

**Examining the effects of individual's polychronicity and
supervisor's management style on creative self-efficacy**

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ABSTRACT

This research focuses on the area of individuals' creative self-efficacy studies in the workplace. Creative self-efficacy is the self belief of whether one has the capacity to perform the job creatively. In the literature, it has been established as an important factor affecting individual's creative performance. However, studies on the variables which can affect creative self-efficacy are rare. The objectives of this research are to examine whether individual polychronicity can affect creative self-efficacy; whether supervisors' supportive and non-controlling management style can influence creative self-efficacy; and whether organisational environmental factors (organisational structure, interaction with co-workers, risk-taking orientation, and a trusting and caring atmosphere) can impact creative self-efficacy. This research argues that supervisory management style can affect organisational environmental factors. Paper questionnaires and web-based surveys were conducted among 123 post-experienced students from Victoria Management School, School of Government, School of Information Management, and Centre for Continuing Education in Victoria University of Wellington. The research findings suggest that individual polychronicity, supervisory management style, interaction with co-workers and risk-taking orientation are significantly associated with individuals' creative self-efficacy at workplace. As expected, supervisory management style is significantly correlated with organisational structure, interaction with co-workers, risk-taking orientation, and a trusting and caring atmosphere. The results also show that factors like individualistic/collectivistic culture and the appointment of people in the management/non-management position can affect creative self-efficacy. Theoretically,

this research has contribution to the creative self-efficacy and creative performance studies, polychronicity studies and “fit” theory between employees and organisational environment. Practically, organisations that want employees to have high creative self-efficacy may recruit polychronic individuals, provide positive creative environment, and encourage supervisors to have supportive and non-controlling management styles.

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Chapter one: Introduction

Chapter outline: the focus of this thesis is on the impact of individual polychronicity and supervisors' supportive and non-controlling management style on creative self-efficacy. This chapter will introduce the research topic including the background and research questions. The second section will conclude with the description of how this thesis is organised.

1.1 Background and research questions

Have you ever noticed that some people are very skilled at juggling many tasks at the same time, whereas other people can only focus on one thing at a time? Take a moment to think about what you do. As you read this thesis, are you doing anything else? Do you respond to e-mails while taking phone calls, and/or think about research projects you are working on? Or, have you blocked off a period of time for one task alone – clearing your mind and planning to immerse yourself into that task from beginning to end? Are you laughing at the fact that one of these two options seems totally unappealing to you or, perhaps, not possible given the demands of your job?

The thesis concerns the individual's polychronicity and its relationships with creative self-efficacy in the workplace. Creative self-efficacy is defined as "the belief one has the ability to produce creative outcomes" (Tierney & Farmer, 2002). Polychronicity is about different preferences individuals have for organising and structuring their time. Some people prefer to focus on one task at a time; others prefer to divide their attention among many simultaneously. If you are one of the former, the thought of working on only one project from start to finish might seem focused and productive, whereas the thought of working simultaneously on many projects might seem

disorganised. On the other hand, if you are one of the latter, working on one thing at a time might seem frustrating and inefficient, whereas having many things in progress might seem dynamic and productive.

Studies have shown that time perceptions and preference are important components of one's personality and behaviour (Hall & Hall, 1990; Bluedorn, 2002) and have different implications on people's willingness to exert effort in completing projects on time. Recently, researchers have identified that individual polychronicity also has a relationship with creativity. They found that polychronic individuals in some ways are more creative than others who are not. This is intriguing and has prompted this research which aims to bridge the gap between individual polychronic studies and creative studies.

In a today's competitive, fast-paced environment, individuals are expected to use their initiative and creativity, rather than simply react to problems that arise.

Everyone has creative potential expressed in one style or another (Kirton, 1976) and can take the initiative to some degree, but some people are more effective at these than others. Kirton proposed that individuals can be located on a continuum ranging from those who have an ability to do things "better" (adaptors) to those who have an ability to do things "differently" (innovators). These abilities are reflected in the qualitatively different solutions they produce to seemingly similar problems. A number of investigations have examined the relation between individuals' cognitive ability and creative outcomes (Kirton, 1989; Masten & Caldwell-Colbert, 1987). Results suggest that individuals with an innovative ability tend to be more creative than those with an adaptive ability (Tierney *et al.*, 1999). The way innovators behave

is similar to the polychronic individual's tendency to do different things simultaneously.

Research has shown significant correlations between measures of cognitive ability and personality traits which contributes to creativity. But no studies have been done on the relationship between polychronicity and creative self-efficacy. Such a relationship is important because while everyone has the capacity to be creative, not everyone is aware of it and/or has confidence in his/her own creative abilities. Since polychronic individuals have many similarities associated with creative and innovative people, is the creative self-efficacy that drives these people also associated with polychronicity? The research question is:

- 1) If individuals have polychronic tendency, would they also have strong creative self-efficacy?

An organisational environment can support or hinder the development of individual creativity by providing encouragements (Amabile, *et al.*, 1996) and support. The creative organisational environment can comprise of the supervisors' supportive and non-controlling management style, organisational structure, interaction with co-workers, risk-taking orientation and a trusting and caring atmosphere (Scott & Bruce, 1994, Rice, 2006). These variables are all related to individual's creative performance. However, no studies have explored the relationship between these variables and creative self-efficacy. This leads to the second research question:

- 2) Does the creative organisational environment help enhance an individual's creative self-efficacy?

Within the creative organisational environment, this thesis takes the interactionist point of view. It argues that among these environmental variables, the supervisor's management style has the most significant impact on creative self-efficacy. However, management style can also influence the organisational structure, the interaction with co-workers, risk-taking orientation and a trusting and caring atmosphere. This leads to several associated sub-research questions:

- 2.1) Does a supportive and non-controlling supervisory management style influence individual's creative self-efficacy?

- 2.2) Do other organisational factors (organisational structure, the interaction with co-workers, risk-taking orientation, and trusting, caring atmosphere) influence individual's creative self-efficacy?

- 2.3) Will a supportive and non-controlling supervisory management style explain the variance of other organisational factors (organisational structure, interaction with co-workers, risk-taking orientation, and a trusting, caring atmosphere)?

The primary purpose of this research is to examine the extent to which individual polychronicity is related to individual creative self-efficacy. The secondary purpose is to examine whether creative self-efficacy is influenced by the organisational environment as well. It is for this reason that this research analyses factors affecting creative self-efficacy at both the individual and organisational levels. The former

focuses on the individual polychronic factor's influence on creative self-efficacy. The latter focuses on organisational factors that affect creative self-efficacy. This includes supervisory management style, organisational structure, interaction with co-workers, risk-taking orientation, and a trusting and caring atmosphere. Before moving further, several conceptual definitions need to be clarified here. Creativity in this research means employees' creative performance in the organisation. Creative ideas mean the novel and useful ideas that employees come up with at the workplace. Creative organisational environment means organisations provide environment which could enhance employees' creative performance in the organisation. These definitions will be used in this study.

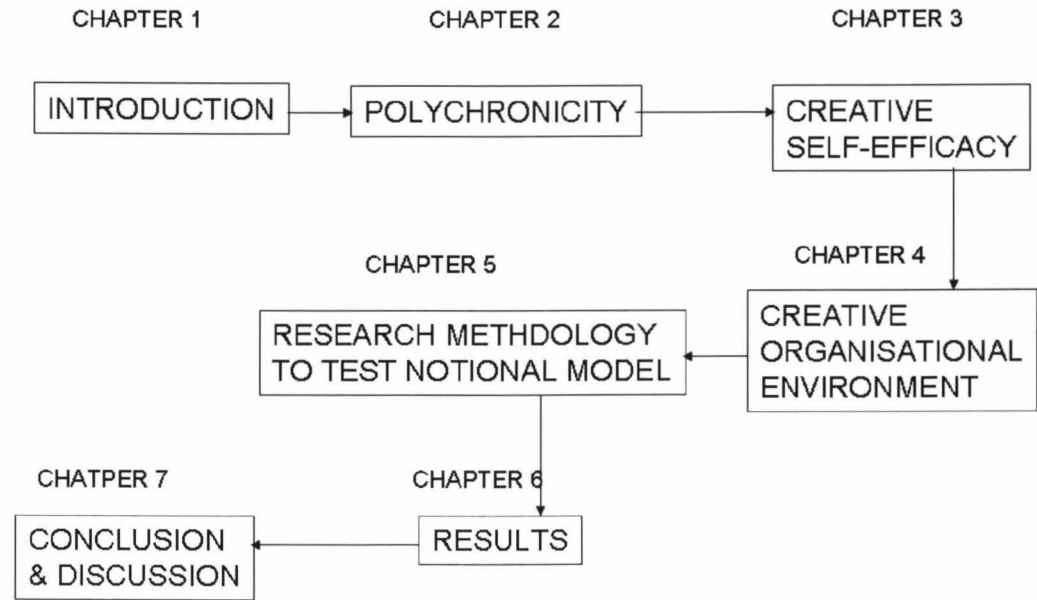
1.2 The structure of the thesis

The schematic diagram in Figure 1 shows the flow of the content and the organisation of the chapters of the thesis. The review in Chapter 2 covers the studies on polychronicity from cultural, organisational and individual point of view. The main focus is on the individual level of polychronicity and its relationship with creativity studies. The key variable here is individual polychronicity.

Following the notion that polychronic individuals show great interest in creativity, Chapter 3 explores the research on creative self-efficacy. The key variable is the individual's creative self-efficacy. With regards to the organisational impact on creativity, Chapter 4 further examines the key variables of the supervisors' supportive and non-controlling management style, organisational structure, the interaction with co-workers, risk-taking orientation, and trusting and caring atmosphere. These chapters provide the theoretical underpinnings upon which this study is built.

Based on the literature reviewed, a notional model of creative self-efficacy is proposed in Chapter 5 incorporating the key variables. This chapter will introduce the methodology of this thesis. The broad hypotheses are formulated for testing. The questionnaire method, the sampling issues, and the instruments to measure these key variables will be discussed respectively.

Figure 1
Structure of the thesis



The results of the data analysis and the findings of the main study will be discussed in Chapter 6. The chapter concludes with central tendency tests, independent sample t-tests, correlation tests and multiple regression analysis.

Chapter 7 includes a discussion on the results and conclusions of the research. The limitations of the study are brought up and possible areas for further research proposed.

Chapter 2: Polychronicity

Chapter outline: A polychronic individual is described as one who is able to do things simultaneously. For example, a person can write a letter, talk on the phone, eat an apple, and listen to music at the same time. Polychrons also tend to move back-and-forth between activities. For instance, someone could be interrupted by a brief phone call, and then go back to the current task with ease. In contrast, a monochronic person's behaviour is sequenced. They tend to finish one task before starting on the next one. There is a possibility that polychronic individual may cope well with today's fast-paced society. This chapter will explore the literature on polychronicity. The first section (section 2.1) will introduce the basic concept of polychronicity. The sections that follow (section 2.2; section 2.3; section 2.4) will explore polychronic research on a cultural level, organisational level, and individual level. The last section (section 2.5) will further examine the studies on the individual level, specifically focusing on the linkage between polychronicity and individual creativity. This section will also point out the gaps in the literature on both individual polychronicity and individual creativity studies.

2.1 Basic concept

The term "polychronic time use" first appeared in Hall's (1959) anthropological work identifying cultural differences in time perception and management. Hall (Hall 1981, 1982, 1983; Hall & Hall, 1987, 1990) described people living in a polychronic culture as tending to engage in more than one activity at the same time. They value time based on the events (e.g. harvests, seasons) and live a slow pace of life. In a monochronic culture, people prefer to do one thing at a time. They value time based on the clock and live at a fast pace. The difference in time preferences means that a

person who grew up in a monochronic culture will find it difficult to adjust to a polychronic culture.

Several researchers (Palmer & Schoorman, 1999) have investigated Hall's perspective of time in polychronicity. Palmer and Schoorman (1999, p.324) put forward three dimensions of polychronicity -- Context, time tangibility and time use preference. Each of these variables is independent of one another. The following paragraphs will examine each of these in turn.

"Context", according to Hall (1959) refers to the situation in which the communication occurs. Different cultures rely more or less on context to support communication. In low context communication, characteristic of monochronic time use, most of the information and meaning is contained in the content of the message (Hall & Hall, 1990, p.6). Here, people speak in a straightforward way. There is hardly any hidden information between the lines. For example, Northern Europeans and North Americans, who are typical monochrons, demand high preciseness in communication. They like to be accurate when they communicate. In contrast, in high context communication, which is a characteristic of polychronic time use, most of the information and meaning is embedded in "the information that surrounds an event" (Hall & Hall, 1990, p.6). For example, in polychronic cultures, like those of Latin America and China, the same sentence can be interpreted differently according to the circumstances, the tone of the speaker, and the position of the speaker.

"Time tangibility" refers to the linear measurement of the calendar or clock, and time intangibility is event-based (as opposed to clock-based), where activities are "timed"

by cycles (e.g. seasons, harvests) or the completion of previous procedures (Clark, 1985; Hall, 1959). The clock-based culture is also seen as a monochronic society, where people consider “time is money”. As such, time can be “bought and sold”, is able to be “saved”, “wasted”, or “spent”, as a tangible resource that has to be managed (Hall & Hall, 1987). Unlike a clock-based culture, in an event-based or polychronic society, time is intangible. It is based on current events, like a harvest. It cannot be controlled and managed.

“Time use preference” has typically been defined and operationalised as the extent to which people (or culture) prefer to engage in multiple tasks simultaneously. If an individual prefers to work on one task at a time, then that individual is said to be monochronic. If an individual prefers to engage in multiple activities simultaneously, then that individual is considered to be polychronic.

A series of studies was done on the time use preference dimension of polychronicity in the workplace to test the relationship between polychronicity and other organisational variables (e.g. Bluedorn, 2002; Bluedorn, Kaufman & Lane, 1992, Lee & Liebenau, 1999; Moustafa, Bhagat & Babakus, 2005; Slocombe & Bluedorn, 1999). Emerging from these studies, Bluedorn, Kalliath, Strube, and Martin (1999, p. 207) and Hall (Bluedorn 1998b, p. 110), defined polychronicity as “ the extent to which people a) prefer to engage in two or more tasks or events simultaneously and b) believe their preference is the correct way to do things” (Bluedorn, *et al.*, 1999, p.207; Bluedorn, 1998b, p.110). This thesis will be based on this definition to explore individuals’ polychronic differences.

Many researchers have treated polychronicity as a continuum in order to measure individual differences in polychronicity, (Bluedorn, Kaufman and Lane, 1992; Hecht and Allen, 2005; Palmer and Schoorman, 1999; Madjar and Oldman, 2006). Several instruments on polychronicity have been developed to measure the degrees of engagement which vary by personal preference (e.g. Polychronic Attitude Index and Inventory of polychronic Values). These instruments show that the difference in the level of individual polychronicity along a continuum depends on the degree of polychronic intensity. On the extremely monochronic end, individuals prefer to focus on one task at a time in a given time period. This implies that people will choose the highest priority task. They do not like interruption while doing the task. On the extremely polychronic end, people prefer to engage in several tasks, “sometimes literally simultaneously and sometimes in a frequent back-and-forth engagement pattern” (Bluedorn, 2002, p.52). However, individuals also tend to choose different time preferences for different activities. The degree of polychronic intensity measures the individual’s polychronic tendencies in most of their activities. From the monochronic/polychronic time use continuum, one can sense that no individual completely typifies the monochronic type or polychronic type. Variation depends on the cultural, organisational and individual level of differences. The following sections will further explore how cultural, organisational, and individual identity influence polychronicity.

2.2 Polychronic Studies based on Cultural analysis

In early research, Hall (1983) describes polychronicity as a cultural variable. Other researchers have built on this work and have shown that the culture can influence all aspects of temporal perception (Manrai & Manrai, 1995), and that differing

perceptions of time are, in turn, a part of culture and affect behaviour (Graham, 1981). Monochronic cultures are characterised by a pattern of sequential behaviour governed by schedules. Everything can be measured. Activities are processed one at a time and often sequentially performed. Hall also noted that people in monochronic cultures do not like multitasking and leaving things unfinished. Further, they tend to see time as a resource which can be easily divided into parts that can be organised and managed (Hall & Hall, 1990). According to Hall, North America and Germany are good examples of monochronic cultures.

In contrast, polychronic culture is characterised by a pattern of simultaneity, a moment-in-time that stresses involvement with people and completion of transactions, the simultaneous processing of several things at once, and comfort at doing multiple activities at the same time (Hall, 1983). In polychronic cultures, time is measured more by accomplishing wholes rather than by parts. People place more value on doing many things at once and this value leads to polychronic behaviours. Examples of polychronic cultures are those of native North Americans, the French, Asians, Latin Americans, and Mediterranean people (Hall & Hall, 1990). Another finding from cultural analysis is the relationship between polychronic culture and speed of activities. Hall (1983) observed that in polychronic cultures things move more slowly than they do in monochronic cultures.

Hall's cultural level analysis on polychronicity helps us to understand the predominant behaviour in that culture. The cultural level polychronic analysis provides a starting point for cross cultural awareness. For example, a business man, from a monochronic culture, would not be frustrated when he/she is aware of the

different value of time in a polychronic culture (Cunha & Cunha, 2004). However, because of globalisation and increased interaction among cultures, it is not enough to simply understand culture differences. One must grasp the whole picture on polychronic studies. More and more studies argue that culture can only be treated as one of the variables which affects individual's polychronic tendency. Evidence shows that polychronic individuals could come from monochronic cultures as well. For example, Onken (1999) found that even within a very monochronic culture such as the U.S., people tend to behave in a polychronic way and such behaviour is positively correlated with the rapid rate of organisation and better performance. Furthermore, Moustafa, Bhagat and Babakus (2005) found when polychronicity is treated as time use preference, it was not culture specific. Contrary to expectations, Tinsley (1998) found that American managers were more polychronic than German and Japanese managers. Conte, Rizzuto, and Steiner (1999) found that French and American students did not differ from each other on polychronicity.

