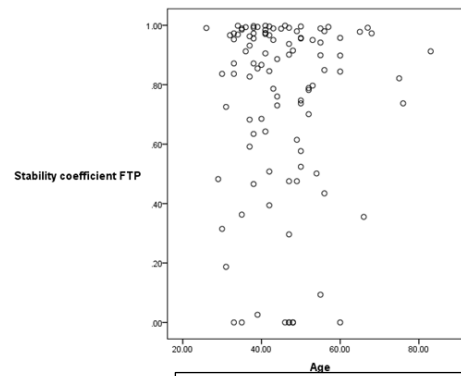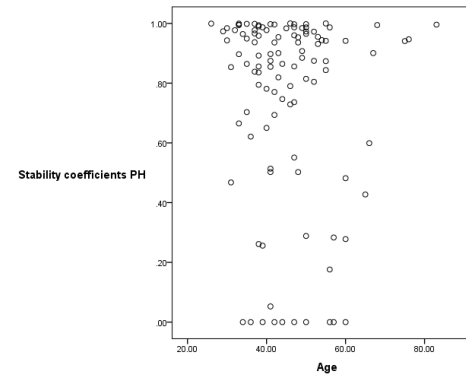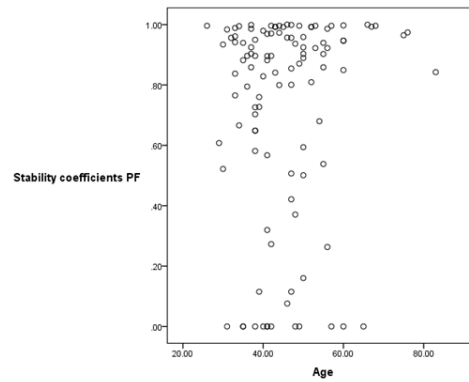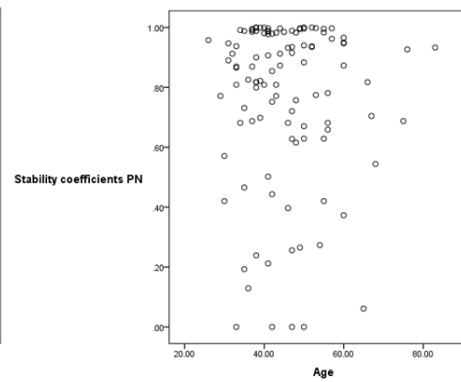
Figure 18 Individual stability coefficients of each time perspective plotted against age

7.3.4 Do time perspectives demonstrate mean level continuity?

A one way repeated measures ANOVA was conducted to examine time effects across the five time perspectives using a Bonferoni correction to control for Type1 errors. The results indicate that there was no time effect for future time perspective across waves of measurement, wilks lambda =.99 F (2,104) =.53, p=.58, present hedonism walks lambda = .98 F (2,105), p =.35, present fatalism wilks lambda = .98 F (2,105), p=. 35, past positive wilks lambda =.98, F (2,105), p=.37, and past negative, wilks lambda = .98 F (2,105), p=.35. Furthermore, there were no gender or age effects found in the five time perspectives across the three measurement occasions.

7.3.5 Do individuals demonstrate interindividual differences in intraindividual change in their time perspectives?

Given three time points, a series of linear growth models were conducted to examine time perspectives for interindividual differences in intraindividual change using MPLUS version 7. The parameters of interest in latent growth models are the intercept and slope means, variances and the covariance between the intercept and slope, which describe the growth trajectories (Preacher, 2010). The growth models were estimated and tested according to the flow chart presented in Figure 17. All growth models were estimated using maximum likelihood estimation which is considered to be a state of the art approach to handling missing data (Enders, 2010).

An LGM for each time perspective was estimated beginning with an intercept and slope and if this model did not fit the data, an intercept only model was considered. The intercept only model is nested within the LGM described by an intercept and slope parameter (Duncan et al., 1999). The two factor model (intercept and slope) demonstrated that the slope factor and its variance, and the covariance between the intercept and slope

were not statistically significant. In the interest of parsimony, a set of single factor models or intercept only model were tested in MPLUS 7 for all time perspectives. The unstandardized results are presented in Table 28 which shows the intercept only models for each time perspective. The growth models indicate that intercept mean and variance were statistically significant showing interindividual differences around the intercept parametre. The MPLUS code for each model is shown in APPENDIX C.

The intercept only model estimates two parametres of interest: mean ($\eta01$), variance ($\zeta\alpha$). The intercept represents the mean score for all individuals across the three time points; the intercept variance quantifies the deviation of individual scores from the mean score at each time point. Growth curve analysis did not support the research question pertaining to interindividual difference in intraindividual change in any of the five time perspectives. These growth trajectories indicate that individuals have different intercepts and that growth curves demonstrate strict stability i.e. individual growth trajectories are parallel (Duncan et al., 1999). The intercept only growth model describes growth that is flat with respect to time (Curran et al., 2010). Figures 19-23 show trajectories for time perspectives that indicate strict stability.

7.3.6 Do individuals demonstrate individual differences in change?

Growth models are used to fit a single trajectory across a number of measurement occasions, but are not informative about individual change between time periods. Another approach to study individual change is to use the reliable change index (Jacobson and Truax, 1991). The reliable change index RCI has been used extensively in studies examining continuity and change in personality (Maassen, 2000; Roberts et al., 2001; Robins et al., 2001; De Fruyt et al., 2006; Donnellan et al., 2007; Blonigen et al., 2008; Lackenhoff et al., 2008).

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Table 28

LGM results for the five time perspectives- intercept only models

Time Perspective	Parametre Est	Std Error	Est/SE	Chi Sq	P value	CFI	RMSEA	DF
Future								
Intercept								
Mean	3.64	.036	*101.11*	*2.33*	*.67*	*1.00*	*0.00*	4
Variance	.135	.021	6.42					
Present Fatalism								
Intercept								
Mean	2.42	.043	56.27	3.74	.44	*1.00*	*0.00*	4
Variance	.191	.030	6.36					
Past Negative								
Intercept								
Mean	2.54	.052	48.84	3.31	.50	*1.00*	*0.00*	4
Variance	.298	.045	6.62					
Past Positive								
Intercept								
Mean	3.66	.039	93.84	3.39	.49	*1.00*	*0.00*	4
Variance	.165	.025	6.6					
Present Hedonism								
Intercept								
Mean	3.30	.037	89.18	3.24	.51	*1.00*	*0.00*	4
Variance	.146	.022	6.63					
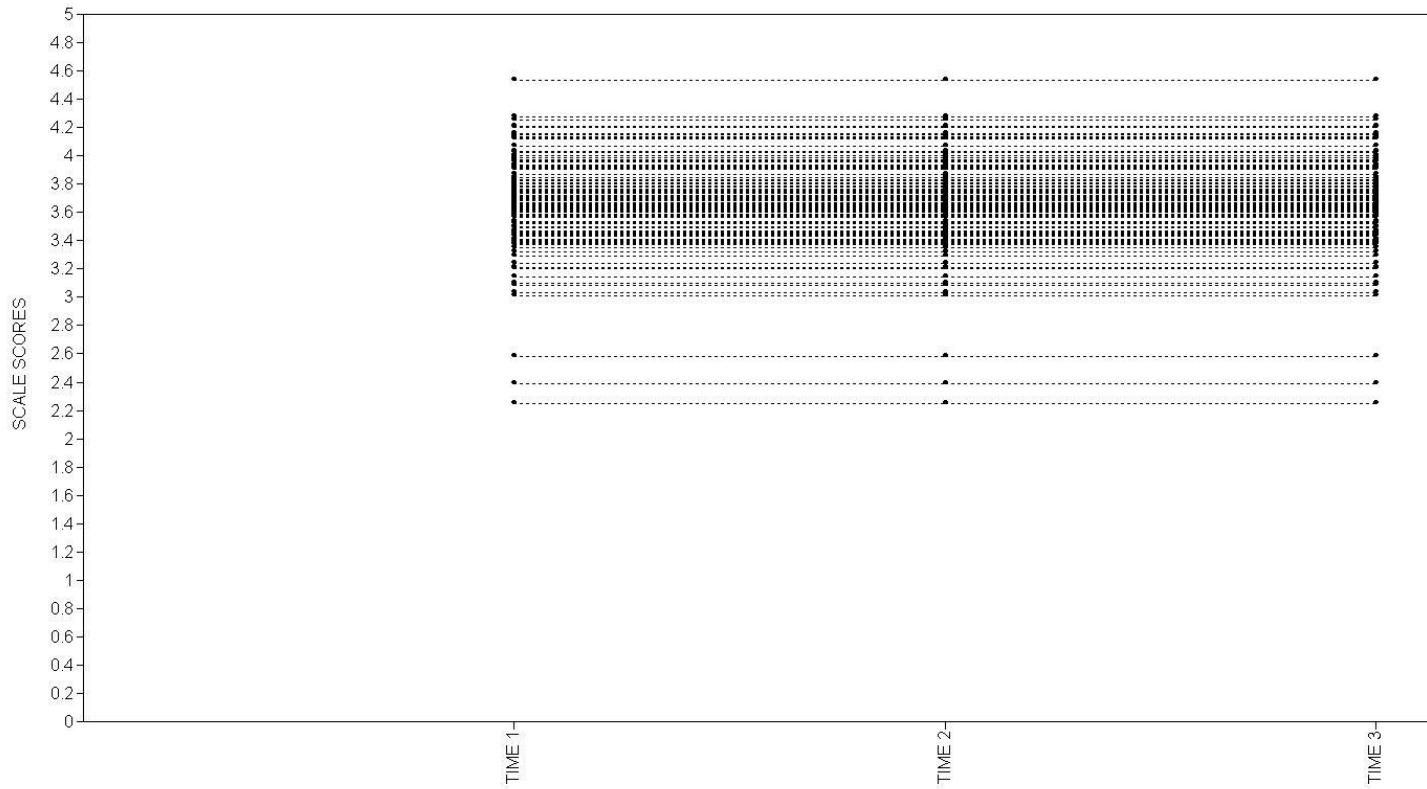
Figure 19 Latent growth model- intercept only model for future time perspective.
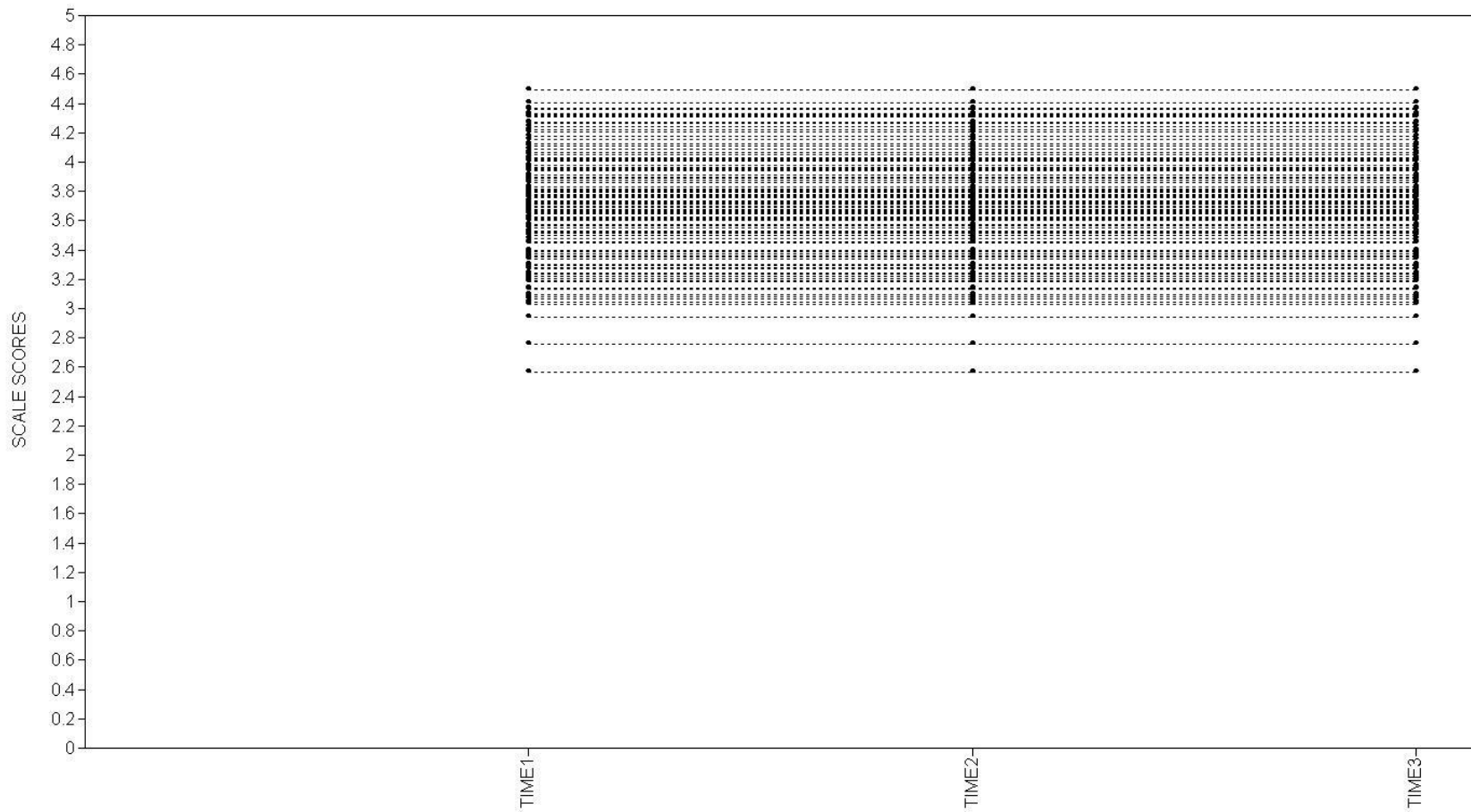
Figure 20 Latent growth model- intercept only model for present fatalism time perspective.