The mixed results, seen at the cultural level of analysis, point to the need for organisational culture and individual personality to be examined when studying polychronicity in the work context. The reason for this is that the polychronic behaviour of a person from a monochronic culture could be due to the working environment, or this individual's personality. The next section will examine the polychronic organisation and the individual behaviour within.

2.3 Polychronic studies of organisations

Research into polychronicity as a factor of organisational culture has mainly relied on questionnaires to measure polychronicity. This approach often involves asking a sample of group members to complete a polychronicity survey about the group as the individual sees it and then averaging their scores. This average is the group's level of polychronicity. This shared perception of polychronicity is an element of an organisation's culture (Onken, 1999). Research done at the organisational level includes the size-polychronicity relationship and polychronicity-speed relationship. The following sections will examine these concepts.

There has been only one piece of research which has extensively examined the relationship between organisational size and polychronicity (Bluedorn & Ferris, 2004). They argued that based on the Schein (1992, p.108)'s work, monochronic cultures would be more appropriate (i.e., more effective) in large organisations whereas polychronic cultures would be more appropriate in small ones. Schein's analysis indicated a negative correlation between size and polychronicity. But their findings showed that the correlation between organisational size (number of employees) and polychronicity (the perception of the company's overall polychronicity by either its CEO or a senior vice president) was not statistically significant. However, when they measured the organisational size based on every ten employees as one unit, they found the organisational size was positively correlated with company polychronicity: "larger firms were more polychronic" (Bluedorn & Ferris, 2004). A similar result was also shown in Lee's study (1999) where greater degrees of polychronicity were associated with increasingly larger organisations.

The possible explanation for the size research may be due to more diversified work units and individual positions (Donaldson, 2001). As the organisation becomes bigger, the scope of organisational tasks and functions are also increased. The scope of the work may increase faster than the individual's workload. Thus, departments and even individual positions may not be able to focus on the same set of activities as the organisation grows. They may need to accomplish more activities in the same amount of time as their current tasks.

If the explanation of the size-polychronicity relationship above is true, the organisational polychronicity could also be positively associated with speed. Speed means that in the organisation, people attempt to accomplish more within the same time period. As the organisation has more tasks to finish within the same time frame, work will have to be performed faster.

At the organisational level of polychronicity studies, two tests have been conducted on the polychronicity-speed relationship. Onken (1999) examined organisational polychronicity in a sample of twenty firms from the telecommunications and publishing industries. She found a statistically significant positive correlation: the more polychronic the company, the more it valued doing things fast. Similarly, Bluedorn (1993) found a significant positive correlation between polychronicity and speed values in the sample of publicly traded companies. Both studies reveal a positive correlation between polychronicity and speed values: the more polychronic the organisation, the more doing things rapidly is valued in its culture.

The previous sections have examined polychronicity at a cultural level and organisational level. From the cultural point of view, the monochronic individual can still behave polychronically in a monochronic culture. Similarly, the polychronic person can show monochronic tendencies in the polychronic culture. Although culture may have an effect on an individual's polychronicity, it is not the primary factor. The next level of analysis is organisational polychronicity. At the organisational level, there is a relationship between organisational size and company polychronicity: the larger the organisation, the greater the degree of polychronic culture. In addition to the polychronicity-size relationship, organisational polychronicity is also positively associated with speed; people tend to work faster in the polychronic organisation.

Even though polychronicity at the organisational level is an interesting research area, the studies did not answer the question of how the individual's working behaviour could be different in the workplace. More studies at the individual level of polychronicity are needed. The following section will further explore individual polychronicity, seen as a personality factor, and how it is affected by demographic factors and other elements of organisational culture.

2.4 Polychronic studies at individual level

Within national or organisational cultures, there are differences in individual polychronic behaviour. Just as cultures vary from one another in their polychronicity, so do individuals vary within each culture. Since individual personality differences play a very important role in polychronic behaviour (e.g. Bluedorn, Kalliath, Strube & Martin, 1999; Bluedorn, Kaufman & Lane, 1992; Conte *et al.*, 1999; Hall & Hall,

1990; Kaufman *et al.*, 1991a; Kaufman, Lane & Lindquist, 1991b; Palmer & Schoorman, 1999), we need to examine the nature of polychronicity as an individual trait. Polychronicity can be seen as a habit that people unconsciously follow in their workplace. It appears that an individual's polychronicity is stable across different working environments.

2.4.1 Individual polychronicity and personality

As a stable trait, individuals will not change their behaviours according to different circumstances. So the degree of stability or the amount of variability would provide important clues about polychronicity's trait-like identity. Many researchers have provided evidence that individual's polychronic behaviour is consistent. For example, the research, done by Kaufman, Lane and Lindquist (1991a), found that an individual's polychronic preference is positively related to their self-reported time-use activity statements. This means that polychronic time use is associated with individuals' acceptance of the ideas of combining activities simultaneously. It is also related to the individuals' abilities to combine activities in order to fit their daily routine. Conte, Rizzuto, and Steiner (1999) provided validation for these self-updated behaviours when they found a statistically significant positive correlation between the observers' ratings and the participant's self ratings: the higher people rated themselves on the polychronicity scale, the higher their friends rated them on it too.

The studies cited have shown that people behave in their own polychronic ways even if they are not usually aware of it. Additionally, there is a consistency between peer-rating and self-rating on polychronicity. This suggests that individual polychronicity displays at least a modest degree of stability and is more likely to be a personality

trait. Given polychronicity is more likely to be a trait, it is important to examine whether there is relationship between polychronicity and the Big Five dimensions. These dimensions have gained wide acceptance (Goldberg, 1993) and are labelled: a) Conscientiousness, b) Agreeableness, c) Intellectance (Openness to Experience), d) Neuroticism (Emotional Stability), and e) Extraversion.

Conte and Jacobs (2003) addressed the relationship between individual polychronicity and the “Big Five” dimensions directly in their study of 181 train operators. They found polychronicity was not correlated with Agressableness, Intellectance, and Neuroticism. It was significantly associated with Conscientiousness and Extraversion, but was nonetheless independent of all of the Big Five dimensions. Therefore, polychronicity can be distinguished from relevant personality and dispositional traits (Conte *et al.* 1999). In a later Conte and Gintoft’s study (2005) of 174 computer retail sales employees, Extraversion was significantly related to polychronicity, further supporting the previous study by Conte and Jacobs (2003).

Another approach to personality is the Type A-Type B distinction (Friedman & Rosenman, 1974). People who exhibit Type A behaviour pattern are characterised by ambitiousness, impatience, easily aroused hostility, and an exaggerated sense of urgency. In contrast, individuals who lack these characteristics are identified as Type B.

Conte, Rizzuto and Steiner (1999) had found that polychronicity was positively correlated with two subcomponents of the Type A behaviour patterns, which are achievement striving and patience/ irritability. However, the modest size of the

correlations indicates that polychronicity does not overlap substantially with these Type A behaviour pattern subcomponents, therefore the items measuring Type A behaviours are not the same as the items measuring individual polychronicity.

Individual polychronicity is a personality trait that can be related to one or more the “Big Five” personality dimensions and Type A-Type B personality traits, and the following section will explore its relationship with demographic characters.

2.4.2 The individual polychronicity and demographic factors

The three demographic variables that have been investigated as possible correlates of polychronicity are: gender, age, and educational level. Of these three, education (Solocombe *et al.*, 1999) and gender (Hall, 1983; Manrai & Manrai 1995, p. 119) have received empirical attention. Hall (1983, p. 52) concluded that monochronic time was more likely to be “male time” and polychronic time was more likely to be “female time”. This seems to suggest that on average women are more polychronic than men. However, the results on the relationship between gender and polychronicity are far from conclusive. Other studies have found that men tend to be polychronic (Conte, Rizzuto & Steiner 1999), women were more polychronic than men (Bluedorn, 2000), and no statistically significant differences between men and women (Conte 2000; Conte, Rizzuto & Steiner 1999; Kaufman, Lane & Lindquist 1991a; Palmer & Schoorman 1999).

Kaufman, Lane, and Lindquist (1991b) have examined the age-polychronicity relationship, but they failed to find any statistically significant relationship.

Studies have shown that there is a positively correlated relationship between polychronicity and respondents' levels of formal education (Kaufman, Lane & Lindquist, 1991b). The more formal education the person has, the more polychronic the person is. However, Bluedorn *et al.*, (1999) has challenged the result of this research done in the United States claiming that the instruments used were not sufficiently reliable and valid. It is, therefore, not clear whether a relationship exists between educational level and polychronicity in a particular work environment.

Research into the relationship between the biographic variables of gender, age and education levels and polychronicity is inconclusive. The following section will explore whether polychronicity is related to other dimensions of organisational cultures, in particular, its relationships with schedule, deadline, punctuality, planning and organizing, and the perspective of person-job fit.

2.4.3 Individual polychronicity and organisational culture

The literature shows that monochrons, as people who prefer to complete one task before taking on another, prefer to plan and follow schedules, and disruptions to their plans can cause negative feelings. They may delay certain tasks so that they can focus on a particular activity (Kaufman-Scarborough & Linquist, 1999). On the other hand, polychrons are good at restructuring activities to accomplish their goals. Compared to monochrons, they are better at “adding time” to a day, allowing them to produce more within the workday than if they had approached tasks monochronically (Kaufman *et al.*, 1991b). They appear more flexible and spontaneous, and at work, they seem more able to cope with pressure and uncertainty.

In Bluedorn *et al.*'s (1999) study with data from two large hospitals, polychronicity was negatively correlated with both punctuality and schedules and deadline values. Benabou (1999) also found that polychronicity was negatively and significantly related to preferences for working for a company that emphasized punctuality, schedules, deadlines, and routines. In a study of 209 students, Conte *et al.* (1999) found that polychronicity was negatively correlated with time awareness, scheduling, and a preference for the organization. In another study of 112 adult heads of a household (94% of whom were working), Kaufman-Scarborough and Lindquist (1999) found that compared to polychrons, monochrons a) were more upset by changes to their schedules, b) used more detailed planning, and c) initiated significantly fewer schedule changes during the day.

These studies are consistent with Hall's (1983) conclusion that polychrons are less concerned about deadlines, schedules and punctuality values. A summary of the significant, empirical relationships between polychronicity and other variables is provided in Table 1. This table is adopted from Conte and Gintoft 's study (2005).

Table 1

Summary of significant relations between individual-level polychronicity and other variables

Correlated	r	n	Study
Positive correlation			
Achievement striving	0.18	161	Conte, Rizzuto & Steiner (1999)
Impatience and irritability	0.18	161	Conte, Rizzuto & Steiner (1999)
General hurry	0.16	209	Conte, Rizzuto & Steiner (1999)
Willingness to exert effort	0.22	246	Slocombe & Bluedorn (1999)
Desire to remain in organization	0.19	246	Slocombe & Bluedorn (1999)
Belief in and acceptance of organisational goal	0.13	246	Slocombe & Bluedorn (1999)
Perceived performance evaluation	0.19	246	Slocombe & Bluedorn (1999)
Absence	0.25	181	Conte & Jacobs (2003)
Lateness	0.19	181	Conte & Jacobs (2003)
Extraversion	0.21	181	Conte & Jacobs (2003)
Cognitive ability	0.15	181	Conte & Jacobs (2003)
Negative correlations			
Role overload	-0.15	310	Kaufman, Lane & Linquist (1991b)
Time awareness	-0.17	209	Conte, Rizzuto & Steiner (1999)
Preference for organization	-0.19	209	Conte, Rizzuto & Steiner (1999)
Scheduling	-0.18	209	Conte, Rizzuto & Steiner (1999)
Scheduling and deadlines	-0.22	199	Bluedorn, Kalliath, Strube & Martin (1999)
Punctuality values	-0.22	199	Bluedorn, Kalliath, Strube & Martin (1999)
Punctuality values	-0.28	301	Benabou (1999)
Schedules and deadlines	-0.31	301	Benabou (1999)
Preference for working routine job	-0.19	301	Benabou (1999)
Conscientiousness	-0.15	181	Conte & Jacobs (2003)
Supervisor performance ratings, train operators	-0.17	181	Conte & Jacobs (2003)

As illustrated in Table 1, not only does individual polychronicity cause different reactions in terms of schedule, deadline, punctuality, planning and organizing, it also has positive correlations with factors, such as willingness to exert effort, desire to remain in the organisation, belief in and acceptance of organisational goals, and perceived performance evaluation. However, this does not mean that all monochrons have negative work attitude. Much depends on the match between the individual needs and the conditions provided by the organisation. The next part explores the perspective of person-job fit.

Kaufman, Lane, and Lindquist (1991b) proposed that if an individual's time preferences and the time use methods of an organisation had a good fit, this would lead to satisfactory performance and enhancement of quality of work and general life. The central idea behind this is that a "fit" or "match" between the person and the situation will produce positive outcomes, whereas a "mismatch" will produce negative outcomes. Edwards (1991) concludes that fit has been shown to be positively related to a) job satisfaction; b) better performance; c) job involvement, commitment, trust and well-being, and negatively related to d) absenteeism, turnover, and resentment. These results have been replicated in several studies. For example, Slocombe and Bluedorn (1999) found that a greater match between preferred polychronicity (the extent to which an individual prefers to be involved with several tasks simultaneously) and experienced work-unit polychronicity (the polychronic behaviours and preferences of the supervisor and co-workers) was associated with higher levels of (1) organisational commitment in terms of willingness to exert effort, desire to remain a member of the organisation, and belief in and acceptance of organisational goals, (2) the individual's perceived performance evaluation by the

supervisor and co-workers, and (3) the individual's perceived fairness of the performance evaluation. A study, done by Hecht and Allen (2005), also shows that if jobs provide opportunities that require individuals to behave polychronically (i.e., polychronicity supplies) and the individual has the desire for such behaviour (i.e., polychronicity values), such a fit would result in polychronicity being related to job satisfaction, self-efficacy, and psychological strain.

This section has explored the individual's polychronicity and its relationship with several dimensions of organisational culture. Polychrons and monochrons do have different work behaviours. Polychrons are less likely to be concerned about schedules, deadlines and punctuality. However, they show indication towards achievement striving and, willingness to exert effort if job conditions are suitable for them.

Besides all the crucial relationships mentioned above, there is one area which researchers have not fully examined—the relationships between individual polychronicity and individual creativity. The next section will explore prior research that has been done on the polychronicity-creativity areas. It will also point out the possible linkage between individual polychronicity and creative self efficacy, which has not been examined in studies of either polychronicity or creativity so far.

2.5 Individual polychronicity and creativity

The first study which showed a significant linkage between individual's polychronicity and creativity was conducted by Bluedorn (1998a), when he investigated the correlates of individuals' orientation to change. In his research, he suggested that "polychronicity is regarded as a trait-like personality variable that

deals with a form of change-switching back-and-forth between projects” (Bluedorn, 1998a, p. 27). Polychrons have the ability of switching between different projects freely. This entails the use of creative problem-solving processes moving from one project to another. Bluedorn (1998a) predicted and confirmed, the more polychronic the individual, the more creative the individual will be. The limitation of this study was that the data was collected from students in undergraduate and graduate management classes at a university and not from working individuals.

Based on this evidence that creativity and polychronic preferences are positively related, Persing (1999) proposed a similar relationship in research and development (R & D). The results from her study showed that the characteristics of creativity or the traits of creative individuals were clearly consistent with polychronicity. There has been a lot of research on the creative individual (Amabile & Grysiewicz, 1988; Gough, 1979; Oldham & Cummings, 1996). The core set of studies on creative personality include broad interests, self-confidence, attraction to complexity, intuition, aesthetic sensitivity, and tolerance for ambiguity. The cited research indicates that polychronic individuals have similar personality traits. Hence, Persing (1999) proposed that individuals will have more tendencies toward polychronicity than toward monochronicity, because their personality traits make them more suitable for creative, intellectually intensive work. She also proposed that the higher the polychronicity of the individual in intellectually intensive work, the stronger an individual’s creative tendencies will be. Persing’s study focused mostly in highly intellectually demanding work such as R & D. Two studies (Bluedorn, 1998a; Persing, 1999), mentioned above focused on the positive relationships between individual polychronicity and creative personality.

Under certain environmental conditions, polychronic individuals can also perform more creatively than monochronic people. Madjar and Oldham (2006) followed this notion in that the fit between polychronicity and contextual conditions had implications for individuals' behaviours (Kaufmann-Scarborough & Lindquist, 1999; Slocombe & Bluedorn, 1999). In their research, individuals with a polychronic orientation exhibited relatively high creativity when they were rotated through different tasks. The creative performance in this study was measured as fluency and overall creativity (Zhou, 1998). "Fluency refers to the total number of ideas generated for the three tasks" (Madjar & Oldham, 2006, p.122). Overall creativity refers to "the extent to which the ideas generated were both novel and practical" (Shalley, Zhou & Oldham, 2004). From the studies above, the task rotation-polychronicity match can enhance individuals' creativity.