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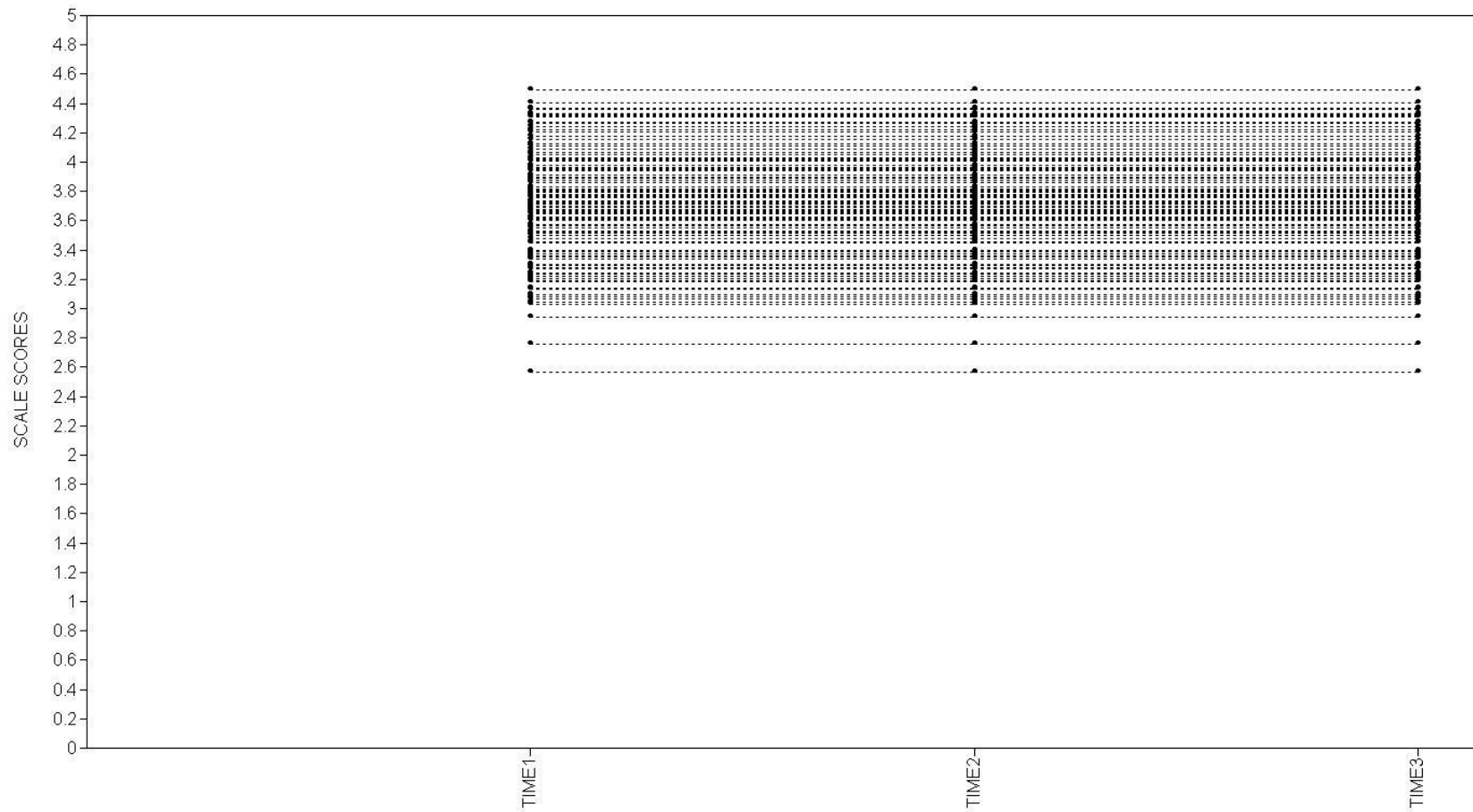
Figure 21 Latent growth model- intercept only model for past negative time perspective
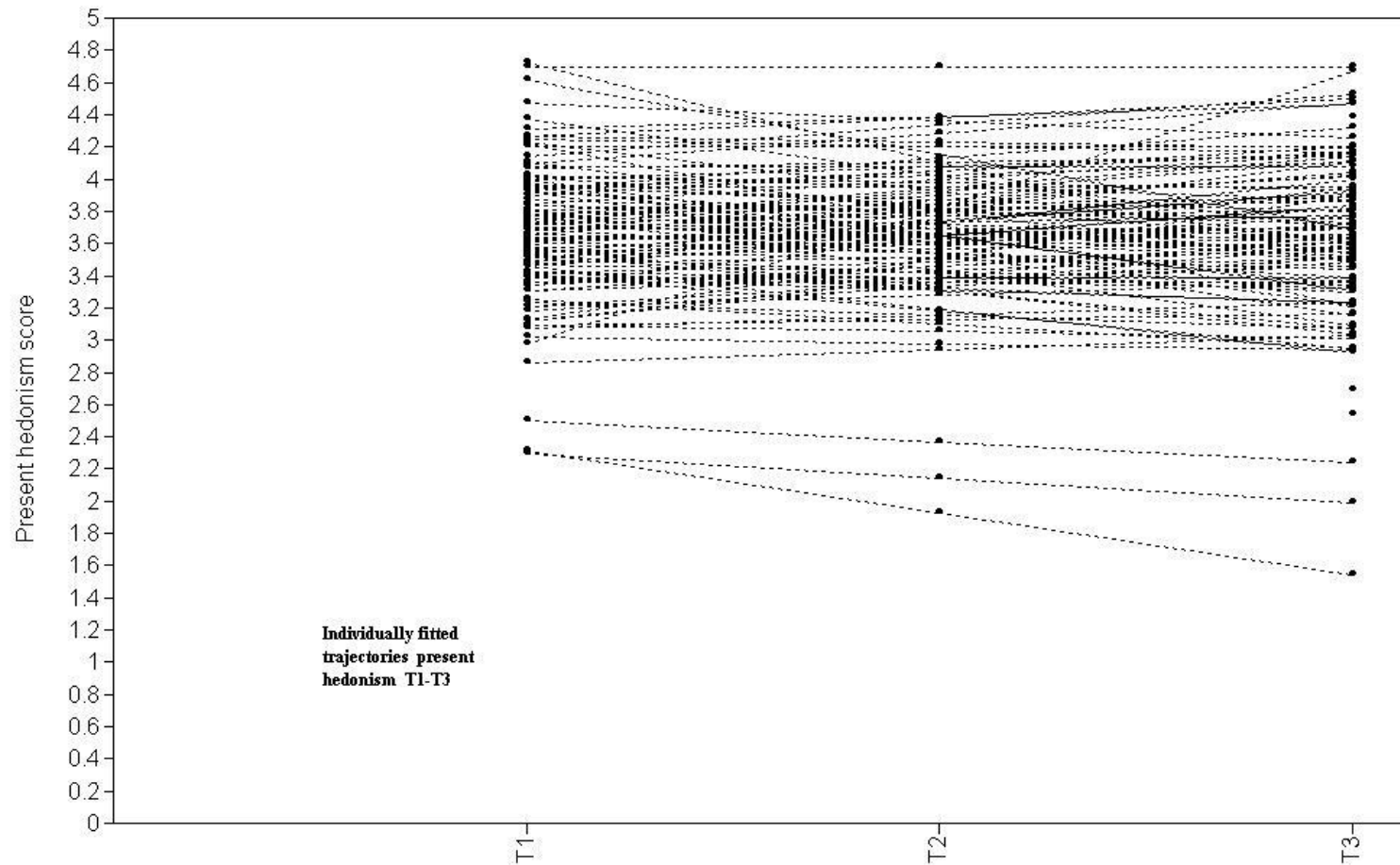
Figure 22 Latent growth model- intercept only model for present hedonism time perspective.
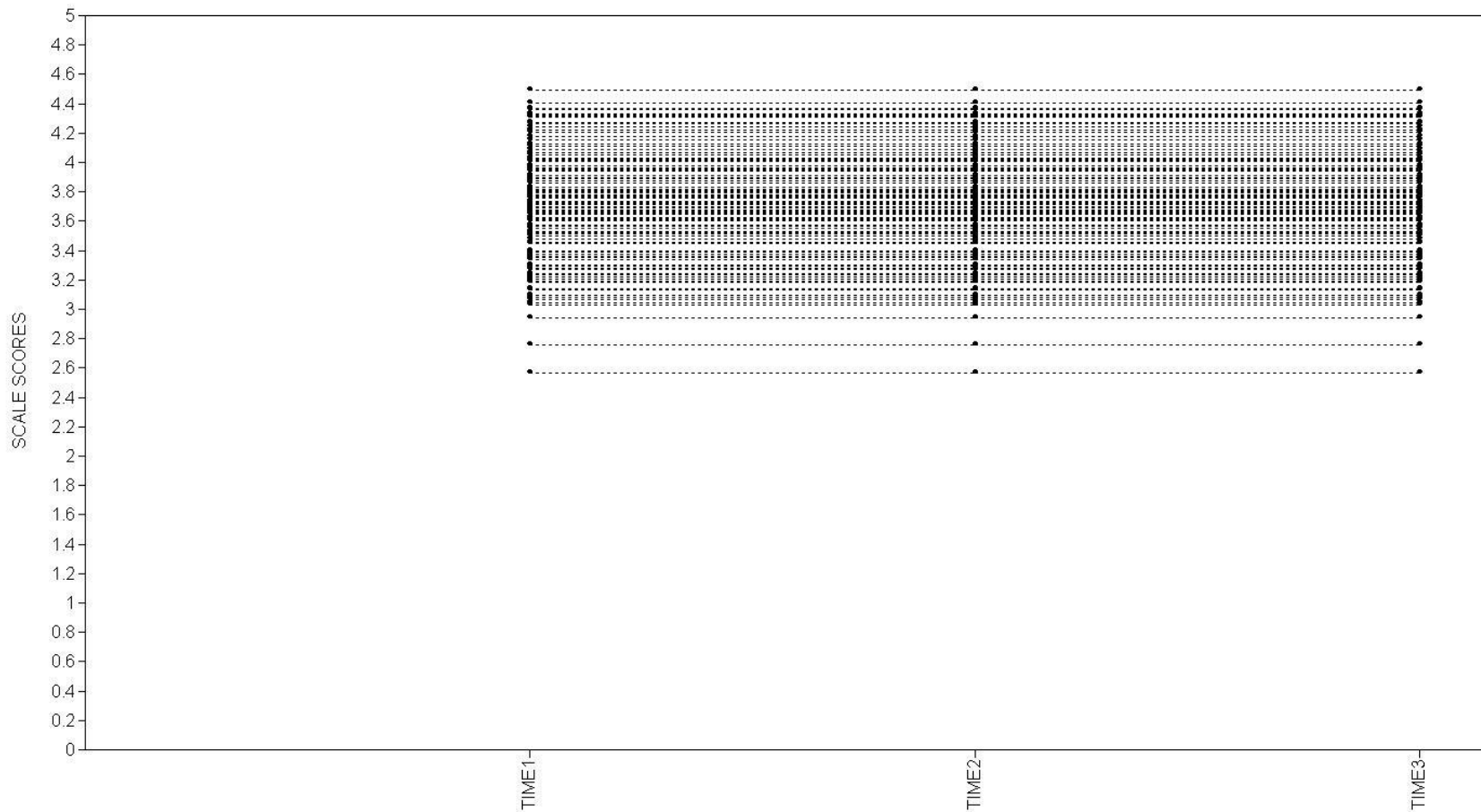
Figure 23 Latent growth model- intercept only model for past positive time perspective. .

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It is customary to present the results of the RCI in terms of those individuals who increased, decreased and remained the same on the measured attribute and these are shown in Table 29.

Table 29

RCI Percentage of changers and non-changers that did not occur by chance

Time perspective	%Decreased	% Same	%Increased	chi sq (2,N= 118)
FTP	3	92	4	1.59
PH	8	80	11	45.5*
PN	5	91	3	3.11
PF	6	80	12	50.13*
PP	3	89	6	27.92*

Note.*p<.05

[a]FTP =Future time perspective , PH=Present hedonism, PN=Past negative, PF =Present fatalism, PP=Past positive

Although the RCIs in Table 29 indicate reliable change, the concern is that reliable change may have arisen by chance, and a chi square test was used to test this hypothesis that reliable change did not occur by chance (Roberts et al., 2001). A chi squared test found that three out of the five time perspectives demonstrated reliable change beyond chance, namely present hedonism, present fatalism and past positive. Gender differences were investigated in reliable change using the crosstab function in SPSS. Reliable change was recoded to 0 for change and 1 for no change and there were no significant differences between the proportion of males and females who demonstrated reliable change.

7.3.7 Correlates of individual change.

Correlational analysis was conducted using the absolute values of the RCI from time1 to time 2 for each time perspectives (Fryer & Elliot, 2007). Pearson correlations indicated that organizational tenure was positively correlated with the RCI for future time

perspective (.204, p<0.05) and the RCI for past positive t1-t2 (.229, p <0.05). Surprisingly, age and gender were uncorrelated with individual change across the five time perspectives. A summary of the study's results is shown in Table 30.

7.4 CHAPTER CONCLUSIONS

The chapter presented an evaluation of the statistical chosen, data analysis and results. The statistical approaches are based on the conceptualization of continuity and change presented in Figure 14. To examine rank order continuity, retest correlations were chosen, but this analysis was supplemented with an evaluation of individual stability coefficients. Mean level continuity and change used RANOVA and Latent growth modeling and the assessment of individual differences in change used the Reliable Change Index.

Data analysis revealed that: data were corrected for non normality through item parceling, data did not demonstrate floor and ceiling effects, a multilevel structure, there were no multivariate outliers, data were missing completely at random, however the assumption of MAR was made. There were no differences between stayers and leavers on any of the time perspective scales, and there were no gender differences in attrition. To deal with missing data it was decided to use the FIML estimation to estimate growth model parametres and obtain means and correlations. The results support the view that time perspectives demonstrates both continuity and change in an adult sample and results of the study are shown in Table 30.

Time perspectives demonstrated rank order consistency, intraindividual variation in individual stability coefficients, mean level continuity in all time perspectives, there were no interindividual differences in intra individual change, however individual differences in change were evidenced across the five time perspectives using the RCI.

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Table 30
Summary of the research findings

<table>
<tr><th colspan="6" style="text-align:center">Research question 1
Do time perspectives demonstrate differential continuity?</th><th>Supported</th></tr>
</table>

	Retest correlations				
	T1-T2	T2-T3	T1-T3	Intraindividual variation	Significance
Time perspective					
Future	.65**	.66**	.64**	YES	p < .01
Present hedonism	.67**	.69**	.62**	YES	p < .01
Present fatalism	.61**	.67**	.59**	YES	p < .01
Past positive	.69**	.71**	.64**	YES	p < .01
Past negative	.70**	.62**	.54**	YES	p < .01

Research question 2   **Supported**
Do time perspectives demonstrate mean level continuity?

Time perspective	T1-	T2	T3	RANOVA
Future	3.61	3.65	3.65	No mean differences
Present hedonism	3.28	3.29	3.31	No mean differences
Present fatalism	2.38	2.46	2.41	No mean differences
Past positive	3.67	3.65	3.65	No mean differences
Past negative	2.54	2.54	2.46	No mean differences

Research question 3   **Not Supported**
Do individuals demonstrate interindividual differences in intraindividual change

| | Intercept only model LGM | | | | | | | | | | |
Time perspective	Intercept		SE		Est/SE		Exact fit			Approx Fit	
	Mean	Variance	Mean	Variance	Mean	Variance	χ^2	P	DF	CFI	RMSEA
Future	3.64	.135	.036	.021	101.11	6.42	2.33	.67	4	1.00	0.00
Present hedonism	3.30	.146	.037	.022	89.18	6.60	3.24	.51	4	1.00	0.00
Present fatalism	2.42	.191	043	.030	56.27	6.62	3.74	.44	4	1.00	0.00
Past positive	3.66	.165	.039	.025	93.84	6.63	3.39	.49	4	1.00	0.00
Past negative	2.54	.298	.052	.045	48.84	6.62	3.31	.50	4	1.00	0.00

Research question 4   **Supported**
Do individuals demonstrate individual change?

Time perspective	% Decreased	% Same	% Increased	chi sq (2,N= 118)	Significance
Future	3	92	4	1.59	
Present hedonism	8	80	11	45.5*	P<.05
Present fatalism	5	91	3	3.11*	
Past positive	6	80	12	50.13*	P<.05
Past negative	3	89	6	27.92*	P<.05

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CHAPTER 8

DISCUSSION

INTRODUCTION

The purpose of chapter eight is to discuss the findings presented in chapter seven. The chapter follows the flow chart in Figure 24. The chapter is divided into three sections. Section one provides a summary of the research problem and results which are discussed in the context of the literature review. Section two discusses continuity and change in time perspectives in the context of similar findings in personality and goal mastery. Section three uses the results to combine the lenses of problematization and temporalism to critique existing time perspective literature using a positioning matrix which classifies existing time perspective research and provides direction for future research opportunities. Chapter eight concludes with a summary of the key findings.