However, an individual's creative performance is a complex issue, which is influenced by many factors, for example, external influences (such as teamwork and supervision) and internal aspects (such as creative personality) (Amabile, *et al.*, 1996). Furthermore, the source of creativity is hard to ascertain (Mathisen & Einarsen, 2004). The individual creative behaviour could be the result of self awareness. If one cannot see oneself being creative, one cannot perform in a creative way. This thesis explores the relationship between polychronicity and creative self-efficacy. Must individuals first have strong beliefs that they can perform creatively, before they act on their beliefs?

Through examining quantitative empirical research associated with creativity in the workplace, researchers (e.g. Egan, 2005; Ford, 1996) have identified two major

factors that affect individual creativity; individual factors and external influences. Under individual creative factors, three sub-areas cover the creative personality, Big Five personality, and self-perception. For self-perception, the emerging area of research focuses on the concept of creative self-efficacy, which is defined as employees' beliefs that they can be creative in their work roles (Tierney & Farmer 2002). Since polychronicity is positively correlated with creative personality, and associated with conscientiousness and extraversion, the question that remains is whether an individual's polychronicity is also correlated with creative self-efficacy.

Creative self-efficacy is a new area of creativity research (Ford, 1996; Egan, 2005). Since polychronicity is seen as a personality trait, associated with creativity, a possible assumption is that there are linkages between polychronicity and creative self-efficacy. The next chapter will examine the studies on creative self-efficacy.

In summary, this chapter has explored the research on polychronicity. The concept was introduced in the first section. Section two indicated that culture is a major factor in polychronicity studies. However, organisational factors and personality should also be taken into account when analysing the individual's behaviour in the workplace. Section three discussed the relationship between organisational polychronicity and organisational size, and the speed-organisational polychronicity relationship. However, these organisational polychronicity factors do not fully explain individuals' different working behaviour. As a result, section four examined polychronicity in relation to the individual's working behaviour. This is the focus of this thesis. This section showed that individual polychronicity is a personality trait. It is strongly related to the individual's working behaviours such as planning, schedules,

punctuality, deadline values, changes, interruptions and positive outcomes on person-job fit. Section five discusses how individual polychronicity is related to creativity research and where there are gaps in the research literature. There are no studies examining the association between individual polychronicity and creative self-efficacy. The next chapter examines whether individual polychronicity is related to creative self-efficacy.

Chapter 3: Creative self-efficacy

Chapter outline: It has been argued that we all have the ability to be creative. If everyone can be creative, why do we not see it as often as we should? There are many variables that contribute to creative thinking and behaviour. Before creativity can occur, a person must be aware of his or her own creative potential or creative self-efficacy. This chapter will examine creative self-efficacy studies. The first section (3.1) explores the basic concept of creative self-efficacy. The second section (3.2) points out the different studies that have been conducted in this area. The third section (3.3) highlights the scarcity of research on creative self-efficacy and individual personality. Building on the discussion in chapter two, this section clarifies the relationship between individual polychronicity and creative self-efficacy. The fourth section (3.4) in this chapter discusses the studies on creative self-efficacy and supervisory management style.

3.1 Defining creative self-efficacy

Creative self-efficacy is an emerging area in creative studies (Egan, 2005; Choi, 2004; Lemons, 2005). Many scholars have concluded that creative self-efficacy is an important factor in creative performance. It can be argued that even though individuals have creative personalities and are in a creative environment, they still cannot perform creatively, if they do not believe in their creative ability. The concept of creative self-efficacy was developed from independent studies into self-efficacy and creativity. Before moving on to creative self-efficacy studies, clarification of the concept of self-efficacy, creative outcomes, and creative ability is required.

The model of self-efficacy from Gist and Mitchell (1992) and Bandura (1997) proposes that one's belief about one's ability will influence what one does and how one tries to do it, especially in challenging situations. Self-efficacy is developed from the gradual acquisition of complex cognitive or social skills through personal experience. Individuals appear to evaluate their capability first, and then regulate their choices and effort accordingly. Self-efficacy is an important factor for individual motivation. It changes depending on the result of learning, experiences and environment.

The idea of creative outcome, developed in the mainstream of creativity research, is defined as the end result of the products, ideas, or procedures. Such outcome is measured in terms of the observation of superiors (Amabile, 1988; Woodman *et al.*, 1993; Oldham & Cummings, 1996; Tierney & Farmer, 2002). Oldham and Cummings (1996) clarified that the creative outcome must satisfy two conditions. It must be novel and original, and it should be useful for the organisation. Before performing creatively, employees must first have creative ability.

How does one define an individual's creative ability? It can be argued that generating creative ideas for new products or processes in a job alone does not entirely demonstrate creative ability. Amabile (1988, p.131) stated that the creative ability includes the ability to "break the mental set," a knowledge of "heuristics for generating novel ideas," and confidence in adopting nonconforming perspectives, taking risks, and acting without dependence on social approval. As such, one can distinguish the difference between strong and weak ability based on the factors above.

Creative self-efficacy is defined as “the belief one has the ability to produce creative outcomes” (Tierney & Farmer, 2002, p.1138). It represents the narrower area of self-efficacy: it is creativity specific or the so-called “specific self-efficacy” (Baudura, 1997; Chen, Gully, Whiteman & Kilcullen, 2000; Stajkovic & Luthans, 1998; Gardener & Pierce, 1998). Hence, a person’s creative self-efficacy depends on the individual’s creative ability and a supportive environment.

In summary, creative self-efficacy is derived from the research in self-efficacy and creativity. Creative self-efficacy is affected by individual factors and organisational environmental factors. The next section will examine the relationships between creative self-efficacy, creative performance, task complexity and personal factors.

3.2 Creative self-efficacy research

Most studies on creative self-efficacy examine its relationship with creative performance (Tierney & Farmer, 2002, 2004; Jaussi, Randel & Dionne, 2007; Lopez, 2003; Choi, 2004). It has been suggested that creative self-efficacy is positively related to creative performance. This thesis examines creative self-efficacy as a dependent variable and the factors that could have an impact on it.

Studies examining the relationship between job complexity and creative self-efficacy have resulted in mixed findings. Tierney and Farmer (2002) found a positive relationship between these two factors in both manufacturing and high-tech companies. Complex jobs require more flexibility and more challenge, and could provide opportunities for people to be more creative. Employees conducting complex jobs would have a greater ability to work creatively, than employees who are doing

less complex jobs. But, in their later study among of R & D employees, Tierney and Farmer (2004) focused that job complexity has no significant relationship with creative self-efficacy at all. The relationship between job complexity and creative self-efficacy still remains unclear.

Researchers (e.g. Amabile, 1988; Tierney, *et al.*, 1999; Redmond, *et al.*, 1993; Tierney & Farmer, 2004) have examined the relationship between factors such as job tenure, education, hierarchical level, job self-efficacy (task-related) and creative self-efficacy. These studies have shown that an individual's job tenure, education, hierarchical level and job self-efficacy are all positively associated with creative self-efficacy. Amabile's (1988) research shows that extensive experience in a particular field helps a person gain confidence in coping with different situations. Such ability is also required in creative work. Although one can argue that doing the same job for years could lead to more "habitual" performance (Ford, 1996), it also provides opportunities to work creatively as the individual becomes more skilful over time. People's viewpoints and knowledge tends to be broadened by education. It helps individuals to use different problem-solving skills, which are crucial for employee creativity (e.g. Amabile & Gryskiewicz, 1987; Tierney, Farmer & Graen, 1999; Nickerson, 1999). Tierney and Farmer's study (2002) showed that job tenure and educational levels are positively related to creative self-efficacy.

An individual's job position has been related to greater involvement in creative activities (e.g. Redmond, Mumford & Teach, 1993; Oldham & Cumming, 1996; Bluedorn, 1998a). As individuals move to higher positions, they need to have a strong ability to deal with any changes occurring in the organisation. An individual's

creative ability is positively related to the organisational changes (Bluedorn, 1998a). Tierney and Farmer (2004) found that hierarchical levels are positively related to creative self-efficacy.

Individual's job self-efficacy is also positively related to creative self-efficacy (Tierney & Farmer, 2002). Job self-efficacy focuses on the belief about performing a job well, which is not necessarily the same thing as performing it creatively. Bandura (1997) and Tierney and Farmer (2002) argued that the general type of job self-efficacy could shape specific creative self-efficacy. Before one has confidence to do the job creatively, he or she must believe they can do the job adequately.

In conclusion, researchers have examined the relationship between task-related factors and creative self-efficacy. However, the relationship between the individual's personality factors and creative self-efficacy has not been explored. The particular interest in this thesis is the relationship between individual polychronicity as a personality trait and creative self-efficacy. The following section will examine the effects of individual personality factors on creative self-efficacy.

3.3 individual personality and creative self-efficacy

Creative self-efficacy is developed from the conceptual model of work-related self-efficacy (Bandura, 1997; Gist & Mitchell, 1992). Much of the research on the individual's personality (such as the Big Five personality dimensions) are associated with self-efficacy (e.g. Thoms, Moore & Scott, 1996; Judge, Jackson, Shaw, Scott & Rich, 2007). However, few researchers have looked at the possible relations between individual personality and creative self-efficacy. There appears to be only one study

so far examining the linkage between individual creative personality and creative self-efficacy (Choi, 2004).

Choi's (2004) definition of creative self efficacy is based on how individuals believe they can control the difficulties of conducting tasks. In other words, it refers to a person's belief that he or she can successfully perform in a creative manner. In his creative performance research among undergraduate students, he identified cautious personality, which is a negative factor in Gough's (1979) creative personality scale, as negatively related to creative self-efficacy. However, his study could not find a relationship between creative personality and creative self-efficacy amongst the sample of students.

This thesis is based on Tierney and Farmer's (2002) definition of creative self-efficacy, where the individual is seen as having the ability to produce creative outcomes based on self-confidence. This concept has been used in the majority of creative self-efficacy research (Beghetto, 2006; Jaussi, Randel & Dionee, 2007; Lemons, 2005). It is closely related to the concepts of self-efficacy and creativity. Further, Tierney and Farmer's (2002) definition has been tested in various settings, including university, manufacturing companies, high-tech organisations, research and development department, and insurance organisations. Their findings can therefore be generalised across different work environments.

Chapter two has examined the relationship between individual polychronicity and creativity. It shows that individual polychronicity is strongly related to creative personality. In the task-rotated environment, polychronicity is strongly related to

creative performance. Since there is a linkage between individual polychronicity and creativity, can individual polychronicity also affect creative self-efficacy?

Polychrons can work effectively between activities. They can easily cope with changes and switch between tasks more flexibly. Polychronicity has a positive relationship with individual creative behaviour. This chapter has indicated that creative self-efficacy also leads to individual creative behaviour. Will individual polychronicity also be positively related with creative self-efficacy?

So far, this chapter has explored the basic concept of creative self-efficacy, a relationship between task-related individual factors and creative self-efficacy and the possible linkage between individual polychronicity and creative self-efficacy. Since creative self-efficacy is a specific self-efficacy, it may also be affected by external environments. Section four of this chapter will examine the relationship between work environment and the supervisory management style.

3.4 supervisory management style and individual creative self-efficacy

Many authors have acknowledged the importance of supervisors in encouraging creativity (e.g., Amabile *et al.*, 1996; Redmond *et al.*, 1993). The literature has consistently shown that having open, participative, non-controlling, and supportive supervisors will encourage employees to have more creative behaviour (Amabile *et al.*, 1996; Oldham & Cummings, 1996). Studies examining the relationship between supervisory management style and creative self-efficacy have shown mixed results. Different supervisory behaviour could lead to different perceptions of creative self-efficacy. This section will examine these behaviours and will put forward a particular supervisory management style that will be studied in detail in this thesis.

A supportive supervisor who is seen as role model, and often uses verbal persuasion, can increase the subordinates' creative self-efficacy (Tierney & Farmer, 2002). Their study showed that employees relied on clues from their colleagues in their workplace to perform creatively. It has been argued that supervisors are the crucial factors shaping employees' efficacy beliefs and confidence building (Gist, 1987; Amabile & Gryskiewicz, 1987). Role modelling by supervisors is a fundamental contextual factor for creativity (Amabile & Gryskiewicz, 1987). Gist and Mitchell (1992) indicated that employees may lack information from the organisation, and models provided by their supervisor could help employees to effectively reach performance targets. Models provide standards that could also enhance an individual's performance efficacy. Verbal persuasion allows a supervisor to convince employees to be creative at work. In addition, verbal expression of trust, confidence, and praise may increase employees' creativity-related efficacy beliefs (Tierney & Farmer, 2002). Therefore, the supervisor's behaviour provides a model for creative performance and constantly communicates to the employees to achieve the desired outcomes.

Even though supervisors' supportive behaviour provided task support, team facilitation, creativity recognition, and creative initiation (Tierney & Farmer, 2004; Amabile, 1988), the direct link between supervisor creativity-supportive behaviour and creative self-efficacy was not statistically significant. However, the relationship between supervisor creative-supportive behaviour and creative self-efficacy is influenced by how employees perceive their supervisors' behaviour. If supervisors support creativity but employees fail to interpret such behaviour correctly, their creative self-efficacy will not be enhanced. The behaviour of supervisors is interpreted by employees (Tierney & Farmer, 2004) is more likely to take full effect.

Choi's (2004) study comes to the same conclusions as in Tierney and Farmer (2004). In his study, supervisor's supportive actions are defined as encouraging open interactions and seeking ideas from and providing feedback to employees. The results showed that supervisor supportive behaviour does not affect creative self-efficacy, but it is mediated by the open group climate. The open group climate is defined as "members" perceptions of mutual openness and expectations for sharing ideas amongst others (Amabile *et al.*, 1996). Thus, if employees have such an open, sharing environment, their creative self-efficacy will be enhanced.

The focus of this thesis is on the effect of supervisor's supportive and non-controlling management style on employees' creative activities in the organisation (Oldham & Cummings, 1996; Deci & Ryan, 1987; Tierney & Farmer, 2002). Such management style is closer to role modelling and verbal persuasion. Supervisors who show concern for employees' feelings and needs, whilst encouraging them to voice their own concerns, provide positive, informational feedback, and facilitate employee skill development. Often, such supervisors do not closely monitor employee behaviour. They do not force employees to think, feel, or behave in certain ways. Following from Tierney and Farmer's (2002) study, one could expect that the supportive and non-controlling supervisory management style should be positively related to creative self-efficacy.

The next chapter will focus on the effect of supervisory management style on creative performance. Given that supervisory management styles are part of the creative environment factors (Amabile, *et al.*, 1996; Woodman, Sawyer & Griffin, 1993; Rice, 2006), the organisational context, such as the structure of organisation, the way of

communication in an organisation, risk-taking orientation and the atmosphere of an organisation, will also be examined.

In short, chapter three has examined the literature on creative self-efficacy. Following the introduction of this basic concept, section one identified creative self-efficacy as a specific self-efficacy related to the concept of creative outcome and creative ability. As such, it is narrower than general self-efficacy. Section two discussed the basic findings in creative self-efficacy studies. The results showed that creative self-efficacy is strongly related to creative performance. There are several factors that affect creative self-efficacy. These included job complexity, individual's job tenure, education, and hierarchical level and job self-efficacy. Section three discussed how scholars had realised the creative personality's impact on creative self-efficacy. But their findings could not be generalised because of the different conceptual basis of their studies. The conclusion of this section raised the possibility of a relationship between individual polychronicity and creative self-efficacy. Moving on to external factors, section four examined the influence of supervisory management styles on creative self-efficacy.

Chapter four: Creative organisational environment

Chapter outline: It has been claimed that all innovations begin with creative ideas (Amabile, 1996). In order to successfully implement new programmes, new products, and new services, the organisation not only depends on the characteristics of creative people, but also the organisational environment. The discussion in chapter three revealed that supervisory management style could affect individuals' creative self-efficacy. In this chapter we will explore other environmental factors that could affect creativity. Section one (section 4.1) will examine the relationship between supervisory management style and individual creativity. This section concludes with a discussion on how supervisory management style influences people's perception. Section two (section 4.2) will explore several organisational factors which have an impact on creativity. These organisational factors include organisational structure (4.2.1), interaction with co-workers (4.2.2), risk-taking orientation (4.2.3), and organisational atmosphere (4.2.4). As these factors are related to individual creative outcomes, this section also raises the possibility of their association with creative self-efficacy.

Before moving to a detailed examination of the creative organisational environment, it is necessary to clarify the distinction between creativity and innovation. These two concepts are closely related (e.g. Ford, 1996; Amabile, 1997; Cumming & Oldham, 1997; Shalley, Zhou & Oldham, 2004). Creativity refers to the development of novel and potentially useful ideas. Although employees might share these ideas with others, only when the ideas are successfully implemented at the organisational level can they be considered innovative (Amabile, 1996; Mumford & Gustafson, 1988). Hence, creativity is the first step in innovation and is crucial for long-term corporate success

(Amabile, 1997). While this thesis focuses on creativity, it also examines environmental factors in organisational innovation.

Another term which needs to be clarified is “creative organisational environment”.

This means the organisational environment which could enhance the individual’s creative performance. This thesis examines organisational environment in terms of: supervisory supportive and non-controlling management style; organisational structure; interaction with co-workers; risk-taking orientation; and organisational atmosphere. Organisational atmosphere is the collective perception of employees on their organisation, for example, whether they think their organisation trusts and cares the employees. Having addressed the creativity and creative organisational environment, the first section below examines the supervisory support for creativity.