CHAPTER 8 DISCUSSION

Chapter Introduction	Section one	Section two	Section three	Chapter Discussion and Conclusion
	Rationale for the research problem	Continuity and change	Implications for time perspective	
	Summary of rationale for research questions and results	Rank order continuity Mean level continuity Interindividual differences in change Individual level change Ipsative continuity	Parallels with personality debate Process and variance Barriers theory development Practical implications	

Figure 24 Layout chapter 8

8.1 SUMMARY OF FINDINGS

Section one of the chapter summarizes the rationale for the research problem, restates the research questions and reviews the current findings in relation to the literature. The research agenda in organizations has highlighted the importance of continuity and change. This important theme has been investigated more thoroughly by personality development researchers, who have developed theories outlining when and why personality develops using the maturity and social investment principles. Presently, there is a significant lack of research examining continuity and change in the dispositional view of time perspective, which is hampering the field, and this study addresses the shortcoming. The shortcoming is addressed by questioning the unidimensional understanding of continuity among time perspective researchers by placing time perspective within a multilevel and multifaceted understanding of continuity and change. Within this framework, time perspectives demonstrated both continuity and change. Continuity and change are time related debates which challenge the research community to update its extant knowledge of a field so that theory remains valid and relevant (Roe, 2008). The co-existence of continuity and change also raises opportunities to theorize about the reasons for continuity and change Roberts et al. (2008).

The purpose of the research is to focus on these central themes of continuity and change in time perspective. Time perspective as a theory reflects the relationship among constructs which are bounded by constraints and assumptions, and these assumptions must be understood (Bacharach, 1989). In the tradition of individual differences, temporal consistency is denoted by retest correlations while change is described through differences in means across time (Pullmann et al., 2006). In this research tradition, time perspective adopts a trait like conceptualization where it is considered stable or not

(Watson, 2004). Currently, the conceptualization of time perspective as a stable individual difference is often understood to imply something that is enduring and fixed but this is a misleading interpretation (Fraley & Roberts, 2005; Roberts et al., 2006b).

The present study drew upon a typology developed within personality development to clarify this assumption. The typology indicates that time perspective can demonstrate both continuity and change at the group and individual level of analysis. The rationale for this view suggests that continuity and change are multifaceted and the presence of one form of continuity does not preclude others. A multilevel perspective provides a more comprehensive picture of continuity and change in time perspective because it highlights that individual differences in change that may occur despite the presence of mean level and rank order consistency.

To examine continuity and change in time perspective, data were collected from a sample of 128 youth workers using a longitudinal design. The research sought to investigate continuity and change in time perspective using the following research questions. Research questions were chosen because of the marked absence of prior theory underpinning continuity and change in time perspective.

8.1.1 Research questions

1. Do time perspectives demonstrate differential continuity?   Supported

2. Do time perspectives demonstrate mean level continuity?   Supported

3. Do individuals demonstrate interindividual differences

in intraindividual change in their time perspectives?   Unsupported

4. Do individuals demonstrate individual change in time perspectives?   Supported

8.2 CONTINUITY AND CHANGE

The purpose of section two is to contextualize the findings using the literatures cited to guide the research presented in the study's introduction.
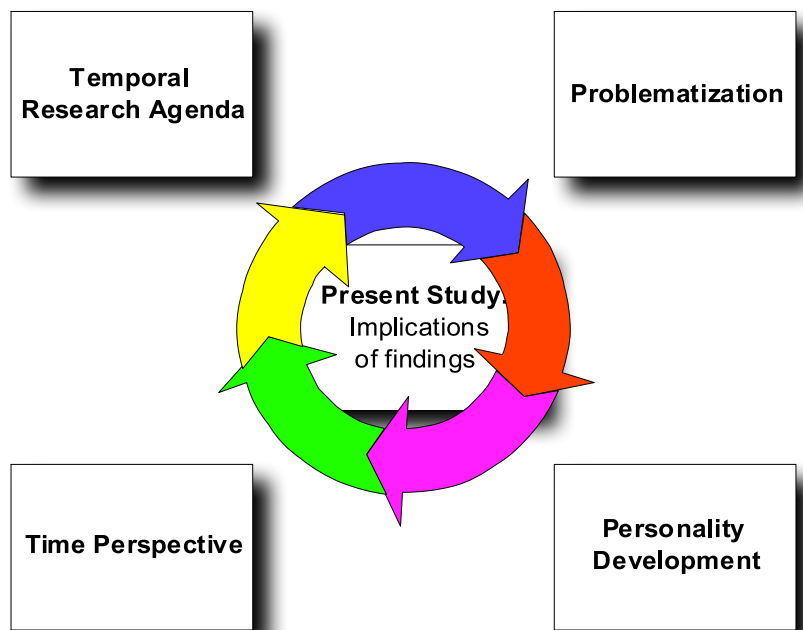
Figure 25 Situating the study's findings

Figure 25 shows that the study of continuity and change in time perspective was driven by a set of diverse literatures. Currently, in organizational theory there are calls for research on time and the research agenda has suggested the study of continuity and change. Time perspective was situated in this arena and problematized using personality development literature. The main concern of the study was to highlight the inadequate conceptualization of continuity and change in time perspective. The inadequacy was demonstrated by positioning the time perspective within a personality development framework to show that it provides a more thorough and broader conceptualization than just rank order continuity to show that interpretations of continuity and change are varied and

multilevel. The framework helps to challenge in-house, paradigmatic and ideological assumptions that the presence of temporal consistency rules out alternative forms of continuity and change. The typology echoes Baltes et al. (1980) who suggest that assumptions of trait like properties should be accompanied by an examination of intra individual variability and that issues of continuity and change must contain information on the average level of a construct and individual variability in the level of that construct.

8.2.1. Rank order continuity

Change and continuity can be examined at the level of the individual and group, and change is defined as an absence of continuity (Caspi, 1998). Differential continuity represents the level of rank order consistency and describes the retention of an individual's relative placement in a group (Roberts & Del Vecchio, 2000). The retest correlations in the present study were smaller relative to the current literature. Table 31 demonstrates the means and retest correlations for each of the time perspectives. In a validation study including older adults Liniauskaité & Kairys (2009) demonstrated that retest correlations were in the range of .72 to .93 for the five time perspectives. The retest interval for these studies was 14 days. Given the range of retest intervals adopted in time perspective research, the nearest comparison can be found in (Luyckx et al., 2010) who used a four month interval in their two wave study.

Retest correlations in the current study for present fatalism, future, and present hedonism ranged from .58 to .70. Present fatalism in the present research shows the lowest retest correlation and this is consistent with previous literature. The declining retest correlations in the present research reflect the wider retest intervals adopted in the study (Watson, 2004). It is likely that rank order continuity was maintained because the vast majority of individual level stability coefficients showed high levels of stability.

Table 31

Mean level and differential continuity

Scale	Sample Means (N 128)			Sample Retest correlations (N128)		
	T1	T2	T3	T1 –T2	T2-T3	T1-T3
Future	3.61	3.65	3.65	.65**	.66**	.64**
Std Dev	**(.50)**	**(.42)**	**(.45)**			
Present Hedonism	3.28	3.29	3.31	.67**	.69**	.62**
Std Dev	**(.46)**	**(.44)**	**(.53)**			
Present Fatalism	2.38	2.46	2.41	.61**	.67**	.59**
Std Dev	**(.58)**	**(.56)**	**(.53)**			
Past Positive	3.67	3.65	3.65	.69**	.71**	.64**
Std Dev	**(.51)**	**(.48)**	**(.50)**			
Past negative	2.54	2.54	2.46	.70**	.62**	.54**
Std Dev	(.69)	(.60)	(.60)			

Note.**p < 0.01

8.2.2 Mean level continuity in time perspective

Mean level change describes the extent to which the average amount of the construct changes over time within a population (Trzesniewski et al., 2004; Fryer & Elliot, 2007) and is equated with normative change (Ludtke et al., 2009). Normative change suggests that people show the same changes during a specific time in the life span and are thought to occur from maturational or historical processes shared by a population (Helson and Moane 1997, cited in Roberts & Wood, 2006,p.20). Mean level continuity was supported in the study; however, the research by Luyckx et al. (2010) found mean level change in three time perspectives among their sample of students.

Mean level continuity may have arisen in the present study because the net effect of increases and decreases of individual scores produced no significant mean level change (Vaidya et al., 2008a). Secondly, individuals were sampled from what might be

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considered as a homogenous social context, in which they have similar temporal attitudes, and congruent attitudes are more resistant to change (Visser & Mirabile, 2004). However, individuals were drawn from different organizations separated by geographic location.

Personality researchers indicate that transitions to adulthood show both continuity and change in personality dimensions (Roberts et al., 2004; Roberts et al., 2006b; Watson and Humrichouse, 2006; Roberts and Mroczek, 2008; Vaidya et al., 2008a). The context for change in Luyckx et al. (2010) is based on young adults in a college environment who were shaping their identities for adult life. The reasons cited for the mean level change in Luyckx et al. (2010) include identity development and preparation for the future. The study focused exclusively on group level measures of continuity and change and did not examine individual measures. It would be tempting to conclude that the dispositional view of time perspective follows some type of developmental age graded trajectory similar to that found by personality development researchers (Mroczek and Spiro, 2003; Mroczek et al., 2006; Roberts and Mroczek, 2008), however, the lack of this type of research hinders our understanding of long term continuity and change in each of the time perspectives.

The thesis research indicates that adults did not demonstrate mean level change and they retained rank order consistency, but retest correlations differed from unity. The average age of respondents in the present study was 44 years (SD=10.3). Life span development research examines continuity and change across the lifespan and suggests that we are always capable of change because individuals adapt with age to overcome the losses associated with aging (Baltes, 1987). The central tenet of life span development is the plasticity principle and previous work in personality suggests that traits are open to influence of the environment at any age (Roberts et al., 2008). Life span development researchers argue that individuals are described in terms of demonstrating both continuity and change in personal attributes (Nesselroade & Ram, 2004) and the results are

consistent with this interpretation.

The prevalence of continuity in the sample may be explained using Continuity theory (Atchley, 2006) which argues that individuals retain consistency in their thinking patterns, activity profiles and social relationships over time. Individuals throughout life build up experience which they use to make decisions and the more they rely on past experiences the greater the probability of continuity. Given that the age of respondents in Luyckx et al. (2010) was 18.2 years, one would expect that students would not have accumulated a significant amount of life experience, which could be used to make decisions unlike the working adult sample studied in the research. If analysis in the present research focused purely on group level indices one may conclude that that the sample of respondents in the study do not demonstrate change. Group level indices such as means and correlations may not indicate change because the proportion of individuals increase in the attribute is offset by those who decrease in that attribute (Roberts et al., 2001). Secondly, researchers may not observe change because they use reliable measures that are designed to capture differences between people and not measure change.

8.2.3 Interindividual differences intraindividual in change time perspectives

Latent growth modeling was used to examine the sample for interindividual differences in intra individual change. The findings supported an intercept only model which suggests strict stability and reflects individual growth curves that are largely parallel and this finding is consistent with a trait conceptualization of a construct (Partridge and Lerner, 2007).

8.2.4 Individual differences in change in time perspective

Individuals demonstrated reliable change across all time perspectives, and they also demonstrated intraindividual variation in stability. Reliable change for each of the five

time perspectives is shown is Table 32. The RCI has been used in studies of personality development, clinical and education settings and is potentially beneficial to non-intervention contexts (Roberts et al., 2001). Personality development literature highlights that the absence of mean level change was accompanied by similar individual level findings (Vaidya et al., 2008a) and the present findings concur with previous research. The vast majority of individuals demonstrated continuity, but there is also evidence of change. Despite the evidence for the coexistence of continuity and change, individuals demonstrated more continuity than change.

The percentage of those who did not demonstrate individual change ranges from 80%-92% which indicates a remarkable level of continuity over the period. Although group level measures indicate continuity in the sample, the reliable change index showed that individuals demonstrated reliable change across all time perspectives that cannot be attributed to the unreliability of time perspective measures. The results imply that over a period of one year, time perspectives can demonstrate reliable change. Individual change may occur despite differential and mean level continuity and is gauged by the reliable change index (Jacobson & Truax, 1991).The RCI has been used in studies of personality development, clinical and education settings and is potentially beneficial to non-intervention contexts (Roberts et al., 2001).

Personality development literature highlights that the absence of mean level change was accompanied by similar individual level findings (Vaidya et al., 2008a) and the present findings concur with previous research. Time perspective research remains largely silent on the coexistence of continuity and change.

Table 32

The reliable change index percentage changers and non-changers

Time perspective	%Decreased	% Same	%Increased	chi sq (2,N= 118)
FTP	3	92	4	1.59
PH	8	80	11	45.5*
PN	5	91	3	3.11
PF	6	80	12	50.13*
PP	3	89	6	27.92*

Note.*p<.05

Note. FTP=Future Time Perspective, PH=Present Hedonism, PN=Past Negative, PF=Present Fatalism, PP=Past Negative

**p<.05

To contextualize the study's research findings, a brief overview in personality development and dispositional approaches to goal mastery are outlined in Table 33. The table indicates that goal mastery shows both mean level change and reliable change at most young ages and over much shorter time intervals.

Personality dimensions have shown both mean level change and reliable change at different ages, but the study lengths have ranged between two and six years. Time perspectives in the current investigation have shown no mean level change, however, they show reliable individual change over a period of twelve months. The table also reflects the extent to which time perspective researchers think in terms of continuity, and cross sectional designs. The debate has lingered off mainstream despite becoming a significant area of research among dispositional and personality researchers (Fryer & Elliot, 2007; Muis & Edwards, 2009). Personality development research provides a more robust description of continuity and change relative to the dispositional view of time perspective. Personality development has helped to clarify that continuity and change coexist rather than being mutually exclusive.

Continuity and change are time related debates and they are important because researchers are unaware of the duration of stability and they have implicitly ruled out the opportunity for change. Furthermore, blindly accepting rank order consistency can hide intraindividual variation in stability.

Table 33

Comparative analyses with personality development and dispositional approaches to goal mastery

| Study | Continuity and change in: | Group | | Individual | |
		Mean level	Rank order	RCI	Waves
Ludtke et al (2009)	Personality and life goals	Y	Y	Y	T1 T2
Muis & Edwards (2009)	Achievement Goals	Y	Y	Y	T1-T4
Fryer & Elliot (2007)	Achievement goals	Y	Y	Y	T1-T3
Donnellan et al (2007)	Personality	Y	Y	Y	T1-T2
van Aken et al (2006)	Personality	Y	Y	Y	T1-T3
Watson & Humrichouse (2006)	Personality	Y	Y	Y	T1- T2
De Fruyt et al (2006)	Personality	Y	Y	Y	T1-T2
Roberts et al. (2001)	Personality	Y	Y	Y	T1-T2
Robins et al (2001)	Personality	Y	Y	Y	T1-T2

Currently, time perspective researchers view continuity and change as mutually exclusive, thereby retaining a view that has been contradicted in a broader literature and these findings have implications for time perspective interventions. The findings prompt discussion on the assumptions behind the dispositional view of time perspective, and this is done through the lenses of problematization and temporalism in section three.

8.2.5 Ipsative continuity

Although ipsative continuity was not directly addressed, it deserves some discussion. Ipsative continuity is concerned with the profile of time perspectives at the individual level of analysis. It is a person–oriented approach which describes the level of stability and change in the ordering of dimensions within the individual (De Fruyt et al., 2006). Ipsative continuity and change can be described in terms of: the score level, the profile pattern and the variability of the profile scores (Fryer & Elliot, 2007). The advantages of ipsative continuity and change are as follows: ipsative continuity and change can be predicted by other individual level constructs such as personality. The approach provides a description of those who changed and those individuals that did not which may help inform our understanding of the processes of stability and change. Thirdly, ipsative continuity and change consider a profile of each factor score within a person rather than a single dimension across individuals which is central to temporal research. Ipsative change is only relative to the individual being studied rather than attending to individual differences (Roberts et al. 2001). The ipsative approach to continuity and change may provide insights into a balanced time perspective at the individual level of analysis rather than drawing on the BTP from an individual differences perspective.

Ipsative continuity and change may be more suitable to changing time perspectives based a coaching intervention where profile change for each individual can be discussed rather than drawing comparisons against the group. A limitation of ipsative continuity and change is that individuals cannot be directly compared to other test takers and the test is presented in a forced choice format rather than using likert scales. Ipsative continuity and change reflect a person oriented approach which is side-lined by the current preoccupation with variable centred approaches in research that uses the ZTPI. The approach is also limited in that it does not permit a critique of rank order continuity which

is an individual differences index. The assumption made by researchers using rank order continuity is that little between person variation is presumed to indicate stability, but the absence of variation is not applicable to within person stability. The ipsative approach does not allow a rank order consistency to be decomposed into its within person components and despite rank order consistency, individuals can demonstrate intraindividual variation in their stability coefficients.

8.2.6 Role of operating environment

The findings support stability of time perspectives in general which may have arisen from a relatively stable operating environment over the data collection period. The research context is naturally a stable setting and training organizations are unionized. The lack of environmental stressors within the organizations may have contributed to the lack of change in time perspectives. Toward the latter end of 2010, Government cutbacks began to push a cultural change from social inclusion toward value for money. A steady state factor that may have suppressed individual change is the extent to which the funding body buffered the training organizations against the impact of cutbacks and change. After the data collection period it is possible that there was greater instability in the external operating environment which may have promoted change in time perspectives.

8.3 TEMPORAL RESEARCH AGENDA AND BARRIERS

The objective of this section is to show that the findings have implications for the dispositional view of time perspective. The current research agenda within organizations calls for greater temporal research and it highlights the research barriers. The research findings are used to highlight the link between variance and process thinking in the time

perspective literature while problematization is used to highlight that continuing to maintain consensus about the validity status does not bode well for process thinking. A positioning matrix which describes the present state of time perspective is shown in Figure 26 and it is developed from the study's results. Although the study's findings are based on a variance approach, they can be used to highlight opportunities for process thinking (Van de Ven, 2007).

8.3.1 Positioning Matrix

The approach to time perspective as a disposition advocated by Zimbardo and Boyd (1999) has grown substantially since 1999. An evaluation of this literature using existing conversations, (Huff 1999, cited in Corley & Gioia, 2011), and variance and process epistemologies is shown in Fig 26, which highlights that time perspective literature can be categorized according to individual differences, rhetoric, long term stability and change and unfolding time perspectives. The positioning matrix is built on the assumption that variance approaches can be used to inform process thinking.

8.3.1.1 Variance and Existing-Individual differences

The vast majority of research using the dispositional view of time perspective falls into the category of individual differences i.e. continuity. In this category, research effort is spent on finding another outcome, antecedent, mediator and moderator. Research progressing along this line does not explain continuity and change in time perspectives. The category advocates an incremental approach to the growth of time perspective literature through gap spotting, which fails to challenge prevailing assumptions (Alvesson & Sandberg, 2011).
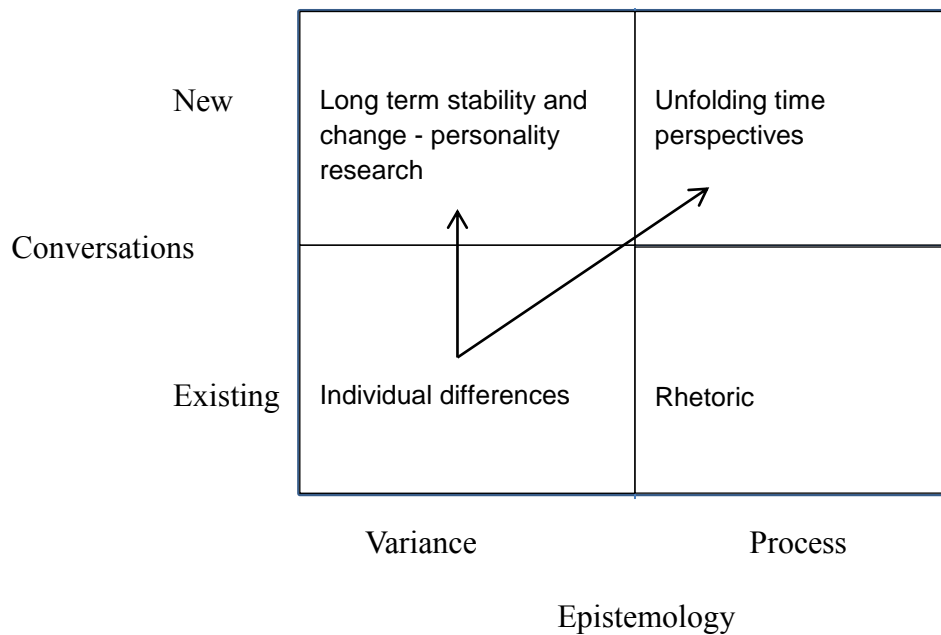
Figure 26 Positioning matrix

New lines of research in the existing and variance category arise through neglect spotting and application spotting. Neglect spotting can occur through identifying under researched areas, application spotting and identification of literature that lacks empirical support (Sandberg & Alvesson, 2011). The most popular approach to extending time perspective research is application spotting where researchers spot an important role for time perspective which has been previously ignored.