4.1 Supervisory support and individual creativity

Supervisors are crucial in influencing employee creativity because they are in a position to have a strong impact on their subordinates’ behaviour. For example, employees’ creative performance can be dramatically improved by revolutionary ideas, useful resources and positive feedback that their supervisors can provide (Mumford, Scott, Gaddis & Strange, 2002). Research points to how important supervisory characteristics are to employees’ intrinsic motivation. For example, Amabile (1983, 1988) notes that the intrinsic motivation is the measure of the individual’s level of enthusiasm for creativity and it is one of the most important personal qualities to enhance creative performance. Tierney, Farmer, and Graen’s (1999) study introduced the importance of “intrinsic motivational orientation” on creative performance. Intrinsic motivation orientation is defined as supervisors or

employees expressing the enthusiasm and acceptance for innovation. Tierney *et al.* (1999) found that when employees worked with supervisors who possessed a similar intrinsic motivational orientation, creative performance was enhanced. In addition, if a supervisor has an innovative cognitive style (Kirton, 1989), such as allowing staff to do things in an unusual way, permitting risk taking, and giving autonomy and freedom to their employees, creativity will be improved. If the employee also has a similar innovative cognitive style, both supervisors and employees' creative performance will be enhanced. This increased performance is the result of employees valuing a work environment with supportive supervisors whom they can trust and work well with.

In addition to affecting creative performance, studies have also examined the impact of supervisory behaviour and subordinate creativity. Redmond *et al.* (1993) discovered that subordinates who are working under supervisors who encourage them to view problems in alternative ways and spend more time thinking about the problems, produced more creative solutions to problems than subordinates who are not under such supervisors. The reason why subordinates with encouraging supervisors generated more creative outputs was because they encouraged new ideas instead of rejecting old ones.

In order to have creative performance, research shows that the quality of the supervisor-subordinate relationships is positively correlated to the employee's creative and innovative behaviour (Scott & Bruce, 1994; Tierney, *et al.*, 1999). High quality relationships between supervisors and their subordinates (characterised by trust, mutual liking and respect) have been shown to produce high levels of creative

and innovative behaviour from their employees. Furthermore, the supervisor's expectations of a subordinate's creative and innovative behaviour are positively correlated to the subordinate's creative and innovative behaviour. In other words, supervisors who expect subordinates to behave creatively will have their expectations met.

A vast majority of studies has provided evidence that supportive and non-controlling supervisory styles are important stimuli for employee creativity (e.g. Amabile & Conti, 1999, Amabile *et al.*, 1996, 2004; Amabile & Gryskiewicz, 1989; Madjar *et al.*, 2002; Oldham & Cummings, 1996; Shalley & Gilson, 2004; Tierney & Farmer, 2002, 2004; Zhou & George, 2003). For example, Amabile *et al.*, (1996) found that people will produce more creative work when they perceive that they have support from senior management and their direct supervisors. Zhou (1998) suggested that employees' creative performance could be enhanced, when supervisors provided feedback to employees in a positive and informal way and when employees were allowed to have high levels of autonomy. Similarly, Oldham and Cummings (1996) found negative relations between supervisors' controlling behaviours and employees' creative output in a manufacturing setting. George and Zhou (2001) and Zhou (2003) showed that controlling behaviours (i.e., close monitoring) from supervisors was negatively related to employee creativity.

Since creative self-efficacy is strongly related to creative performance, the supervisor's supportive management style, therefore, is also likely to be related to creative self-efficacy. In this study, the supervisor's ability to influence their subordinates' creative self-efficacy was tested. Prior studies have shown that

employees' perceptions of supervisors' behaviour is positively related to employees' perceptions of organisational environment (Scott & Bruce, 1994; Mumford, *et al.*, 2002). For example, when employees think their supervisor support their creative performance, they will also perceive the organisation as having a caring and trusting atmosphere. The next section of this chapter will examine organisational factors that relate to creative performance (Rice, 2006). These factors include organisational structure, the interaction with co-workers, risk-taking orientation, and a trusting and caring organisational atmosphere.

4.2 Other organisational variables and individual creativity

There are numerous organisational factors that relate to creative performance (Amabile, *et al.*, 1996; Woodman *et al.*, 1993). In Rice's (2006) study, four groups of variables are considered: "(1) structure, control and hierarchy in an organisation; (2) support, interaction, and communication with co-workers in an organisation; (3) risk-taking orientation; and (4) the atmosphere of an organisation" (Rice, 2006, p.235).

The following section will explore these four organisational factors.

4.2.1 Structure, control and hierarchy in an organisation and individual creativity

Research has identified a strong relationship between organisational structure and innovation. For example, Kanter (1983) found that "matrix structures" are associated with increased autonomy and the belief that new ideas will be accepted. To further support Kanter (1983), Damanpour's (1991) study found that the types of organisational structure, such as specialisation, functional differentiation, and open communication channels, were consistently positively related to innovation. His research implies that in order to be innovative, supervisors should structure groups

based on specialised work and establish a matrix structure that promotes ongoing communication.

Fyvie and Ager (1999) come to the same conclusion about the impact of organisational structure on innovation in non-government organisations (NGOs). In their research, they found a flat structure was positively associated with the initiation of innovation. Their results from NGOs generally demonstrated that in flattened hierarchies, there was more team work. Flattened hierarchies normally have three management layers of staff. Here cross-functional team-based activities, operating on an informal and autonomous basis, create an open-plan arrangement that encourages a constant flow of staff between offices and departments. It also creates an impression of continual personal interaction and information exchange. Such arrangements further enhance innovation in the organisations.

Currently, hierarchical structure inhibits innovation in the organisations (Fyvie & Ager, 1999; Henry & Walker, 1992). Hierarchical structure emphasises rules and procedures. Henry and Walker's book on organisation innovation mentions 3M. The company has a reputation for innovativeness and its low degree of hierarchical structure is the major factor which enhances the company's innovative activities.

At the beginning of this chapter, it was mentioned that innovation is closely related to creativity. Organisational structure could also affect an individual's creative performance (Isaksn, Lauer, Ekvall & Britz, 2001; Ekvall, 1997). Structure determines the way people and functions are arranged. It fixes levels of responsibility, decision making authority, and formal reporting relations with others in the

organisation. The structure and the size of the organisation, and its working units influence the use of power in the decision making process. The type of structure within departments of an organisation (e.g. hierarchical and bureaucratic vs. flat and empowered) has an impact on employee perceptions of the creative climate in those departments. In Ekvall's (1997) creative studies of three different types of structure in the organisation, the department with the strict, rational structure promoted rigid and non-adaptive ways of doing things. Creative performance was not normally the primary consideration. On the other hand, the department with a looser structure, more freedom, higher risk-inclination, and a debating, dynamic and playful atmosphere tended to stimulate creative performance.

In summary, prior research has identified a positive correlation between organisational structure and innovation. There is also a clear linkage between innovation and creativity. Hence, organisational structure can positively increase a individual's creative performance as well. For example, research shows that matrix structures can stimulate organisational innovation. On the other hand, a less flat and hierarchical structure can inhibit the initiation of organisational innovation. Chapter three argued that individual creative self-efficacy is positively associated with an employee's creative performance. Thus, organisational structure may influence creative self-efficacy as well.

4.2.2 Support, interaction, and communication with co-workers and individual creativity

Co-workers pose another organisational variable with the potential to influence employee creativity positively (Woodman *et al.*, 1993). Amabile *et al.* (1996) demonstrated that co-workers could positively influence creativity through encouragement, open communication and informational feedback. Farmer *et al.* (2003) found that when Taiwanese employees perceived that co-workers expected them to be creative, their role identities as creative employees were stronger. This supportive co-workers' behaviour could also promote knowledge sharing within an organisation (Amabile, *et al.*, 1996; Von Krogh, Ichijo & Nonaka, 2000). Evidence suggests that the free exchange of information in the organisation could facilitate creative performance (Amabile, 1988, Kanter, 1983). Group members and peers also influence individual innovation. Researchers (e.g. Seers, 1989; Scott & Bruce, 1994) suggest that the cohesiveness of a work group determines the degree to which individuals believe that they can introduce ideas without hesitation. The collaborative effort among peers is crucial to idea generation.

Seers (1989) discussed the "role-making process", defined as how the individual see their interaction with their group mates at the work place, in employees' innovative performance. This process may result in high-quality team member relationships characterised by mutual trust and respect and in cooperation and collaboration between an individual and the rest of the work group. Conversely, the role-making process may result in low-quality team member relationships, in which individuals are not integrated into the work group, and collaboration, trust and respect are low. In conditions of high team-member relationships, individuals have additional resources available to them in the form of idea sharing and feedback. When the task

interdependence and work group member interaction is high, the good relationship among staff could enhance the individual's innovative behaviour (Scott & Bruce, 1994).

Additionally, the relationship among co-workers is reflected by the "interconnectedness" in the organisation (Fyvie & Ager, 1999). Interconnectedness is the degree to which the units in an organisation are linked by interpersonal networks. The extent to which new ideas can flow easily and rapidly among an organisation's members has often been found to be associated with successful innovation. Adair (1996) raises the importance of "interconnectedness" on innovation within 3M Company. Such cross-communication of ideas or "interconnectedness" creates social networks making employees aware of up-coming events in the organisation. It also increases the organisational innovative climate through shared interests among co-workers.

In brief, these studies show relationship between open communication and information feedback, knowledge sharing, and "interconnectedness" in the organisation. Warm relationships amongst co-workers can enhance individual innovate and creative performance. It would seem that a positive environment with co-operative co-workers could encourage greater creative self-efficacy.

4.2.3 Risk-taking orientation and individual creativity

Risk-taking orientation appears to be a critical factor in creative performance. Risk-taking is identified as an important variable in a creative personality (Gough, 1979). A person may have a tremendous amount of creative potential and be in an

environment that supports and promotes creative performance, but if this person does not take the risk of presenting a new and novel idea, workplace creativity will not occur. The creative person must be unconventional in order to break out of set ways of thinking that inhibits creative ideas (Rudowicz & Yue, 2002). Amabile (1988) and Woodman *et al.*, (1993) proposed that an individual's creative performance would be enhanced with a risk-taking personality. Creativity is linked to both risk-taking personality and risk-taking environment. Shalley and Gilson (2004) states that creative behaviour will depend on both personality factors, such as whether or not an individual has a risk-taking personality trait, and the organisational environment, which encourages people to take risks.

An organisational environment can play a big role in whether or not employees bring forth creative ideas. Encouraged risk-taking creates an environment reinforcing creative behaviour. Researchers, such as Lubart (1990) and Tesluk *et al.* (1997) suggested that if the organisation had a risk-taking orientation, employees were more likely to produce creative ideas, products, or procedures. This in turn would lead to innovative products. An environment that is conducive to creativity is also one where employees feel free to speak up and where risk-taking is accepted (Moukwa, 1995). In Moukma's (1995) study, it was discovered that the discussion of novel ideas occurs most frequently where there staff had good relationships. Such relationships were viewed as close friendships and not those based on the formal positions alone. Such friendships can happen among co-workers and subordinates (Albrecht & Hall, 1991). Albrecht and Hall (1991) proposed that close friendships are perceived as the safest situations to bring forth new ideas because individuals feel a sense of trust and comfort. In this study, group members felt at ease discussing ideas with each other

and allowed themselves to take risks. The results show that the more risk-taking orientation in the organisation, the more opportunities for creative work.

On the other hand, collective organisational orientation may also not produce creative ideas, products or procedures, if they do not allow (whether intentionally or unintentionally) employees to bring forth novel ideas, or worse, criticise them for doing so. For example, Kindler (1998) suggests that in order to support and promote risk-taking among employees, supervisors and other organisational decision makers must increase their tolerance for failure (i.e. not reaching desired goals). This is because employees are more likely to be risk avoidant when they feel vulnerable, and when they feel punished for failure.

In conclusion, research has identified that a risk-taking environment can support creative performance by encouraging employees to take the risk of suggesting new ideas. Researchers have stated that one of the important variables in creative environments is to have a culture that values risk-taking. On the other hand, in a risk-averse environment, employees can be reluctant to produce creative work. This suggests that risk-taking at the organisational level is reflected in the employee's creative performance. Hence, it seems that the organisation's risk-taking orientation could also be related to individuals' creative self-efficacy.

4.2.4 Organisational atmosphere and individual creativity

With regard to organisational atmosphere, evidence shows that a trusting and caring atmosphere encourage workers to perform more creatively (e.g., Amabile, *et al.*, 1988; Enson, Cottam & Band, 2001; Mumford & Gustafson, 1988). A trusting and caring

atmosphere can be created by several activities which promoted in the organisation. For example, Von Krogh *et al.* (2002) found that creativity was enhanced in activities such as managing conversations in the workplace, and building trust and an atmosphere of care. McAllister (1995) and Albrecht and Hall (1991) explained that in a trusting and caring atmosphere, employees can develop emotional bonds with each other which encourage risk-taking in the organisation. This happens because having emotional bonds means employees tend to listen and speak honestly to one another and work well with colleagues from diverse backgrounds. They trust one another with information, and honour collaborative working efforts. In such an environment, employees are likely to increase productivity, personal satisfaction, and creativity.

Several theorists have proposed that play (and the environment conditions that facilitate play) can promote creativity in the workplace. For example, Gordon (1961) proposes that playful activity enhances flexibility and novel adaptation. Under this proposition, Gordon developed the popular creativity-training program “Synectics”. Such a programme asserts the essential role of play in the creative process. Playful activities and atmosphere of fun can lead to creativity during task engagement. Playfulness is one characteristic in the creative personality. Researchers have identified playfulness as a characteristic distinguishing creative children and adults from their less creative mates at the same age group (e.g. Gough, 1979, Amabile, 1996). Since playfulness is a characteristic linked with individual creative performance, a playful atmosphere is likely to enhance individual creative performance.

Time pressure also can be seen as one of the environmental variables in organisational atmosphere. The presence of time deadlines or production goals has often been mentioned as a possible constraint on creativity (Amabile, 1996). When there are tight deadlines, individuals are pressurised to meet them. This can result in lowered intrinsic motivation for creative performance. Amabile in her studies (e.g. Amabile & Gyskiewicz, 1989; Amabile, *et al.*, 1996) has identified intrinsic motivation as having impact on individual creative performance. When employees feel a sense of time pressure in their workplace, they have a lower chance of producing creative work. This thesis argues that the sense of time pressure can also stimulate creative activities. When employees feel time pressure, they could be more eager to put effort and spend more time on the tasks. As such, they could be more attached to the job. The time commitment could enhance their confident and enthusiasm for creative self-efficacy and creative performance.

In summary, the relevant organisational variables include a trusting and caring atmosphere, an atmosphere of fun and playfulness, and a sense of time pressure within the organisation. Previous research demonstrated the impact of each of these variables on individual creative performance. It is because of the strong relationship between creative self-efficacy and creative performance, that we would expect the organisational atmosphere to have an affect on individual creative self-efficacy.

This chapter has explored organisational environmental factors that influence creative performance. It is clear that supervisory management style impacts on creativity. It seems that there are possible relationships between supportive and non-controlling supervisory management style and creative self-efficacy. However, supervisory

management style itself could influence other environmental variables. These include organisational structure, communication with co-workers, risk-taking orientation and other environmental variables on organisational atmosphere (a trusting and caring environment, atmosphere of fun and playfulness, a sense of time pressure). As these variables are positively related with individual creative performance, it seems that these are possibly linked to creative self-efficacy. The next chapter will outline the methodology of this thesis. Several research questions and hypotheses, that follow, will be presented. The chapter will also discuss the procedure and the measurement of each variable.

Chapter five: Methodology

Chapter outline: This chapter will describe the methodology of this thesis. The first section (5.1) will outline the research questions, theoretical framework and the developed hypotheses. The second section will outline the research design (5.2.1), the data collection methods (5.2.2), sample characteristics (5.2.3), and measurement instruments (5.2.4).

5.1 Research questions, theoretical framework and hypothesis development

Few studies have been conducted on the polychronic individuals' working behaviour in creative organisational environment. There is no known study that has investigated the relationship between individual polychronicity and creative self-efficacy.

Furthermore, in the creative self-efficacy literature, research has rarely been done on the impact of organisational environment, especially the supervisory management style, on creative self-efficacy. This research is interested in answering the following two questions:

- 1) If individuals have polychronic tendency, do they also tend to have strong creative self-efficacy?
- 2) Does creative organisational environment enhance an individual's creative self-efficacy?