8.3.1.2 Existing and Process -Rhetoric

Existing conversations about change are mainly rhetoric. The rhetoric quadrant raises concerns because variables are used to measure process, which was criticised by Roe et al. (2012) on the grounds of methodological misfit. Research in this quadrant argues for adaptability of time perspective using the balanced time perspective. The importance of reducing past negative and present fatalism to low levels is an important feature of intervention research (Zimbardo & Boyd, 2008). Examples of rhetoric include

discussions about creating a balanced time perspective to improve well-being and mental health. Currently, temporal therapy falls into this category, where changes in time perspective are discussed in terms of variables which do not show how therapy allows time perspective changes to unfold over time.

The balanced time perspective is a case in point which is essential to optimal functioning (Zimbardo & Boniwell, 2004), but time perspective researchers do not know the required adjustment in time perspectives to produce an improvement in well-being, the pace of improvement and the shape of improvement. In effect, this research indicates current thinking rather than reflecting current practice and Roe et al. (2012) made the same observation in relation to the study of team processes. The dispositional view of time perspective is conceptualized as a process that partitions our experience into categories of past, present and future and continued emphasis on variance approaches has resulted in a significant body of timeless research which tells us little of how time perspectives unfold in the context of our life experience.

The individual difference category is situated within research paradigms that show technological certainty i.e. there is agreement that certain methods and research questions will advance the field (Pfeffer, 1993) and research in this category will not challenge that status quo. Research in the individual differences and rhetoric categories depends heavily on variance epistemology which cannot explain how time perspectives demonstrate continuity and change.

8.3.1.3 Variance and New – longer term stability and change

New conversations push the research agenda toward process and variance thinking. Researchers are unclear about continuity and change in time perspective across the life span. Personality development research shows that personality increases in rank order consistency with age (Roberts & Del Vecchio, 2000) and shows normative change in early

adult hood (Roberts et al., 2001), adulthood (Helson et al., 2002) and even into old age (Mroczek & Spiro, 2003). Currently, researchers have no knowledge of continuity and change in time perspective across longer time intervals or if change is possible in shorter intervals. These observations are central to developing temporal knowledge about time perspective such as when it changes and what predicts those changes.

Under variance models, the principles of personality development may open new conversations in continuity and change in time perspective by advancing other aspects of the temporal research agenda such as temporal relationships and dynamic relationships. For example, the maturity principle states that people become more socially dominant, agreeable, and conscientious and emotionally stable with age between 18-26 (Roberts et al., 2001). Research conducted by Dunkel and Weber (2010) shows that time perspectives correlate with the Big Five. Maturity is used to explain personality consistency and so it may be hypothesised that the maturity principle explains continuity and change in time perspectives. Current methodological developments in multivariate latent growth models may be used to investigate these avenues.

Variance approaches might be used to develop process thinking with time perspective interventions. For example, variance models have shown that past negative and present fatalism time perspectives are positively related to suicidal ideation (Laghi et al., 2009). Unfortunately, time perspective research cannot explain how the emergence or growth in present fatalism and past negative are related to the emergence and growth of suicidal thoughts which has implications for intervention.

8.3.1.4 New and Process –Unfolding time perspectives

Process thinking may benefit early school leavers by investigating the intention to leave school early through connections with different unfolding processes such as the intention to leave school, a decline in commitment to school and classes of time

perspective. The intention to leave school early may be led by becoming uncommitted to school and a decrease in future time perspective, increases in present fatalism and past negative. Research which shows time perspective and school commitment changes may act as an early warning system. More recent state measures of time perspective developed by Worrell and Mello (2009) yielded six time perspectives including a future negative time perspective which might focus on a relationship between future negative and the intention to leave school early.

Process research will require: the conceptualization of a pathway to show how time perspective evolves, a new measure of time perspective that captures a pattern and a new temporal design to collect data at the desired intervals. In Solinger et al. (2013) the authors examined newcomer organizational commitment using graphic trajectories that could be displayed on a computer screen. Respondents created their own commitment trajectories using fast capture measure of organizational commitment with self anchoring scales ranging from 0-100. The approach allowed respondents to create their own unfolding graphical descriptions of their organizational commitment. These developments arising from the research findings face barriers because they challenge present thinking.

8.3.1.5 Problematization -Barriers to process thinking

The findings have implications for the broader way in which time perspective research is evolving. The problematization of the time perspective showed the role of in-house, paradigmatic and ideological assumptions. In-house assumptions reflect the primacy of rank order continuity as the main indicator of stability, paradigmatic assumptions highlighted that the role of present research is to legitimize consensus about the validity status of time perspective as a disposition (Zimbardo & Boyd, 1999) and ideological assumptions indicate that establishing continuity is preferred by and large to examining change.

Building consensus about the validity of the five time perspectives has occurred through gap spotting which reinforces the consensus and does not question underlying assumptions, and gap spotting reinforces an accumulation norm which does not encourage scepticism (Alvesson & Sandberg, 2013). Gap spotting has not resulted in any new theoretical developments which shows when time perspectives change, what factors support and inhibit change and the duration of continuity i.e. gap spotting is contributing to a mind-set that is oblivious to process approaches. Time perspectives can predict a variety of outcomes and behaviours such as risky driving, addiction and suicidal ideation but unless scholars have gained temporal knowledge of time perspective by describing it in terms of a trajectory, time perspective research will remain timeless.

8.4 Practical applications

8.4.1 Intervention

The practical implications of this research attend to time perspective interventions where it would be important to reduce the levels of present fatalism among female instructors. Present fatalism is negatively related to academic outcomes and should be monitored. Unlike current research, the findings suggest that time perspectives are adaptable at the individual level of analysis. Given the clientele that attend the training organization, it would be incumbent on managers to ensure that levels of present fatalism do not increase to levels which may impact educational outcomes. Interventions addressing present fatalism require that we are aware that present fatalism trajectories may show improvement, bifurcation and relapse (Roe, 2008).

8.4.2 Recruitment of instructors

It is also important that for new instructors starting in training organizations that the right balance of time perspectives are maintained. Increasing levels of present fatalism may not

be conducive to becoming and insider and remaining with a training organization. Recent research on becoming uncommitted to an organization may want to consider time perspective in relation to on boarding scenarios (Solinger et al., 2013). The findings of the present study alert us to the need for time perspective to engage with the radical temporalist view so that time perspective remains relevant to the early school leaver settings by being captured as a process rather than by static categories which indicate general tendencies.

8.5 Contribution-Theoretical and Methodological implications

The study represents a contribution to the literature in the following ways.

- The research has addressed a much overlooked theme of continuity and change in time perspective. The research findings show that time perspectives can demonstrate plasticity in an adult sample. The study's findings question the continued preoccupation with bolstering the validity status of time perspective as a disposition.

- The findings question the trait like interpretation of time perspective by showing that time perspectives can demonstrate individual differences in change.

- The research challenged the assumption that rank order consistency is interpreted as the main indicator of continuity and despite rank order consistency; individuals demonstrate intraindividual variation in their stability coefficients.

- Thirdly, the investigation brings time perspective in line with personality development literature and achievement goal stability studies which demonstrate that continuity and change are multilevel and coterminous.

- Methodologically, the study provides a more rigorous approach to continuity and

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change using a variety of different methods.

- The study is a longitudinal field study which represents a departure from the traditional two period designs adopted by time perspective researchers who make extensive use of university students.

- The plasticity of time perspective shows that time perspectives are adaptable over a number of weeks and this finding suggests a role for time perspective interventions.

8.6 CHAPTER CONCLUSIONS

The chapter presented the study's findings and placed them in the context of existing literature. The main finding is that the research supports the coexistence of continuity and change in time perspectives which are supported from literature in personality development and dispositional approaches to goal mastery. The results were used to create a framework which indicates that time perspective as a disposition is heavily invested in a static view of time perspective despite the rhetoric of change. Continuity and change are temporal debates, but there is little time in time perspective. The research finding suggest a new conversation for time perspective using process thinking and reflects an initial starting point from which to address the temporal research agenda.

CHAPTER 9

CONCLUSIONS

The rationale for conducting the study is based on extending the temporal research agenda by examining continuity and change in time perspective. The present research chose the themes of continuity and change in time perspective because this theme is under researched given developments in closely related fields such as personality and dispositional views of goal achievement.

The commonly held view among time perspective researchers is that time perspective does not change when temporal consistency is established. This claim is justified on the following grounds: the vast majority of studies using time perspective are cross sectional and these designs are uninformative about continuity and change, validation studies appear to follow the same retest intervals outlined in the existing literature and the obvious lack of longitudinal studies investigating continuity and change in time perspective is obvious.

Recent research in personality development has challenged the one-dimensional view of stability, vis a vis rank order consistency and provides a more rigorous approach to understanding continuity and change. The present research initiated a new conversation about long term continuity and change in time perspective, a time related individual difference using the framework presented in Roberts et al. (2008). Consistent with this framework, time perspective was subjected to a more thorough analysis of continuity and change relative to the extant literature. The research sought to discover the coexistence of continuity and change in the dispositional view of time perspective using the following

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research questions.

1. Do time perspectives demonstrate differential continuity?   Supported

2. Do time perspectives demonstrate mean level continuity?   Supported

3. Do individuals demonstrate interindividual differences in

intraindividual change in their time perspectives?   Unsupported

4. Do individuals demonstrate individual change?   Supported

All research questions were answered. No time perspective demonstrated mean level change and all time perspectives demonstrated differential continuity. There was no evidence to support interindividual differences in intraindividual change. However, individuals demonstrated individual differences in change using the reliable change index and they demonstrated intraindividual variation in stability.

The research findings suggest that the preoccupation with consensus about the validity status of theory is concerning because it encourages researchers to take a unidimensional view of continuity or to consider that continuity and change are mutually exclusive. The research findings suggest that time perspective research should direct effort to new theory development which further explores continuity and change. The preference for continuity over change needs to be challenged because it distracts from important research avenues, such as intervention. Current literature shows relationships between time perspective and important health, psychological and academic outcomes and time perspectives may need adaptation through intervention. The research findings support the view that time perspectives are adaptable which makes them an ideal candidate for intervention to reduce past negative, present fatalism and improve future and past positive perspectives.

9.1 Limitations

The study has a number of limitations in the areas of methodology and research design.

1. Attrition is a concern among longitudinal research and it was decided to base the study on a potential pool of 400 respondents across different training organizations. The study's research design intended to financially incentivize respondents via a 500 euro prize in a draw. Dublin City University Research Ethics Committee raised an ethical objection to the participant incentive on the grounds that the incentive may unduly influence a participant's response, and that financial remuneration may encourage people to participate in the study who would not otherwise do so.

The sample size limited the research because it did not support invariance testing across time periods to establish configural and metric invariance and it limited the method variance analysis. To manage method variance, the survey items were scrambled on each measurement occasion. To conduct invariance testing, refinement of the measurement instrument was considered. Refinement of measures refers to the application of a set of procedures to improve or modify the representation of a construct (Smith & McCarthy 1995). When measures are refined, they should be retested in an independent sample and discriminant validity should be re-examined (Smith & McCarthy, 1995).The option to modify (reduce) the number of scale items by using cutoffs for factor loadings, at .5 and above with cross loadings less than .25, was considered, but this approach was rejected because of guidance and concerns provided in Stanton et al. (2002). The implication of this decision is that the findings may have arisen in part from beta and gamma change (Golembiewski et al., 1976) and that the assumption of invariance was made rather than supported empirically.

2. The research started with the intention of using four measurement occasions, but

three waves of data materialized. Midway through the data collection phase, the training network underwent a programme of change, which dampened the willingness to participate beyond three occasions. The three wave design is albeit an improvement over existing practices, but it is limited to describing linear trajectories.

3.   Time perspectives demonstrated impressive continuity using the ZTPI, a valid and reliable measure, but these measures are not designed to detect change. Alternative measures of time perspective were considered but they were mainly future oriented and reflected state measures (Ballard & Seibold, 2004a), which would not allow a broader investigation into continuity and change. Another measure of time perspective was developed by Jones et al., (2004) which includes past, present and future, however the measure was unpublished.

4.   Given the lack of prior theorizing on continuity and change in time perspective, the study was guided by research questions rather than by a set of formal hypotheses. Personality development researchers examining continuity and change in personality and dispositional approaches to goal mastery have not used hypotheses, but have been guided by a set research questions. The current lack of theorizing about continuity and change in time perspective is evidenced in the absence of longitudinal research examining rank order mean level and individual differences in change and continuity.

5.   The study's results are not generalizable to a wider audience and would require replication with another adult sample.

6.   The ZTPI has demonstrated inadequate model fit statistics using structural equation modeling (Worrell & Mello, 2007) and some authors have reported lower than expected scale reliabilities (Milfont & Gouveia, 2006). Validation studies have raised questions about construct, discriminant and face validity. Face validity was raised directly by Milfont et al. (2008) as a concern with items in the ZTPI which reflect personality

measures. In a validation study, Worell and Mello (2007) added that a substantial amount of survey items did not load on any of the five time perspectives in a sample of adolescence. Despite this challenge, the ZTPI is regarded as a promising measure that addresses discriminant validity (McGrath and Tschan 2004). It appears that the measure requires research to address these concerns.

7. The statistical approaches used in the research have limitations. RANOVA is limited to between person differences, it assumes no missing data, and imposes unrealistic assumptions on longitudinal data such as sphericity which is unlikely to hold in practice. Latent growth modeling takes a top down approach and fits a single trajectory to the sample. In the presence of latent groupings, a latent growth model can be unsuitable because the trajectory fitted to the data does not consider latent groupings.

An alternative approach such as fitting individual trajectories to the data may provide additional insights for change such as spaghetti plots (Oi-man et al., 2008). Spaghetti plots are a first step to examining individual level change and they rely on longitudinal data in long format. Individual scores are plotted against time and a series of plots are generated which describe different change trajectories. The advantage of the spaghetti plot is shown in Li et al. (2012) where team process trajectories were used to critique a default linear development of team process dynamics. Rather than assuming a default growth trajectory each team's process dynamic can be described using a separate mathematical function.

9.2 New research opportunities

There are a number of future research opportunities arising from the present study which suggest that a new temporally sensitive measure of time perspective is required so that time perspective is modelled as a process. Secondly, intervention research can draw on

time perspectives so that researchers know about when to intervene and how to promote and offset time perspectives. Thirdly, the development of a time sensitive measure of tie perspective can open new research avenues into organizational research such as socialization of new instructors' into training organizations.

9.2.1. Development of a temporally sensitive measure of time perspective

Prior to any discussion about changing time perspectives, a measure of time perspective that fits within the temporalist research agenda should be developed. The measure of time perspective applied to early school leavers should include evaluative, cognitive, emotional items and events, but should not take the form of multi item surveys. The new measure may best be presented in a graphical form to manage literacy difficulties and to reflect a trajectory of a changing time perspective. Perhaps a platform for this measure is the learner's mobile phone where they are prompted by text message to complete a picture on their phones and describe the events that are linked to the trajectories. Future research might develop and validate a measure of time perspective that is suitable for temporal research among early school leavers.

9.2.2. Cross level phenomenon

An interesting research opportunity for time perspective, assuming a time sensitive measure, would be to examine change in time perspective as a function of other phenomenon happening at higher levels within the organization. For example, what is the relationship between the changes in time perspectives and how an organizational change programme evolves? If an organizational change programme is imposed on individuals does the trajectory for future time perspective show decline and over what interval? What parts of the organizational change programme has greatest/least impact on changing time perspectives? If resistance to change is being examined, will past positive increase with

rising resistance to change as individuals recall the past as a means of solidifying routines so that the pace of change declines or at least stabilizes?

9.2.3. Shared temporal cognitions- Is there a contagion effect?

Research examining shared temporal cognitions using the ZTPI suggest that time perspectives should be regarded as individual differences (Bartel & Milliken, 2004). However, from a temporalist view, an interesting study might examine a contagion effect in that an instructors time perspectives are "contaminated by" those of learners so that there is a time to exposure. How long does it take for time perspectives to reflect higher levels of present fatalism in individual instructors as a result of working in training environment? Can the reverse occur in that new instructors who are present fatalistic observe a decline in their levels of present fatalism as a result of working with early school leavers? A temporalist perspective will focus on leads and lags such that present fatalism lags the exposure to the training centre environment.

9.2.4. Intention to leave school early or return to training

The youth work context might form a new line of time perspective intervention research, especially among those who plan to leave school before they achieve their Leaving Cert. While it is important to consider the intention to leave school early, it is essential that researchers capture the intention of an early school leaver to pursue any further education and training opportunities or engage with the labour market. An obvious starting point might be to examine the relationship between time perspective and the intention to leave school early by modeling time perspectives as latent classes, where membership of a class heightens or dampens the intention to leave school early. Similarly, it is important to examine processes that prevent or dissuade the early school leaver from engaging with further study or progressing to the labour market. Once the early school

leaver has progressed, it would be equally desirable to investigate processes that help them to maintain improvement and identify processes that prevent them from retaining employment or staying in further education. A practical piece of research would be to examine if attending a training organization makes and improvement in learner self-esteem and self efficacy and future time perspective over their two year course at the training organization. The research opportunity ideally lends itself to the phenomenon which has an onset, duration and offset (Roe, 2008). Work experience is a central part of the early school leaver's programme at the training organization which can last for between two and twelve weeks. Exploring the trajectory of early school leavers' commitment to an employer over the interval of work experience would be a significant practical and theoretical contribution.

Concluding remarks

The barriers to time research can be summarized by Carlstein (1977), cited in Bergmann, 1983, p.498 "Time adopts the somewhat discourteous practice of wearing different hats which are seldom raised to meet the unwary researcher with an unambiguous meaning" Interdisciplinary research on time using new and existing conversations can incrementally disentangle the many faces of time, and for temporal research to flourish it must build consensus and technical certainty (Pfeffer, 1993).

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APPENDIX A ETHICS APPROVAL LETTER

Dublin City University
Ollscoil Chathair Bhaile Átha Cliath

DCU

Dr. Finian Buckley
DCUBS

5th March 2009

REC Reference: DCUREC/2009/020

Proposal Title: **Within and between person variation in individual time perspective.**

Applicants: Dr. Finian Buckley, Mr. Blaze Aylmer

Dear Finian,

Further to expedited review, the DCU Research Ethics Committee approves this research proposal. Should substantial modifications to the research protocol be required at a later stage, a further submission should be made to the REC.

Yours sincerely,

pp Fiona Brennan.

Mr. Brian Trench
Chair
DCU Research Ethics Committee

APPENDIX B SURVEY

Introduction to the survey

My name is Blaze Aylmer and I am a Community Training Centre, (CTC), manager in Galway. I am undertaking research as part of my PhD at Dublin City University under the supervision of Dr. Finian Buckley, tel. 017005658. My contact details are 0878207469 and email address is blazeaylmer@gmail.com

The study examines how CTC staff, managers and boards view issues around time. The research seeks your views on the variety of ways in which time is considered in your personal, professional and work related lives.

I sincerely appreciate the demands on your time. The questionnaire should only take about **20-25** *minutes to complete. This study is a 15 month longitudinal study which seeks to gain insights into the ways in which you consider time. Therefore I will be seeking your cooperation on five separate measurement occasions spread out over the coming 15 months. The subsequent surveys will be shorter and should take about 15-20 minutes to complete. In the event that the self addressed envelope is mislaid, please return the survey to:* **Blaze Aylmer Monatigue Craughwell Co Galway.**

A good response rate is essential to the successful completion of my PhD and your time and effort is especially appreciate. All responses will be treated in strict confidence.

Survey Layout

Section 1: Inquires about your background details and your individual attributes.

Section 2 Relates to your preference for past-time, present –time and future-time.

Instructions

Please read each question carefully and answer all questions.

Remember there is no right or wrong answer, the important point is that your views and opinions are expressed.