This research focuses on how supervisory management style influences creative self-efficacy within the creative organisational environment. Researchers (Scott & Bruce, 1994; Mumford, *et al.*, 2002) have found that if employees perceive their supervisors as having a management style that supports creativity, they will also think that the

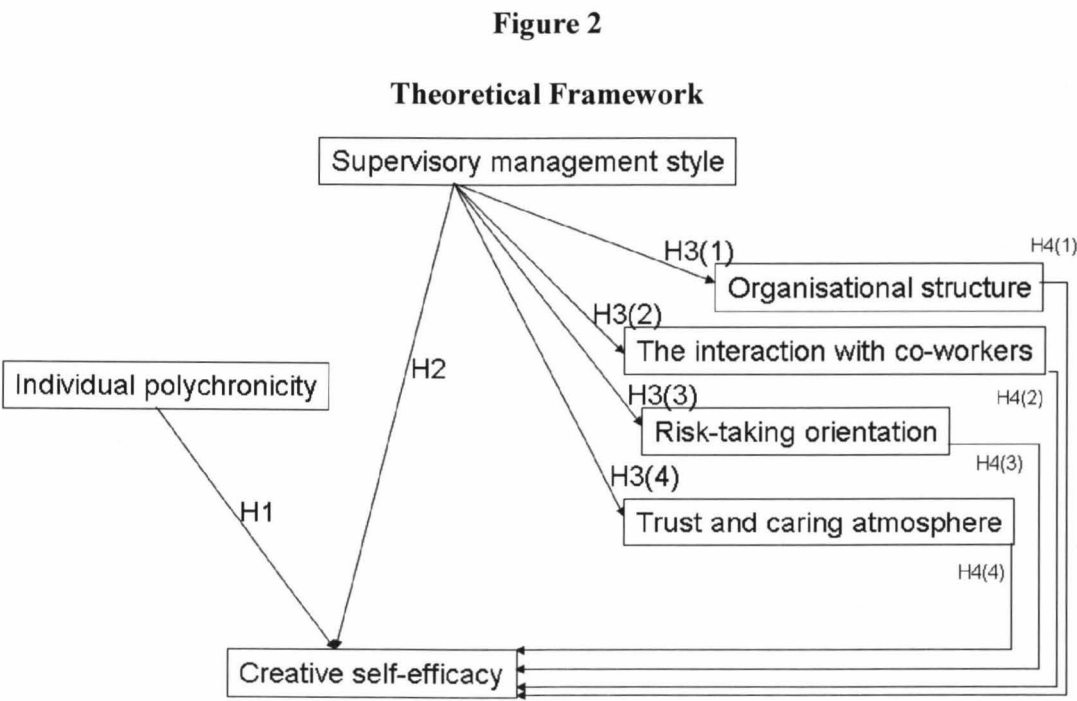
organisation as a whole has a creative supportive environment. This raises further questions arising from question 2 above:

- 2.1) Does supportive and non-controlling supervisory management style influence individual's creative self-efficacy?
- 2.2) Do other organisational factors (organisational structure, the interaction with co-workers, risk-taking orientation, and trusting, caring atmosphere) influence individual's creative self-efficacy?
- 2.3) Does supportive and non-controlling supervisory management style significantly explain the variance of other organisational factors (organisational structure, the interaction with co-workers, risk-taking orientation, and trusting, caring atmosphere)?

The focus of this thesis is on the relations which include the following four points:

- the relation between “individual polychronicity” and “creative self-efficacy”;
- the relation between “supportive and non-controlling supervisory management style” and “creative self-efficacy”;
- the relation between “supportive and non-controlling supervisory management style” and “organisational context (organisational structure, the interaction with co-workers, risk-taking orientation, and trust, caring atmosphere)”;
- the relation between “organisational context (organisational structure, the interaction with co-workers, risk-taking orientation, and trust, caring atmosphere)” and “creative self-efficacy”.

Based on these variables and relationships which need to be tested, a theoretical framework has been developed and is presented in Figure 2. The theoretical framework helps to build a logical network among the variables. Through this network, the relevant problems which need to be investigated can be clearly identified (Cavana, Delahaye & Sekaran, 2001). The theoretical framework of this thesis is based on the research questions mentioned.



In order to answer the research questions and test the possible relationships in the theoretical framework, several hypotheses are established. Based on the research questions, Hypothesis 1 is to answer research question (1). Hypothesis 2 is to answer the research question (2.1). Hypotheses 4(1), 4(2), 4(3) and 4(4) are to answer research question (2.2). Hypotheses 3(1), 3(2), 3(3) and 3(4) are to answer research question (2.3). The detailed hypothesis and its relationship with research questions are shown below.

In order to answer:

Research question 1: If individuals have polychronic tendency, do they tend to have strong creative self-efficacy?

So:

Hypothesis 1: The higher degree of an individual's polychronic tendency, the stronger the creative self-efficacy.

In order to answer:

Research question 2.1: Does supportive and non-controlling supervisory management style influence individual's creative self-efficacy?

So:

Hypothesis 2: The more supportive and non-controlling supervisory style the employees perceive, the stronger their level of creative self-efficacy.

In order to answer:

Research question 2.2: Does other organisational factors (organisational structure, the interaction with co-workers, risk-taking orientation, and trusting, caring atmosphere) influence individual's creative self-efficacy?

So:

Hypothesis 4(1): Controlling and hierarchical organisational structure are associated with lower levels of creative self-efficacy.

Hypothesis 4(2): Higher levels of supportive communication among co-workers are associated with higher levels of creative self-efficacy.

Hypothesis 4(3): Higher levels of risk-taking are associated with higher levels of creative self-efficacy.

Hypothesis 4(4): An open, fun, trusting, caring environment is associated with higher levels of creative self-efficacy.

In order to answer:

Research question 2.3: Does supportive and non-controlling supervisory management style significantly explain the variance of other organisational factors such as organisational structure, the interaction with co-workers, risk-taking orientation, and trusting, caring atmosphere?

So:

Hypothesis 3(1): Supportive and non-controlling supervisory style significantly predict the less controlled and hierarchical structure.

Hypothesis 3(2): Supportive and non-controlling supervisory styles significantly predict the high levels of supportive communication among co-workers.

Hypothesis 3(3): Supportive and non-controlling supervisory styles significantly predict the high levels of risk-taking organisational orientation.

Hypothesis 3(4): Supportive and non-controlling supervisory styles significantly predict an open, fun, trusting, caring environment.

Table 2(1)

Hypotheses between personal variable, environmental variables and creative self-efficacy

Variable			Creative self-efficacy
Personal variable		Individual polychronicity	H1
Environmental variables	Supervisor variable	Supervisory management style	H2
	Organisational contexts variables	Organisational structure	H4 (1)
		The interaction with co-workers	H4 (2)
		Risk-taking orientation	H4 (3)
		Trust and caring atmosphere	H4 (4)

Table 2(2)

Hypotheses between supervisory management style and organisational factors

Environmental variables	
Supervisory management style	Dependent variable (organisational factors)
H3 (1)	Organisational structure
H3 (2)	The interaction with co-workers
H3 (3)	Risk-taking orientation
H3 (4)	Trust and caring atmosphere

In summary, the hypotheses in Table 2(1) cover the individual variable which is individual polychronicity. The environmental variables are made up of the supervisory management style and organisational factors. The organisational factors comprise organisational structure, the interaction with co-workers, risk-taking orientation, and the trust and caring atmosphere. The formulated hypotheses are to test the relationships between these variables and creative self-efficacy. Table 2(2) covers the inter-relationships within environmental factors. Hypotheses are to test possible relationships between supervisory management style and the organisational

factors. Literature review supporting these hypotheses is listed against each hypothesis in Table 3(1) and Table 3(2).

Table 3(1)

Literature review on relationships between personal variable, environmental variables and creative self-efficacy

Variable		Creative self-efficacy	References
Personal variable	Individual polychronicity	H1	Bluedorn (1998a), Persing (1999), Madjar & Oldham (2006), Choi (2004), Tierney & Farmer (2002)
Environmental variables	Supervisory management style	H2	Tierney & Farmer (2002), Amabile, <i>et al.</i> (1996), Redmond, <i>et al.</i> (1993), Oldham & Cummings, (1996), Tierney & Farmer, (2004), Gist & Mitchell (1992)
	Organisational structure	H4 (1)	Kanter (1983), Mclean (2005), Damanpour (1991)
	The interaction with co-workers	H4 (2)	Woodman, <i>et al.</i> (1993), Amabile, <i>et al.</i> (1996), Farmer, <i>et al.</i> (2003)
	Risk-taking orientation	H4 (3)	Lubart (1990), Shalley & Gilson (2004), Amabile (1988), Woodman, <i>et al.</i> (1993)
	Trust and caring atmosphere	H4 (4)	Amabile, <i>et al.</i> (1988), Enson, <i>et al.</i> (2001), Mumford & Gustafson, (1988)

Table 3(2)

Literature review on relationships between supervisory management style and organisational factors

Environmental variables		
Supervisory management style	Dependent variable (Organisational factors)	References
H3 (1)	Organisational structure	Amabile, <i>et al.</i> (1996), Woodman, <i>et al.</i> (1993), Rice (2006), Scott & Bruce (1994), Mumford, <i>et al.</i> (2002)
H3 (2)	The interaction with co-workers	
H3 (3)	Risk-taking orientation	
H3 (4)	Trust and caring atmosphere	

5.2.1 Research design

This research design is used to investigate and explain the effects of the independent variables on the dependent variables. It has been referred to as the typical hypothesis testing research (Cavana, *et.al.*, 2001). Survey questionnaires were used to collect detailed information regarding individual’s polychronicity, and employees’ perceptions on supervisory management styles, individual’s creative self-efficacy, employees’ perceptions on organisational contexts. Biographical details, such as age, educational level, gender, ethnicity, number of years working in the organisation, current job status, and number of years working in total, were also included in the questionnaire.

5.2.2 Data collection processes

A review of the literature has shown that, creative self-efficacy, as the personal belief of one’s creative ability, occurs in any work environment whether in the public or private sector (e.g. Livingstone, *et al.*, 1997). Employees working in the various organisations are all subject to this phenomenon. In this research, working experience

in an organisation was an essential factor when selecting participants. The information sheet, questionnaire and the Human Ethnic Committee (HEC) approval are in Appendix B.

In a pilot study, a draft questionnaire was administered to 27 post-experienced students in September 2007. The draft questionnaire included five areas to examine individual's polychronicity, supervisory management style, creative self-efficacy, creative organisational environment and biographic data. The instruments which are measure the first four areas are all adapted from the original research (Bluedorn, *et al.*, 1999; Oldham & Cummings, 1996; Tierney & Farmer, 2002; Rice, 2006). This allowed for comparisons to be made with the earlier studies. The pilot study confirmed that the respondents found the wording of the items clear and understandable. Through this, the instruments have achieved the content validity. To test the construct validity, a factor analysis is required. As factor analysis needs to have large number of participants, the pilot study only shows the high level of content validity. The slight change was made from the measurement for organisational factors. The original scale for the items was on five-point Likert-type scale. A seven-point was used to make this variable consistent with the other variables measured in this study. This made comparisons between supervisory management styles and organisational factors possible (Cozby, 2001, p.119).

An early attempt was made at data collection (early October 2007), using a web-based survey sent to several companies in the financial industry, business service industry, telecommunication industry and food industry in the Wellington region. This had a poor response rate. The total respondents were 18. Follow-up telephone

calls did not help to increase the response rate. As a result, a decision was made to collect data from post-experienced students who were taking management classes in the Faculty of Commerce and Administration. These students came from Victoria Management School, School of Government, School of Information Management, and Centre for Continuing Education in Victoria University of Wellington. Participants were from a variety of industries and they work in both public and private sectors. These post-experienced students all had experience in the workplace, which matches the primary criteria when selection participants. As the main focus of this thesis is to examine the relationship between the variables and testing predictions, rather than to test how the biographic factors affect independent factors, the convenience sampling methods was used (Cozby, 2001).

There were two methods of data collection. Questionnaires were distributed to the students before the class and these were collected at the end of the class. A second method was the web-based survey link, which sent to the lecturers. The lecturers sent the link to the students. In terms of the content, there is no difference between the hard copy questionnaire and web-based survey. All data collected were strictly confidential and anonymous. By the middle of December 2007, 44 valid web-based questionnaires and 79 valid hard copy questionnaires were collected.

Biographical details, such as age, educational level, gender, ethnicity, number of years working in current organisation, current job status and number of years working in total are provided in Table 4. The detailed graphs for these variables are in the Appendix A. Most respondents were at non-management or junior management levels with graduate or post-graduate qualifications. A large proportion of them had

over 10 years working experience in total. The sample had a similar number of males and females with a gender ratio of 1: 1.24.

Table 4
Biographic data (N=123)

Gender		%
	Female	44.7
	Male	55.3
Current Job Status	Non-Management	35.0
	Supervisor	4.1
	Junior Management	37.4
	Senior Management	23.6
Age	Under 20	0.8
	20-35	36.6
	36-50	50.4
	51-65	11.4
	Over 65	0.8
Ethnicity	NZ European/Pakeha	63.4
	Maori or Pacific Island	7.3
	Indian	6.5
	Chinese	5.7
	Other English spoken countries (e.g. British, Australia)	10.6
	Other Asian	6.5
Number of years working in the organization (years)	Less than 1	20.3
	1-2	31.7
	2-5	25.2
	5-10	14.6
	Over 10	8.1
Number of years working in total (years)	Less than 1	1.6
	1-2	2.4
	2-5	8.1
	5-10	17.1
	Over 10	70.7
Education	High School	9.8
	Bachelor's Degree	33.3
	Others (Diploma)	5.7
	Honour(s) Degree	10.6
	Masters Degree	35.8
	Ph. D. Degree	4.9

5.2.3 Sample size

The normal procedure in deciding sample size was for the researcher to identify the target population first, then select a sufficient number of elements from the population so that by studying the sample, it would be possible to generalise findings to the population (Cavana, *et al.*, 2001). However, this research could not follow this process. All the concepts which are examined in this thesis are taking place in the working environment. As a result, the assumption was made that working experience is the primary criteria for the study. The size of the population based on this criterion then becomes hard to identify. A way to determine an acceptable sample is to follow the “power” of the statistics guidelines. Power refers to the “likelihood the statistics which can detect the effects of the independent variable” (Cone & Foster, 2006, p.134). The effects of independent variables refer to how much difference these variables make in relation to the dependent variable in the hypothesis. By selecting the level of power, the effect size, the confidence level and the number of the independent variables, the sample size can be estimated from the table provide by Cohen (1992). Statistics experts have identified that for the majority, if the level of power is 0.80, it is a reasonable value. Effect size is distinct from small effect value, as 0.10; medium effect value, as 0.30; and large effect value, as 0.50. Among these three values, medium effect value (0.30) has been considered the most usable and observable in various studies (Cohen, 1992).

The level of confidence is 95% ($p < 0.05$) is the conventionally accepted level for most business research. In this research there are six independent variables in total. Based on the table two for sample size on small, medium, and large effect size at Power= 0.80 for $p = 0.01$, 0.05, and 0.10, the necessary sample size for the study having six independent variables is 97. The sample size of this research is 123, which is more than the minimum required.

5.2.4 Measurement instruments:

The wording in the questionnaire followed the original instruments from various researchers shown below, which covers five area of the study (individual polychronicity, supervisory management style, creative self-efficacy, organisational context and biographic data). The literature review has showed that the original instruments have been conducted extensively in each field. The pilot study also confirmed the good content validity of the instruments. Except the bio-data, all variables included in this thesis were measured using a seven-point Likert-type scale:

1=strongly disagree

2=slightly disagree

3=disagree

4=neither agree nor disagree

5=agree

6=slightly agree

7=strongly agree

Individual polychronicity: The scale used to measure individual polychronicity contained ten items adapted from the Inventory of Polychronicity Values (IPV) (Bluedorn, *et al.*, 1999). Scale was intended to capture the degree to which individual's attitude on doing things simultaneously in the workplace, such as "We would rather complete an entire project every day than complete parts of several projects". Among the items, item two, four, five, seven and nine were reverse scored. Hence, when editing data, a response of 7, with 7 denoting "strongly agree", really means "strongly disagree, which is actually a 1 on the seven-point scale.

Bluedorn, *et al.*, (1999) developed the IPV as an indicator of the polychronic culture of an organization but clearly indicates that the inventory can be adapted for individual use: “the IPV can be easily modified to provide a valid and reliable measure of individual level polychronicity” (Bluedorn, *et al.*, 1999, p.227). Later, several researchers have used this measurement to test individual polychronicity with reliable results (e.g. Zhang, Goonetilleke, Plocher & Liang, 2005; Conte, Rizzuto & Steiner, 1999; Conte & Jocab, 2003; Conte & Gintoft, 2005).

Supervisory management style: To measure supervisory management style, the researcher used twelve items developed by Oldham and Cummings (1996). The items were designed to reflect supportive and non-controlling supervision from the employees’ point of views, such as, “My supervisor keeps informed about how employees think and feel about things”. Item seven, nine, ten and eleven were reverse-coded.

Creative self-efficacy: Tierney and Farmer (2002) used a three-point scale. In their study, they tested the instrument in both manufacturing and operation setting. The results demonstrated a good level of reliability (manufacturing, $\alpha=0.83$; operations, $\alpha=0.87$) and has been widely used by several creative self-efficacy research such as Tierney and Farmer (2004); Beghetto (2006); Jaussi, Randel, and Dionne (2007). The scales seek to reflect employees’ beliefs in their ability to be creative in their work, for instance, “I have confidence in my ability to solve problems creatively”.

Organisational context (organisational structure, the interaction with co-workers, risk-taking orientation, and trust, caring atmosphere): The four groups of variables

representing different aspects of organisational context, in terms of structure, control, and hierarchy; support, interaction, communication and consultation; risk-taking orientation; and atmosphere, were adopted from Rice's (2006) study. In this study supervisory management style is a crucial factor within creative organisational environment. As such, the items relating specifically to supervisors were added to supervisory management style category. In total, there were two areas including four items excluded in this measurement. These were:

- “My supervisor always provides me with clear structures when assigning me a new project”. This item was to measure the “structure, control, and hierarchy” in Rice's (2006) study.
- “My supervisor always encourages me to learn new things”; “my supervisor frequently consults me to ask for my opinion before making decisions”; and “in my organisation, managers believe that time spent to reach collective decisions is valuable time.” These items were under the category in Rice's (2006) study to measure the “Support, interaction, communication and consultation” in the organisation.

Biographical data: There were seven categories to consider as control variables in this thesis. Educational level, which may influence creative behaviour (Amabile, 1988; Tierney & Farmer, 2004), was coded from 1 to 6. Tenure in the organisation, working years in total, and the current job status, were also added, as these reflect work domain expertise (Oldham & Cummings, 1996; Tierney & Farmer, 2002, 2004). Number of years working in current organisation and number of years working in total were coded from 1 to 5. The current job status was coded from 1 to 4.

As dependent variable is creative self-efficacy is part of self-concept. Ethnicity was also taken into account. Psychologist Miller (1999) pointed out that the traditional theories of self-concept are grounded in the culture of the United States and Western Europe. In these countries, the “self” has strong individualistic meaning. In contrast to the meaning of self, in other cultures, for example China and Japan, the “self” is a collective concept which emphasises relationships with others. The cross-cultural study in multicultural context of New Zealand is very interesting. Previously, scholar, such as Hofstede (2001), characterised that New Zealand has a high degree of individualism and an emphasis upon personal responsibility and independence rather than the collective group. Later, in the GLOBE project, a study spanning 62 cultures, House and colleagues (2004) found the similar result, which is in New Zealand as a whole, individualistic is highly ranked. However, more researchers start to realise the importance of sub-cultural studies within the New Zealand society. Pfeifer and Love (2004) argued that individualistic culture in New Zealand is only represented in Pakeha society (non-Māori New Zealanders of European heritage). The Māori cultural group has high degree of collectivism. Moya Ah Chong & Thomas (1997) also argued that Pacific Islanders, as one of the largest ethnic minority group in New Zealand, have high level of collectivism. Hence, it is interesting to see whether people from different ethnicity have differences in creative self-efficacy. According to Statistics New Zealand (2007), NZ European/Pakeha constituted the majority of the group, followed by Māori, Asian and Pacific Islanders. Ethnicity was coded from 1 to 6 for each of these groups. In addition, this thesis controlled for respondents’ gender and age. Gender was coded as 1 or 2 for males and females. Age was coded from 1 to 5. The coding for these variables is shown in Appendix C.

To test the goodness of the data, the reliability and validity of the measures were tested. “Cronbach’s alpha coefficient” is included in this thesis to test the reliability of data. It is a reliability coefficient that indicates how well the items in a set are positively correlated to one another (Cavana, *et al.*, 2001). Generally, an alpha coefficient of 0.8 or higher (e.g. Bryman & Cramer 1990) is accepted for the internal consistency reliability of the data. The Cronbach’s alpha reliability coefficients of the six independent and one dependent variable were obtained. Cronbach’s alpha for individual polychronicity is 0.98; for supervisory management style is 0.813; for the creative self-efficacy is 0.832. The sub-scales for the four organisational context groupings each had reliability coefficients below 0.8. Therefore, the researcher adapted the same analysis strategy as the original study done by Rice (2006). Here, every item from organisational context was analysed individually.

“Factor analysis” is included in this thesis to test the factorial validity of data. It helps to identify whether or not the items are measuring the same concepts or variables. Table 5 shows the output of the factor analysis on “individual polychronicity”. Table 6 shows the output of the factor analysis on “supervisors’ supportive and non-controlling management style”. Table 7 shows the output of the factor analysis on “creative self-efficacy”. Table 8 shows the output of the factor analysis on “organisational creative context”.

Table 5

Output of the factor analysis for the individual polychronicity

One Factor	
PolyItem10	.88
PolyItem5	.88
PolyItem1	.88
PolyItem6	.85
PolyItem9	.84
PolyItem4	.84
PolyItem7	.84
PolyItem2	.81
PolyItem8	.80
PolyItem3	.80

Extraction Method: Principal Axis Factoring.
a 1 factors extracted. 4 iterations required

Table 6

Output of the factor analysis for supervisors' supportive and non-controlling management style

Items	Factor	
	1	2
SSItem3	.81	.10
SSItem2	.81	.15
SSItem14	.81	.28
SSItem4	.81	.31
SSItem1	.72	-.13
SSItem16	.72	.20
SSItem5	.71	.38
SSItem6	.70	.44
SSItem13	.65	-.07
SSItem15	.62	.26
SSItem8	.61	.37
SSItem10	-.08	.83
SSItem9	.09	.74
SSItem11	.27	.64
SSItem12	.13	.61
SSItem7	.42	.50

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

Table 7

Output of the factor analysis for creative self-efficacy

	Factor
	1
CSEItem2	.90
CSEItem3	.86
CSEItem1	.86

Extraction Method: Principal Axis Factoring.
a 1 factors extracted. 7 iterations required.

Table 8

Output of the factor analysis for organisational creative factors

	Factor					
	1	2	3	4	5	6
OCItem3	.98	.11	-.02	-.04	.09	-.01
OCItem4	.93	.02	.003	-.03	.10	.04
OCItem5	.48	-.08	-.02	.20	-.09	.05
OCItem17	.21	.83	.08	-.07	.02	.19
OCItem15	-.12	.52	.47	-.10	.12	.09
OCItem18	.11	.51	.16	-.16	.02	.13
OCItem16	.18	-.51	-.03	.20	-.01	.05
OCItem12	.023	.11	.79	-.13	-.06	.09
OCItem13	.01	.24	.54	-.03	-.20	-.26
OCItem1	.20	.09	-.21	.16	.08	.08
OCItem10	.08	-.27	-.18	.71	-.13	.16
OCItem2	.21	-.38	-.19	.54	-.06	-.12
OCItem6	-.05	-.40	.05	.48	-.07	-.30
OCItem9	.07	-.03	.13	.10	-.74	-.17
OCItem11	.14	.04	-.03	-.04	.69	.13
OCItem14	.07	.19	.03	-.06	.25	.55
OCItem8	-.02	.10	-.01	.08	.13	.53
OCItem7	-.27	.08	.37	.31	.29	-.50

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 12 iterations.

The results in Table 6 and Table 8 show that both measurements on individual polychronicity and creative self-efficacy have good construct validity. Table 5 shows that these ten items are only measure one variable which is individual polychronicity. Also, all the item loadings which measure polychronicity are above 0.70, which have achieved the Kaiser criterion on factor analysis. Table 7 shows that these three items

only measure one variable which is creative self-efficacy. All the three item loadings which measure creative self-efficacy are above 0.85. This instrument also achieved the Kaiser criterion on factor analysis.

However, the instrument to measure supervisors' supportive and non-controlling management style and the instrument for organisational creativity did not achieve the good construct validity. Whether or not the items measure the same variables depends on the loadings of the items. Generally, if the loadings of the items are greater than 0.3, these items are grouped together to present one factor. In Table 6, items 3, 2, 14, 4, 1, 16, 5, 6, 13, 15, and 8 load on factor 1, as all these item loading are above 0.6 in factor 1; items 10, 9, 11, 12, and 7 load on factor 2. It implies that the items for supervisors' supportive and non-controlling management style measures two aspects. In Table 8, items 3, 4, and 5 load on factor 1 as these three items have a loading above 0.3 in that category; items 17, 15, 18, and 16 load on factor 2, as these four items have a loading above 0.3 in that category. Similarly, items 12, 13, and 1 load on factor 3; items 10, 2, and 6 load on factor 4; items 9 and 11 load on factor 5; items 14, 8, and 7 load on factor 6. Such results show the original measurement for organisational creativity lacks construct validity.

Factor analysis identified that the instrument for supervisors' supportive and non-controlling management style and the instrument for organisational creative context cannot guarantee the construct validity of data. In order to decide how to use these items, content validity need to be established. Content validity describes the intended theoretical constructs developed from literature review. The strategy which this thesis used is shown below:

- The items to measure individual polychronicity and creative self-efficacy remains the same;
- Only items 1, 2, 3, 4, 5, 6, 8, 13, 14, 15, and 16 for measuring supervisors' supportive and non-controlling management style were used.
- Items to measure several aspects on organisational creative context followed the original strategy conducted by Rice (2006). Each item was analysed individually.

Chapter six: Results

Chapter outline: this chapter will report on the results of the study. First section (6.1) will present the central tendencies and dispersion among the variables. Second section (6.2) will examine the relationships between biographic data (gender, age, education, ethnicity, current job status, number of years working in the organisation, and number of years working in total) and creative self-efficacy. Section three (6.3) will report on the correlations among variables. Finally, section four (6.4) will detail the test result of the hypotheses formulated in chapter five.

6.1 Measures of central tendencies and dispersion

The mean, the standard deviation and the variance provide a general indication of how the respondents have reacted to the items in the questionnaire. The central tendencies of responds also reflect whether certain items and measurements appear skewed.

The results of the SPSS output are shown in Table 9. In the table, PolyItem1 to PolyItem10 measures individual's polychronicity. SSItems1, 2, 3, 4, 5, 6, 8, 13, 14, 15, and 16 measure supervisors' supportive and non-controlling management style. CSEItem1 to CSEItem3 measure individual's creative self-efficacy. OCItem1 to OCItem18 measure four aspects of organisational creative context: OCItem1 to OCItem4 measure organisational structure, OCItem5 to OCItem8 measure the interaction with co-workers, OCItem9 to OCItem11 measure the risk-taking orientation, OCItem12 to OCItem13 measure trust and caring atmosphere in the organisation. All variables were measured on a seven-point scale. The mean of the polychronic items is 4.23, supervisors' supportive and non-controlling management

style is 4.48, the mean for creative self-efficacy is 4.81, and the mean for organisational creative context is 4.20.

The variance for individual polychronicity (PolyItem1 to PolyItem10), supervisors' supportive and non-controlling management style (SSItem1, 2, 3, 4, 5, 6, 8, 13, 14, 15, and 16), creative self-efficacy (CSE1 to CSE3), and organisational creative context (OCItem1 to OCItem18) is quite high (2), indicating that the respondents are widely spreading from the minimum of 1 to the maximum of 7. The standard deviation is 1.5, demonstrating the variables are closely clustered.

Table 9

Descriptive statistics on variables

Variables	Items	Mean	Std. Deviation	Variance
Individual polychronicity	PolyItem1	4.54	1.67	2.79
	PolyItem2	4.33	1.51	2.29
	PolyItem3	3.88	1.48	2.19
	PolyItem4	4.27	1.72	2.95
	PolyItem5	4.24	1.73	3.00
	PolyItem6	3.84	1.57	2.47
	PolyItem7	4.22	1.67	2.80
	PolyItem8	4.17	1.40	1.96
	PolyItem9	4.62	1.55	2.39
	PolyItem10	4.25	1.52	2.32
Supervisors' supportive and non-controlling management style	SSItem1	3.91	1.79	3.20
	SSItem2	4.54	1.85	3.43
	SSItem3	3.81	1.74	3.02
	SSItem4	4.26	1.79	3.19
	SSItem5	4.71	1.64	2.70
	SSItem6	4.28	1.72	2.97
	SSItem8	4.32	1.54	2.38
	SSItem13	3.48	1.58	2.50
	SSItem14	4.59	1.72	2.97
	SSItem15	3.91	1.72	2.95
	SSItem16	4.13	1.74	3.02
Creative self-efficacy	CSEItem1	4.70	1.33	1.77
	CSEItem2	4.97	1.12	1.26
	CSEItem3	4.75	1.30	1.70
Organisational factors	OCItem1	4.96	1.37	1.88
	OCItem2	4.81	1.65	2.73
	OCItem3	3.37	1.60	2.56
	OCItem4	3.44	1.79	3.22
	OCItem5	3.54	1.55	2.41
	OCItem6	3.47	1.60	2.56
	OCItem7	4.74	1.69	2.87
	OCItem8	4.98	1.63	2.65
	OCItem9	4.60	1.82	3.32
	OCItem10	4.39	1.97	3.86
	OCItem11	3.58	1.82	3.30
	OCItem12	3.61	1.77	3.11
	OCItem13	4.45	1.85	3.41
	OCItem14	4.60	1.56	2.44
	OCItem15	3.88	1.71	2.91
	OCItem16	4.24	1.58	2.51
	OCItem17	4.37	1.54	2.37
	OCItem18	4.48	1.62	2.63

In summary, all variables are widely clustered around the mean. Individual polychronicity and organisational creative context are about average closed to the mean. Supervisor's supportive and non-controlling management style and individual creative self-efficacy are fairly above the mean.

6.2 Independent-Samples t-test between creative self-efficacy and biographic data.

T test will indicate if individual creative self-efficacy is significantly different among individual with different biographic data. Only a few researchers have conducted this before (Tierney & Farmer, 2004; Redmond, *et al.*, 1993) and will be worth exploring in this study. The following section will examine whether creative self-efficacy is affected by gender, age, education, ethnicity, current job status, number of years working in the organisation, and number of years working in total. The mean of creative self-efficacy, in Table 10(1), Table 11(1), Table 12(1), Table 13(1), Table 14(1), Table 15(1), and Table 16(1) below, equals the average mean of CSEItem1, CSEItem2, and CSEItem3. Since the variance of following groups is not equal:

- gender groups,
- age groups,
- education groups,
- ethnicity groups,
- groups for the current job status,
- groups for the number of years working in the organisation
- groups for the number of years working in total ,

“the Equal variance not assumed” in the t-test is considered here.

The results of the t-test are shown in Table 10(1) and Table 10(2). The difference in the means of 5.60 and 5.33 with standard deviation of 2.48 and 3.10 for the male and female on creative self-efficacy is not significant (see Table 10(2) for the t-test for Equality of Means). The mean different is 0.79 with a significant level of 0.126. Thus, there is no difference on creative self-efficacy between male and female in this study.

Table 10(1)

Group statistics between gender and creative self-efficacy

Gender	N	Mean	Std. Deviation	Std. Error Mean
Male	68	5.60	0.826	.300
Female	55	5.33	1.032	.418

Table 10(2)

Independent samples test between gender and creative self-efficacy

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances not assumed	1.544	102.26	.126	.794	.514	-.226	1.814

For the age group, the respondents under 35 were grouped together and coded as 1. Respondents over 35 were clustered, coded as 2. The output for this procedure is displayed in Table 11(1) and Table 11(2). In Table 11(2), the variances are not statistically different since the *p* value of Levene’s test is 0.278. In other words, there is no significant difference in mean creative self-efficacy between age group on under 35 and age over 35.

Table 11(1)

Group statistics between age and creative self-efficacy

Age	N	Mean	Std. Deviation	Std. Error Mean
Under 20 to 35	46	5.36	1.048	.464
36 to over 65	77	5.55	0.849	.290

Table 11(2)

Independent samples test between age and creative self-efficacy

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances not assumed	-1.092	79.941	.278	-.597	.547	-1.686	.491

The education group was divided into two groups. These with high school Degree, bachelor's Degree and others (diploma) were the under-graduate/graduate group. Honour(s) Degree, Masters Degree and Ph. D. degree holders were in the post-graduate group. The results are shown in Table 12(1) and Table 12(2). In Table 12(2), the variances are not significantly different since the p value of Levene's test is 0.548. Hence, there is no difference between under-graduate/graduate degree holders and post-graduate degree holders on creative self-efficacy.

Table 12(1)

Group statistics between education and creative self-efficacy

Education	N	Mean	Std. Deviation	Std. Error Mean
High school, bachelor, others (diploma)	60	5.42	0.923	.357
Honour(s), Masters, Ph.D.	63	5.51	0.94	.355

Table 12(2)

Independent samples test between education and creative self-efficacy

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances not assumed	-.603	120.88	.548	-.304	.504	-1.302	.694

The ethnicity grouping was based on the concept of individualism or collectivism. Chapter five has mentioned that in the countries, like the United States and Western Europe, the “self” has strong individualistic meaning. New Zealand is considered of having individualistic culture (Hofstede, 2001; House, *et al.*, 2004). However, within New Zealand, Māori cultural group and Pacific Islanders have high level of collectivism (Pfeifer & Love, 2004; Moya Ah Chong & Thomas, 1997). Asian cultural groups, such as Chinese, Indian and people from other Confucian Asia or Southern Asia, are scored high in collectivism values (House, *et al.* 2004). Hence, the ethnic groups in this thesis are divided into two. Respondents belong to New Zealand European/Pakeha, and other English speaking countries (e.g. Britain, Australia) were

grouped together and coded as 1. It is assumed that this group has high level of individualistic value. Respondents who considered themselves as Maori or Pacific Island, India, China, or Other Asians were grouped together and coded as 2. It is assumed of having high level of collectivistic value. The results are shown in Table 13(1) and Table 13(2). In Table 13(2), the variances are slightly significant with the *p* value of Levene’s test at 0.05. Therefore, there is a significant difference in creative self-efficacy between individualistic ethnicity and collectivistic ethnicity. Since the mean of the group (5.58), which includes NZ European/Pakeha, and other English spoken countries (e.g. Britain, Australia), is significantly higher than the other group (5.20). The latter appears to have more creative self-efficacy than the former.

Table 13(1)

Group statistics between ethnicity and creative self-efficacy

Ethnicity	N	Mean	Std. Deviation	Std. Error Mean
NZ European/Pakeha, Other English spoken countries (e.g. Britain, Australia)	91	5.58	0.905	.285
Maori or Pacific Islander, India, China, Other Asia countries	32	5.20	0.954	.506

Table 13(2)

Independent samples test between ethnicity and creative self-efficacy

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances not assumed	1.969	51.959	.054	1.143	.580	-.022	2.307

The current job status was divided into two groups: people in the non-management position and people in the management position (supervisor, junior management, senior management). The outputs are shown in Table 14(1) and Table 14(2). In Table 14(2), the variances are significant at $p=0.006$. People in the non-management and management position are significantly different in creative self-efficacy. Since the mean of people working in the non-management position (5.13) is significantly lower than the mean of people working in the management position (5.65), it can be concluded managers have more creative self-efficacy than non-managers.