When you have completed the survey please return it in the self addressed envelope provided.

Please return the completed questionnaire by

<table>
<tr><td colspan="2">Section1:-Background Details: In this section you will be asked questions about yourself. Please answer each of the following questions by ticking or writing in the boxes provided.</td></tr>
</table>

1. Gender: Male ☐   Female ☐   **2.**Number of years working at the CTC: ☐   **3.** Age ☐   **4.** Do you have children?   Yes ☐   No ☐

5. Please indicate your role with the organisation: Manager ☐   Instructor ☐   Clerical Officer ☐   Board member ☐   other –please specify _____

6.Please indicate the highest educational achievement   **7.**Please indicate your ethic origin origin e.g. Irish, French

Primary ☐   Secondary ☐   Trade ☐   Third level ☐   Professional ☐   _____

Section 2: Your preference for past-time, present –time and future-time. Please read each statement and circle a response

		Very uncharacteristic	Uncharacteristic	Neutral	Characteristic	Very characteristic
7	I believe that getting together with one's friends to party is one of life's pleasures.					
8	Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories.	1	2	3	4	5
9	Fate determines much of my life.	1	2	3	4	5
10	I often think of what I should have done differently in my life.	1	2	3	4	5
11	My decisions are mostly influenced by people and things around me.	1	2	3	4	5
12	I believe that a person's day should be planned ahead each morning.	1	2	3	4	5
13	It gives me pleasure to think about my past.	1	2	3	4	5
14	I do things impulsively.	1	2	3	4	5
15	If things don't get done on time I don't worry about it.	1	2	3	4	5
16	When I want to achieve something, I set goals and consider specific means of reaching these goals.	1	2	3	4	5
17	On balance, there is much more good to recall than bad in my past.	1	2	3	4	5
18	When listening to my favourite music, I often lose all track of time.	1	2	3	4	5
19	Meeting tomorrow's deadlines and doing other necessary work comes before tonight's entertainment.	1	2	3	4	5
20	Since whatever will be will be, it doesn't really matter what I do.	1	2	3	4	5
21	I enjoy stories about how things used to be in the "good old times."	1	2	3	4	5
22	Painful past experiences keep being replayed in my mind.	1	2	3	4	5
23	I try to live my life as fully as possible, one day at a time.	1	2	3	4	5
24	It upsets me to be late for appointments.	1	2	3	4	5
25	Ideally, I would live each day as if it were my last.	1	2	3	4	5
26	Happy memories of good times spring readily to mind.	1	2	3	4	5
27	I meet my obligations to friends and authorities on time.	1	2	3	4	5
28	I've taken my share of abuse and rejection in the past.	1	2	3	4	5
29	I make decisions on the spur of the moment.	1	2	3	4	5

		Section 2: Continued Your preference for past-time, present –time and future-time. Please read each statement and circle a response					
30	I take each day as it is rather than plan it out.	1	2	3	4	5
31	The past has too many unpleasant memories that I prefer not to think about.	1	2	3	4	5
32	It is important to put excitement in my life.	1	2	3	4	5
33	I've made mistakes in the past that I wish I could undo.	1	2	3	4	5
34	I feel that it's more important to enjoy what you're doing than to get work done on time.	1	2	3	4	5
35	I get nostalgic about my childhood.	1	2	3	4	5
36	Before making a decision, I weight the costs against the benefits.	1	2	3	4	5
37	Taking risks keeps my life from becoming boring.	1	2	3	4	5
38	It is more important for me to enjoy life's journey than to focus only on the end result.	1	2	3	4	5
39	Things rarely work out as I expected.	1	2	3	4	5
40	It's hard for me to forget unpleasant images of my youth.	1	2	3	4	5
41	It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.	1	2	3	4	5
42	Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.	1	2	3	4	5
43	You can't really plan for the future because things change so much.	1	2	3	4	5
44	My life path is controlled by forces I cannot influence.	1	2	3	4	5
45	It doesn't make sense to worry about the future, since there is nothing I can do about it anyway.	1	2	3	4	5
46	I complete projects on time by making steady progress.	1	2	3	4	5
47	I find myself tuning out when family members talk about how things used to be.	1	2	3	4	5
48	I take risks to put excitement in my life.	1	2	3	4	5
47	I make lists of things to do.	1	2	3	4	5
50	I often follow my heart more than my head.	1	2	3	4	5
51	I am able to resist temptations when I know that there is work to be done.	1	2	3	4	5
52	I find myself getting swept up in the excitement of the moment.	1	2	3	4	5
53	Life today is too complicated; I would prefer the simpler life of the past.	1	2	3	4	5
54	I prefer friends who are spontaneous rather than predictable.	1	2	3	4	5
55	I like family rituals and traditions that are regularly repeated.	1	2	3	4	5
56	I think about the bad things that have happened to me in the past.	1	2	3	4	5
57	I keep working at difficult, uninteresting tasks if they will help me get ahead.	1	2	3	4	5
58	Spending what I earn on pleasures today is better than saving for tomorrow's security.	1	2	3	4	5
59	Often luck pays off better than hard work.	1	2	3	4	5
60	I think about the good things that I have missed out on in my life.	1	2	3	4	5
61	I like my close relationships to be passionate.	1	2	3	4	5
62	There will always be time to catch up on my work.	1	2	3	4	5
63	There will always be time to catch up on my work.	1	2	3	4	5

Thank You   The next survey will be posted on :_____ and I appreciate your support.

APPENDIX C MPLUS CODE GROWTH MODELS

Future time Perspective LGM

Title: growth model of FTP no invariance testing

 DATA:

  FILE IS C:\Mplus\thesis\SPSSLGM1.dat;

 VARIABLE:

  MISSING ARE ALL (-999);

  NAMES ARE ID FT2av FT3av FT1av;

 usevariables

 FT1av FT2av FT3av;

 !insert scale subscores FTPt1 t2 t3.

 ANALYSIS:

   Estimator=ML;

   ! data normality in observed scores

! LATENT GROWTH MODEL

  Model: i | FT1av@1 FT2av@1 FT3av@1;

         FT1av@0

         FT2av@0;

         FT3av@0;

         FT1av(1);

         FT2av(1);

         FT3av(1);

!GRAPHS

  PLOT:TYPE=PLOT3;

SERIES IS   FT1av(1) FT2av(2) FT3av(3);

OUTPUT: STD SAMPSTAT Tech1;

Present Fatalism LGM

Title: growth model of PF no invariance testing

 DATA:

 FILE IS C:\Mplus\SPSSLGM.dat;

VARIABLE:

 MISSING ARE ALL (-999);

 NAMES ARE ID PFT1av PFT2av PFT3av;

usevariables

 PFT1av PFT2av PFT3av;

!insert scale subscores FTPt1 t2 t3.

ANALYSIS:

 Estimator=ML;

Model: i s |PFT1av@0 PFT2av@1 PFT3av@2;

        PFT1av(1);

        PFT2av(1);

        PFT3av(1);

 PLOT:TYPE=PLOT3;

 SERIES IS   PFT1av(1) PFT2av(2) PFT3av(3);

OUTPUT: STD SAMPSTAT Tech1 Tech4;

Present Hedonism LGM

Title: growth model of PH no invariance testing

 DATA:

 FILE IS C:\Mplus\SPSSLGM1.dat;

VARIABLE:

 MISSING ARE ALL (-999);

 NAMES ARE ID PHT1av PHT2av PHT3av;

usevariables

 PHT1av PHT2av PHT3av;

!insert scale subscores FTPt1 t2 t3.

ANALYSIS:

 Estimator=ML;

Model: i s |PHT1av@0 PHT2av@1 PHT3av@2;

        PHT1av(1);

        PHT2av(1);

        PHT3av(1);

        i with s@0;

 PLOT:TYPE=PLOT3;

 SERIES IS   PHT1av(1) PHT2av(2) PHT3av(3);

 OUTPUT: STD SAMPSTAT tech1 Tech4;

Past Negative LGM

Title: growth model of PN no invariance testing

 DATA:

 FILE IS C:\Mplus\SPSSLGM1.dat;

VARIABLE:

 MISSING ARE ALL (-999);

 NAMES ARE ID PNT1av PNT2av PNT3av;

 usevariables

 PNT1av PNT2av PNT3av;

!insert scale subscores FTPt1 t2 t3.

ANALYSIS:

 Estimator=MLR;

  ! used to adjust for non normality in observed scores

Model: i s |PNT1av@0 PNT2av@1 PNT3av@2;

  PNT1av(1);

  PNT2av(1);

  PNT3av(1);

  i with S@0;

 PLOT:TYPE=PLOT3;

 SERIES IS   PNT1av(1) PNT2av(2) PNT3av(3);

 OUTPUT:STDSAMPSTAT Tech4;

Past Positive LGM

Title: growth model of PN no invariance testing

DATA:

FILE IS C:\Mplus\SPSSLGM1.dat;

VARIABLE:

MISSING ARE ALL (-999);

NAMES ARE ID PPT1av PPT2av PPT3av;

usevariables

PPT1av PPT2av PPT3av;

!insert scale subscores PPt1 t2 t3.

ANALYSIS:

Estimator=ML;

Model: i s |PPT1av@0 PPT2av@1 PPT3av@2;

PNT1av(1);

PNT2av(1);

PNT3av(1);

i with S@0;

PLOT:TYPE=PLOT3;

SERIES IS   PPT1av(1) PPT2av(2) PPT3av(3);

OUTPUT: STD SAMPSTAT Tech4;

Sample code for multilevel models- Present hedonism

```
DATA:

  FILE IS C:\Mplus\SPSSLGM1.dat;

VARIABLE:

  MISSING ARE ALL (-999);

  NAMES ARE CTCID PHT1av PHT2av PHT3av;

  USEVARIABLES=CTCID PHT1av PHT2av PHT3av ;

   Cluster is CTCID;

  ANALYSIS:

  TYPE = TWOLEVEL;

  Estimator=ML;

  MODEL:

%WITHIN%

 iw | PHT1av@1 PHT2av@1 PHT3av@1;

PHT1av@(1);

PHT2av@(1);

PHT3av@(1);


 %BETWEEN%

 ib | PHT1av@1 PHT2av@1 PHT2av@1;

 PHT1av@0;

 PHT1av@0;

 PHT1av@0;

 OUTPUT:     STD     SAMPSTAT     Tech4     TECH1     TECH2     Tech3;
```

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