Table 14(1)

Group Statistics between current job status and creative self-efficacy

Current job status	N	Mean	Std. Deviation	Std. Error Mean
Non-managers	43	5.13	0.938	.429
Junior Managers, Supervisor, Senior Managers	80	5.65	0.884	.297

Table 14(2)

Independent Samples Test between current job status
and creative self-efficacy

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances not assumed	-2.802	81.760	.006	-1.462	.522	-2.500	-.424

The number of years working in this organisation was divided into group 1 (people working in an organisation less than 2 years) and group 2 (people working in an organisation over 2 years). The results of the t-test are shown in Table 15(1) and Table 15(2). In Table 15(2), the variances are not significant ($p = 0.219$). Hence, there is no difference in creative self-efficacy between people working in current organisation less than 2 years and working over 2 years in an organisation.

Table 15(1)

Group statistics between number of years working in this organisation and
creative self-efficacy

Number of years working in the organisational	N	Mean	Std. Deviation	Std. Error Mean
Less than 2 years	64	5.38	0.898	.337
over 2 years	59	5.59	0.958	.374

Table 15(2)

Independent samples test between number of years working in this organisation and creative self-efficacy

	t-test for Equality of Means ^a						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances not assumed	-1.236	118.493	.219	-.622	.503	-1.619	.375

People working a total 10 years and over account for 70.7% of the sample and were treated as group 1. The rest were treated as group 2. The outputs are displayed in Table 16(1) and Table 16(2). In Table 16(2), the variances are not statistically different ($p = 0.095$). Consequently, there is no difference on creative self-efficacy between people working in total less than 10 years and those working in total over 10 years.

Table 16(1)

Group statistics between number of years working in total and creative self-efficacy

Number of years working in total	N	Mean	Std. Deviation	Std. Error Mean
Less than 10 years	36	5.24	1.056	.528
Over 10 years	87	5.58	0.859	.276

Table 16(2)

Independent samples test between number of years working in total and creative self-efficacy

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances not assumed	-1.701	55.104	.095	-1.013	.596	-2.208	.181

In conclusion, this section examined the relationships between creative self-efficacy and several biographic variables using the t-test. The results from the tests indicate that there is a marginally significant difference between individualistic ethnicity and collectivistic ethnicity in creative self-efficacy. There is a significant difference between people in the non-management position and people in the management position in creative self-efficacy. However, the results also show that there is no difference between male and female, between age from under 35 and age over 35, between undergraduate degree and postgraduate degree, between number of years in current organisation less than 2 years and over 2 years, and between number of years working in total from less than 10 years and over 10 years in creative self-efficacy.

6.3 Pearson correlation among variables

Before using the Regression procedure to test the hypotheses, the initial examination of the correlation among the data should be done. Pearson correlation was used to analyse whether or not a high score on one variable was associated with a high score on the other. Although it cannot determine the casual relation between variables, it is an important initial step before regression analysis.

As mentioned in chapter five, the lower level of Cronbach's alpha, means that the items measuring organisational factors (organisational structure, the interaction with co-workers, risk-taking orientation, and trust, caring atmosphere) have to be examined individually. This strategy was used by Rice (2006). To make it simple and easy to be computed, the variables of organisational creativity were coded as "OCItemN (N=1.2...18)". The coded items and the meaning behind the code are in Appendix D.

The Pearson correlation matrix obtained for the 21 variables is shown in Table 17. The results show that the creative self-efficacy is, as expected, significantly positively correlated to individual polychronicity. The standard error of estimate (s.e.) is 0.44 ($p < 0.01$), and to supervisors' supportive and non-controlling management style (s.e.=0.397, $p < 0.01$).

Creative self-efficacy and organisational factor, unwillingness to share information with other workgroups (OCItem6), is negatively correlated with creative self-efficacy (s.e.=-0.177, $p < 0.05$) and with supervisors' supportive and non-controlling management style (s.e. =-0.371, $p < 0.05$). Success requires initiative and providing ideas in the organisation (OCItem8), is positively associated with creative self-efficacy (s.e. =0.187, $p < 0.05$). It is also positively associated with supportive and non-controlling management style (s.e. =0.216, $p < 0.05$). Not changing the way things are done (OCItem10), is negatively associated with creative self-efficacy (s.e. =-0.271, $p < 0.01$) and is negatively associated with supportive and non-controlling management style (s.e. =-0.333, $p < 0.01$).

As for the relationship between organisational factors and supportive and non-controlling management style, apart from OCItem6, OCItem8 and OCItem10, the results also show that hierarchical power in the organisation (OCItem2) is negatively correlated (s.e.=-.0.369, $p<0.01$). Enjoy doing the work (OCItem12) is positively correlated (s.e.=0.234, $p<0.01$). A sense of time pressure (OCItem13) is positively correlated (s.e.=0.197, $p<0.05$). Free and open communication (OCItem15) is positive correlated (s.e.=0.355, $p<0.01$). Atmosphere of caring (OCItem17) is positive correlated (s.e.=0.439, $p<0.01$). A sense of commitment (OCItem18) is positive correlated (s.e.=0.393, $p<0.01$). Within these items, OCItem2 reflects the factors on organisational structure. OCItem6 and OCItem8 reflect the factors related to the interaction with co-workers in the organisation. OCItem10 reflects the factor related to the risk-taking orientation in the organisation. OCItem12, OCItem13, OCItem15, OCItem17, and OCItem18 reflect the factors on trust and caring atmosphere in the organisation.

Some new findings which were not included in the hypotheses are also shown in the results. These are: individual polychronicity is positively associated with supervisors' supportive and non-controlling management style (s.e.=0.308, $p<0.01$). Not changing the way things are done (OCItem10) is negatively correlated with individual polychronicity (s.e.=-0.247, $p<0.01$).

Table 17
Correlations on individual polychronicity, supportive and non-controlling management style, creative self-efficacy, and organizational factors

		POLY	SS	CSE
POLY	Pearson Correlation	1	.308(**)	.440(**)
	Sig. (2-tailed)		.001	.000
SS	Pearson Correlation	.308(**)	1	.397(**)
	Sig. (2-tailed)	.001		.000
CSE	Pearson Correlation	.440(**)	.397(**)	1
	Sig. (2-tailed)	.000	.000	
OCItem1	Pearson Correlation	-.092	-.032	-.134
	Sig. (2-tailed)	.311	.727	.139
OCItem2	Pearson Correlation	-.104	-.369(**)	-.155
	Sig. (2-tailed)	.252	.000	.086
OCItem3	Pearson Correlation	.059	.115	-.008
	Sig. (2-tailed)	.515	.207	.934
OCItem4	Pearson Correlation	.021	.074	-.020
	Sig. (2-tailed)	.814	.414	.822
OCItem5	Pearson Correlation	-.053	.074	-.049
	Sig. (2-tailed)	.562	.417	.592
OCItem6	Pearson Correlation	-.088	-.371(**)	-.177(*)
	Sig. (2-tailed)	.331	.000	.050
OCItem7	Pearson Correlation	.008	-.177	-.049
	Sig. (2-tailed)	.927	.050	.591
OCItem8	Pearson Correlation	.113	.216(*)	.187(*)
	Sig. (2-tailed)	.215	.017	.039
OCItem9	Pearson Correlation	-.013	.014	-.001
	Sig. (2-tailed)	.889	.874	.992
OCItem10	Pearson Correlation	-.247(**)	-.333(**)	-.271(**)
	Sig. (2-tailed)	.006	.000	.002
OCItem11	Pearson Correlation	.037	-.061	.023
	Sig. (2-tailed)	.684	.505	.800
OCItem12	Pearson Correlation	-.026	.234(**)	.016
	Sig. (2-tailed)	.773	.009	.860
OCItem13	Pearson Correlation	-.006	.197(*)	-.018
	Sig. (2-tailed)	.944	.029	.845
OCItem14	Pearson Correlation	-.046	.089	-.010
	Sig. (2-tailed)	.612	.325	.911
OCItem15	Pearson Correlation	-.034	.355(**)	.028
	Sig. (2-tailed)	.708	.000	.756
OCItem16	Pearson Correlation	-.070	-.131	-.032
	Sig. (2-tailed)	.441	.148	.728
OCItem17	Pearson Correlation	.049	.439(**)	.011
	Sig. (2-tailed)	.592	.000	.906
OCItem18	Pearson Correlation	.098	.393(**)	.107
	Sig. (2-tailed)	.280	.000	.240

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

POLY=individual polychronicity; SS=Supervisors' supportive and non-controlling management style; CSE=Creative self-efficacy; OCItem1 to OCItem18= See Appendix D

In conclusion, the Pearson correlation shows the expected relationship between individual polychronicity and creative self-efficacy, between supportive and non-controlling management style and creative self-efficacy. For the organizational factors, the variables belonging to the organisational structure, and the variables belonging to the trusting and caring atmosphere in the organisation have no relationship with creative self-efficacy at all. However, variables, like unwillingness to share information with other workgroups, success require initiative and providing ideas, which belong to the interaction with co-workers are related to creative self-efficacy. Not changing the way things are done in the organisation under category of risk-taking orientation is also correlated with creative self-efficacy. The results also show the correlation between several variables in the organisational context and supportive and non-controlling management style. These variables include:

- hierarchical power (under organisational structure category),
- unwillingness to share information with other workgroup (under the interaction with co-workers category),
- success require initiative and providing ideas (under the interaction with co-workers category),
- not changing the way things are done (under risk-taking orientation category),
- enjoying doing the work (under trusting and caring atmosphere category),
- a sense of time pressure (under trusting and caring atmosphere category),
- free and open communication (under trusting and caring atmosphere category),
- atmosphere of caring (under trusting and caring atmosphere category),
- a sense of commitment (under trusting and caring atmosphere category).

Apart from these associations which relate to the hypotheses, the Pearson correlation also shows that individual polychronicity is positively associated with supervisors'

supportive and non-controlling management style. Such polychronic tendency is negatively associated with variable, like not changing the way things are done, in the organisational creative context.

6.4 Evaluating the hypothesised model

This section will use regression analysis to evaluate the hypothesised model. It has been said that regression is a powerful tool for summarising the nature of the relationship between variables and for making predictions of likely values of the dependent variables (e.g. Cavena, *et al.*, 2001; Bryman & Cramer, 2001). In the following parts, section 6.4.1 will use multiple regression analysis to examine the relationship between individual polychronicity and creative self-efficacy (Hypothesis 1), between supervisors' supportive and non-controlling management style and creative self-efficacy (Hypothesis 2), and between the organisational creative context and creative self-efficacy (Hypothesis 4(1), Hypothesis 4(2), Hypothesis 4(3), Hypothesis 4(4)). This section will also use forward regression analysis to examine which variable has the most significant impact on creative self-efficacy. Based on the results from section 6.4.1, section 6.4.2 regression analysis will be used to test the relationships between supervisors' supportive and non-controlling management style and organisational creative context (Hypothesis 3(1), Hypothesis 3(2), Hypothesis 3(3), and Hypothesis 3(4)).

6.4.1. Use of multiple regression analysis

Section 6.3 has identified that with regards to organisational creativity, only the variables concerning the interaction with co-workers and risk-taking orientation in the organisation have correlations with creative self-efficacy. These variables include

unwillingness to share information with other workgroups (OCItem6), success requires initiative and providing ideas (OCItem8), and not changing the way things are done (OCItem10). As such, in the multiple regression analysis on creative self-efficacy, only these three variables under organisational creativity are included. Additionally, individual polychronicity and supervisors' supportive and non-controlling management style were also entered. The results of regressing these five independent variables against creative self-efficacy can be seen in Table 18(1).

Table 18(1) shows the five independent variables that are entered into the regression model. The R (0.457) is the correlation of the four independent variables with the dependent variables. After all the inter-correlations among the five independent variables are taken into account, the R Square is 0.209. Table 18(2) shows that the F value of 64.74 is significant at the 0.01 level. What the results means is that 21 percent of the variance (R-square) in creative self-efficacy has been significantly explained by the five independent variables. Thus, Hypothesis 1 on the relationship between individual polychronicity and creative self-efficacy, Hypothesis 2 on the relationship between supervisors' supportive management style and creative self-efficacy, Hypothesis 4(2) on the relationship between the interaction with co-workers and creative self-efficacy, and Hypothesis 4(3) on the relationship between risk-taking orientation and creative self-efficacy are substantiated.

Table 18(1)

Model summary of multiple regressions on organizational factors (OCItem10, OCItem8, OCItem6), supportive and non-controlling management style, individual polychronicity and creative self-efficacy

R	R Square	Adjusted R Square	Std. Error of the Estimate
.457(a)	.209	.205	1.80757

a Predictors: (Constant), OCItem10, OCItem8, POLY, OCItem6, SS

Table 18(2)

ANOVA of multiple regressions on organizational factors (OCItem10, OCItem8, OCItem6), supportive and non-controlling management style, individual polychronicity and creative self-efficacy

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1057.580	5	211.516	64.737	.000(a)
Residual	382.274	117	3.267		
Total	1439.854	122			

a Predictors: (Constant), OCItem10, OCItem8, POLY, OCItem6, SS
b Dependent Variable: Creative self-efficacy

To further examine which variable has the most significant impact on creative self-efficacy, forward regression analysis was carried out. This procedure can be used to decide the sequence of the most significant variable on the dependent variable. The SPSS output (Table 19) shows the highest beta under standardised coefficients, is 0.44 for polychronicity, which is significant at 0.01 level. The second highest beta under standardised coefficients is 0.153 for supervisors’ supportive and non-controlling management style, which is significant at 0.01 level.

Table 19

Coefficients of forward regression on organizational factors (OCItem10, OCItem8, OCItem6), supportive and non-controlling management style, individual polychronicity and creative self-efficacy

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	5.418	.554		9.788	.000	4.322	6.514
	POLY	.212	.012	.440	17.063	.000	.188	.237
2	(Constant)	3.865	.739		5.230	.000	2.402	5.328
	POLY	.201	.013	.393	15.840	.000	.175	.226
	SS	.029	.009	.153	3.049	.003	.010	.047

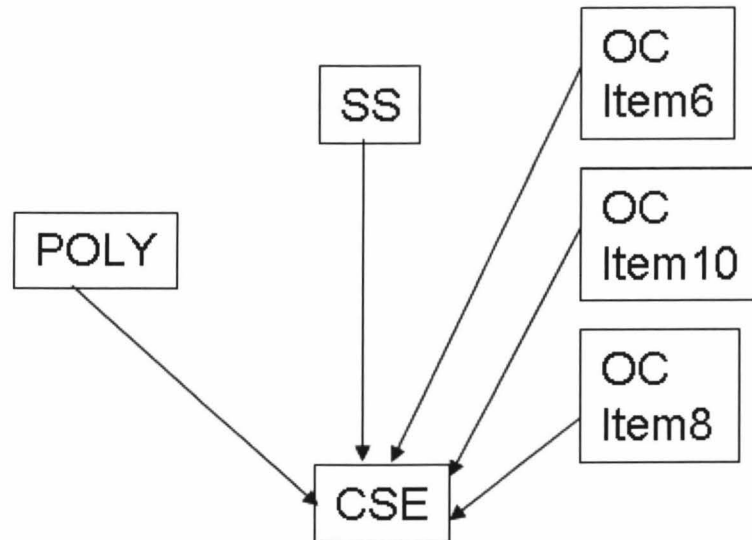
a Dependent Variable: CSE=creative self-efficacy

POLY=Polychronicity

SS=Supervisors' supportive and non-controlling management style

The results in section 6.4.1 support the hypotheses on the relationship between individual polychronicity and creative self-efficacy (H1), supervisors supportive and non-controlling management style and creative self-efficacy (H2), the interaction with co-workers and creative self-efficacy (H4(2)), and risk-taking orientation in the organisation and creative self-efficacy (H4(3)). It also shows that individual polychronicity has the most significant impact on creative self-efficacy. The second most significant impact on creative self-efficacy is supportive and non-controlling management style. The third is the variables on the interaction with co-workers and risk-taking orientation in the organisation. New theoretical framework based on these results is shown in Figure 3.

Figure 3
Structure of the relationships between individual polychronicity, supportive and non-controlling management style and organisational factors (OCItem6, OCItem10, OCItem8), and creative self-efficacy



OCItem6= unwillingness to share information with other workgroups; OCItem8= success requires initiative and providing ideas; OCItem10= not changing the way things are done;
 SS= supervisors' supportive and non-controlling management style;
 POLY= individual polychronicity;
 CSE= creative self-efficacy

6.4.2 The relationship between supervisors' supportive and non-controlling management style and organisational creative context

This section will examine the relationship between supervisors' supportive and non-controlling management style and organisational creative context. Section 6.3 has shown that supervisors' supportive and non-controlling management style is associated with hierarchical power in the organisation (OCItem2), unwillingness to share information with other workgroups (OCItem6), success requires initiative and providing ideas (OCItem8), not changing the way things are done (OCItem10), enjoying doing the work (OCItem12), a sense of time pressure (OCItem13), free and open communication (OCItem15), atmosphere of caring in the organisation (OCItem17), and a sense of commitment (OCItem18). Among these variables, OCItem2 is under the category of organisational structure. OCItem6 and OCItem8 are

under the category of the interaction with co-workers. OCItem10 is under the category of the risk-taking orientation in the organisation. OCItem12, OCItem13, OCItem15, OCItem17, and OCItem18 are under the category of the trusting and caring atmosphere in the organisation. However, the Pearson correlation does not show the causal impact between the variables. Thus, regression analysis was carried out. The analysis in Table 20 indicated:

- a significantly negative relationship between SS*OCItem2 ($R^2=-0.137$, $p<0.01$),
- a significantly negative relationship between SS*OCItem6 ($R^2=0.137$, $p<0.01$),
- a significantly positive relationship between SS*OCItem8 ($R^2=0.046$, $p<0.05$),
- a significantly negative relationship between SS*OCItem10 ($R^2=0.111$, $p<0.01$),
- a significantly positive relationship between SS*OCItem12 ($R^2=0.055$, $p<0.01$),
- a significantly positive relationship between SS*OCItem13 ($R^2=0.039$, $p<0.05$),
- a significantly positive relationship between SS*OCItem15 ($R^2=0.126$, $p<0.01$),
- a significantly positive relationship between SS*OCItem17 ($R^2=0.192$, $p<0.01$), and
- a significantly positive relationship between SS*OCItem18 ($R^2=0.155$, $p<0.01$).

Table 20

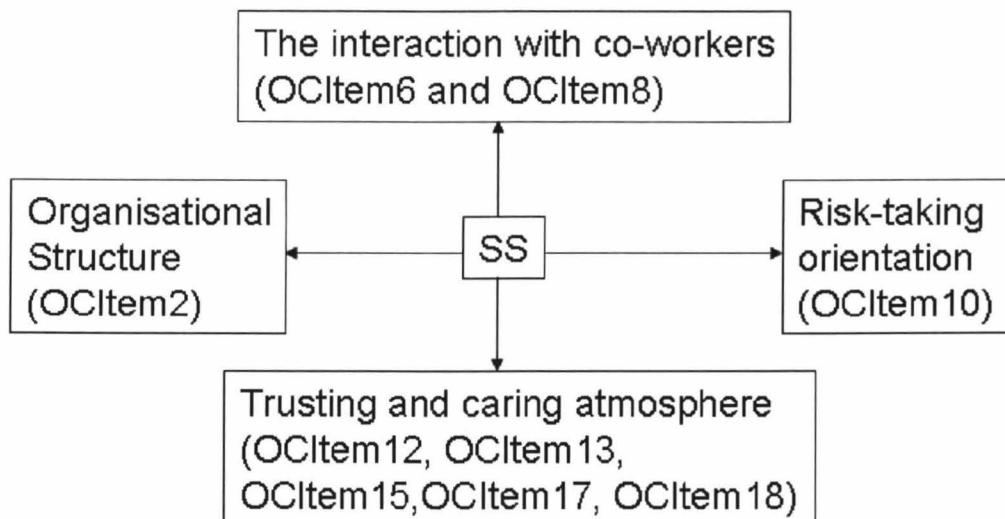
Model summary of regression analysis on SS*OCItem2, SS*OCItem6, SS*OCItem8, SS*OCItem10, SS*OCItem12, SS*OCItem13, SS*OCItem15, SS*OCItem17, SS*OCItem18

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
SS*OCItem2	.369(a)	.137	.129	1.541
SS*OCItem6	.371(a)	.137	.130	1.493
SS*OCItem8	.216(a)	.046	.039	1.595
SS*OCItem10	.333(a)	.111	.103	1.861
SS*OCItem12	.234(a)	.055	.047	1.721
SS*OCItem13	.197(a)	.039	.031	1.819
SS*OCItem15	.355(a)	.126	.119	1.602
SS*OCItem17	.439(a)	.192	.186	1.388
SS*OCItem18	.393(a)	.155	.148	1.497

SS=Supervisors' supportive and non-controlling management style;
OCItemN (N=2, 6, 8, 10, 12, 13, 15, 17, 18) =See appendix D

Since OCItem2 is under the category of organisational structure, OCItem6 and OCItem8 are under the category of the interaction with co-workers, OCItem10 is under the category of risk-taking orientation in the organisation, OCItem12, OCItem13, OCItem15, OCItem17 and OCItem18 are under the category of the trusting and caring atmosphere in the organisation, Hypothesis 3(1), Hypothesis 3(2), Hypothesis 3(3), and Hypothesis 3(4) are substantiated. The theoretical framework based on the results is shown in Figure 4.

Figure 4
**Structure of the relationships between organisational factors and supervisors’
supportive and non-controlling management style**

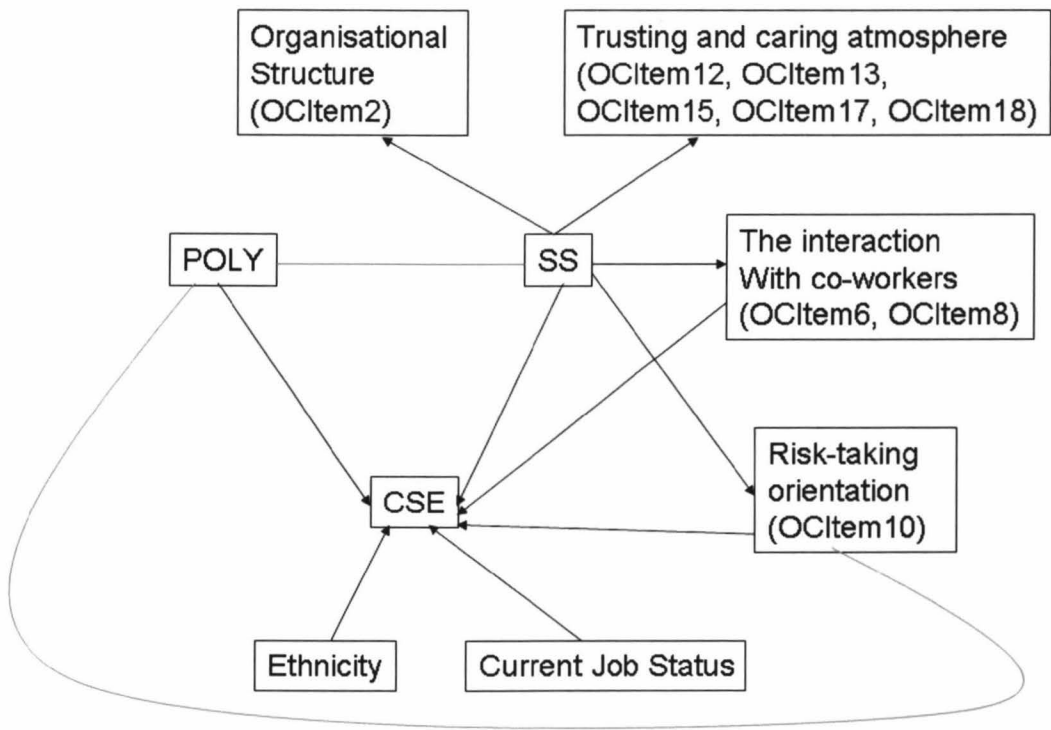


SS=supervisors’ supportive and non-controlling management style
OCItem2=hierarchical power in the organisation; OCItem6=unwillingness to share information with other workgroups; OCItem8=succcess requires initiative and providing ideas; OCItem10=not changing the way things are done; OCItem12=enjoy doing work; OCItem13=a sense of time pressure=OCItem15=free and open communication; OCItem17=atmosphere of caring; OCItem18=a sense of commitment

To summarise, this chapter presents the results of the research. T-test shows that there is a slight difference between individualistic ethnicity and collectivistic ethnicity in creative self-efficacy. People with individualistic ethnicity have higher creative self-efficacy than people with collectivistic ethnicity. People working in the management positions have significantly more creative self-efficacy than people working in the non-management positions. Pearson correlation shows that individual polychronicity is associated with supervisors’ supportive and non-controlling management. It is also associated with the variable like, not changing the way things are done, under organisational creativity. Regression analysis supports H1 that there is a positive

relationship between individual polychronicity and creative self-efficacy, H2 that there is a positive relationship between supervisory management style and creative self-efficacy, H4(2) that there is a positive relationship between the interaction with co-workers and creative self-efficacy, H4(3) that there is a positive relationship between risk-taking orientation and creative self-efficacy. The regression analysis also substantiates H3(1) that there is a negative relationship between supervisors' supportive and non-controlling management style and organisational hierarchical structure, H3(2) that there is a positive relationship between supervisors' supportive and non-controlling management style and the interaction with co-workers, H3(3) that there is a positive relationship between supervisors' supportive and non-controlling management style and risk-taking orientation in the organisation, H3(4) that there is a positive relationship between supervisors' supportive and non-controlling management style and the trusting and caring atmosphere in the organisation. The overall theoretical framework from these results are summarised in Figure 5.

Figure 5
Overall relationships between individual polychronicity, supervisors' supportive and non-controlling management style, organisational factors, and creative self-efficacy



POLY=individual polychronicity;
 SS=supervisors' supportive and non-controlling management style;
 CSE=creative self-efficacy;
 OCItem2=hierarchical power in the organisation; OCItem6=unwillingness to share information with other workgroups; OCItem8=success requires initiative and providing ideas; OCItem10=not changing the way things are done; OCItem12=enjoy doing work; OCItem13=a sense of time pressure=OCItem15=free and open communication; OCItem17=atmosphere of caring; OCItem18=a sense of commitment

Chapter seven: Discussion, contribution, limitation and areas for future research

Chapter outline: Section 7.1 of this chapter will discuss the implications of the research results. The purpose of this thesis was to examine the possible relationship between individual polychronicity and creative self-efficacy and the possible impact of creative organisational environmental factors on individual creative self-efficacy. Among these variables, the individual polychronicity and supervisors' supportive and non-controlling management styles in particular were examined. The influence of several other environmental factors (organisational structure, the interaction with co-workers, risk-taking orientation, and trusting and caring atmosphere) were also explored. Section 7.2 will outline the theoretical and practical contribution. Section 7.3 will point out the limitation and constraints of this thesis. It will also suggest several areas for future research.

7.1 Discussion

The first section (7.1.1) will discuss the relationships between individual polychronicity and creative self-efficacy, between ethnicity and creativity self-efficacy, and between current job status and creative self-efficacy. Section (7.1.2) will cover the relationship between organisational environmental factors and creative self-efficacy. In particular, it will focus on the impact of supervisors' supportive and non-controlling management style on creative self-efficacy. The rejected hypotheses between organisational structure and creative self-efficacy and between trusting and caring atmosphere and creative self-efficacy will also be included. Section (7.1.3) will cover the interaction between supervisors' management style and organisational creativity. Lastly, in section (7.1.4), the positive association between individual

polychronicity and supervisors' supportive and non-controlling management style, and the positive correlation between individual polychronicity and changing the way things are done will be discussed.

7.1.1 The relationships between individual polychronicity and creative self-efficacy

At the individual level, the findings show that individual polychronicity is positively related to creative self-efficacy. A characteristic of polychronic people is high creative self-efficacy. Chapter two has shown a clear link between individual polychronicity and creative personality. These people like to find new ways of doing things. They like to make changes and are comfortable with uncertainty. Their behaviours in the workplace do not follow a set sequence and these tend to enhance their creative performance and creative self-efficacy or their belief that they are creative at work. This correlation could help organisations formulate strategies to attract and nurture polychronic employees in order to have increased creative performance. For example, in the recruitment process, by running a polychronic test, the organisation could decide whether the existing culture would fit with polychronic candidates. Knowing the nature of polychrons, organisations could use strategies, such as flexible working hours, multiple tasking, and non-controlling supervision, to get the best out of them.

This research's findings show significant difference in creative self-efficacy between individualistic cultures and collectivistic cultures within New Zealand. In the group which makes up of NZ European/Pakeha and British, Australian or people from other English spoken countries (individualist), people tend to focus more on "self" needs and performance. In the group which makes up of Maori, Pacific Islander, Chinese,

Indian and people from other Asian countries (collectivist), people tend to follow the group demands. The achievement of “self” needs should contribute to the “group” performance. As expected in individualistic cultures, creative self-efficacy is found to be higher. This is in line with previous research that suggests that when it comes to self-concepts, people should be aware of cultural differences (Miller, 1999). Such cultural differences could have great impact on team performance. In groups working on creative projects, the people from individualistic cultural background could provide the stimulus for creative ideas. Once the ideas are accepted by the group, the people from collectivistic background could become the implementers keeping the group on track towards achieving group goals.

The difference in creative self-efficacy between people in the non-management positions and people in the management position is understandable. Managers are expected to have a wider range of creative capabilities than non-manager. This is because managers have to deal with complex problems and, over time, develop confidence in dealing with uncertainty and creative ideas. Such a finding could contribute to the role of leadership. Since managers have more creative self-efficacy, they have the ability to think outside the box and provide innovative solutions. Organisations should provide a creative environment to give these managers plenty of opportunities to implement innovative solutions.

Interestingly, the results did not show a relationship between education and creative self-efficacy, and between working experience and creative self-efficacy. This appeared to contradict Tierney and Farmer’s (2002) study. However, this earlier study was based on the role of education and creative success. It showed that the more

education the people have, the more creative success they had. With an increase in education and working experience, employees appeared more confident of creative success. However, creative success does not necessarily mean having confidence to put forward creative ideas. Employees' creative success is normally judged on observable behaviours and outcomes by their supervisors, senior managers or external experts. While such an estimation of creative success may relate to education and working experience, a similar relationship with the individual's internal creative self-efficacy cannot be assumed.

7.1.2 The relationships between organisational environmental factors and creative self-efficacy

The findings show that there is a significantly positive relationship between supervisors' supportive and non-controlling management style and creative self-efficacy. This supports the research by Amabile *et al.* (1996), Oldham & Cummings (1996), and Tierney & Farmer (2002). Under such supervision, employees have more freedom to try new things. Even if they make mistakes along the way, employees are still encouraged to be creative. In such an environment, employees' creative self-efficacy is certainly stronger. When it comes to the organisational leadership, managers should enable employees to gain power and achieve influence within the organisation. By providing employees with the information, responsibility, authority and trust to make decisions and act independently with their expertise, employees could have strong creative self-efficacy, and with commitment, the quality of their work would increase.

The results also show that interaction with other workgroups and a risk-averse orientation are significantly related to creative self-efficacy. If employees are

unwilling to share information with their group mates, the organisation becomes less integrated. Each workgroup treats the others as competitors. In such an environment, there is little information flow within the organisation. Employees have few chances to view their own workgroup tasks within the overall strategic plan. One of the important factors for creative self-efficacy is encourage openness and flexibility. The competition among groups in a closed environment could decrease employees' creative self-efficacy. The unwillingness to share information with other workgroups can cause problems in communication and result in interpersonal conflicts within the organisation. This conflict, in turn, could further lower creative self-efficacy. If the organisation does not encourage risk-taking, it will remain doing things the usual ways. Employees who naturally dislike making changes will become further entrenched in their way. In such a situation, reinforced by the organisation's working style, employees are unlikely to make changes in their jobs. No changes lead to a decrease in creativity and certainly lower creative self-efficacy. However, if within an organisation there is interaction amongst groups and a risk-taking orientation, people will be encouraged to find new ways of doing things, and employees will attempt to be creative at work and a higher level of creative self-efficacy results.

The research results do not support the relationship between organisational structure and creative self-efficacy. It can be argued that the hierarchical structured of an organisation does not necessarily mean that it has less risk-taking orientation or it has lower interaction with co-workers. Even though the power is in the hands of relatively few people in the organisation, managers could still encourage their employees to be creative. The results also show that there is no relationship between trusting and caring atmosphere and creative self-efficacy. Thus, managers who provide a trusting

and caring atmosphere in order to increase employees' commitment may not necessarily increase creative performance.

7.1.3 The interaction between supervisors' management style and creative organisational environmental factors

The results show that supervisors' supportive and non-controlling management style has a negative impact on hierarchical power in organisations. When supervisors support creativity, they are more likely to empower employees and encourage them to develop new skills. Within such an environment, people have the freedom to contribute ideas and do their jobs in the best possible ways. This involvement can increase job satisfaction for the individual and frequently results in better job performance. The supervisors' supportive and non-controlling management style also encourages communication and consultation with other work groups. Such a supervisory style provides a trusting and caring atmosphere in the organisation, where there is more risk-taking and less fear of failure. The results support previous studies (e.g. Tesluk *et al.*, 1997; Moukwa, 1995), which reached a similar conclusion where such supervision had a positive relationship with the interaction between workgroups, a negative relationship with risk-averse orientation, and a positive relationship with success that requires initiative and new ideas. The findings of this study also show that supportive and non-controlling management style has a positive relationship with time pressure in the organisation. An explanation for this is that under supportive supervision, employees enjoy doing their jobs. In the motivation theory, such feelings arise from intrinsic rewards, which do not depend on the actions of some other person. Being self-motivated, employees feel a sense of urgency without stress, and will finish work faster than usual.

7.1.4 The association between individual polychronicity and supervisory management style and the positive correlation between individual polychronicity and changing the way things are done

The results provide some other unexpected findings. For example, there is a positive correlation between individual polychronicity and supervisors' supportive and non-controlling management style. This can be seen as a "match" between the environment and the individual. In the previous discussion, it has been mentioned that the polychronic individual has a flexible working style. They like freedom and have strong self belief in their creativity. Under supportive supervision, they are given more freedom to do things their own way. They do not need to worry about breaking the rules and not following procedures. The results also show that there is a positive correlation between individual polychronicity and changing the way things are done. This can be understood in this way: in the majority of organisations, there are more monochronic employees who follow the sequenced way of doing things. When polychronic individuals work in such organisations, they do not like to work in a sequenced way. These polychrons like to jump from one idea to another. To adjust the organisation's way of doing things, they need to change their behaviour to make it acceptable to others but retaining their polychronic ability to be used when appropriate.

7.2 Contribution

The findings of this thesis show that individual behaviour patterns (individual polychronicity), supervisors' management style (supportive and non-controlling management style), and creative organisational environmental factors (the interaction with co-workers, trusting and caring atmosphere) can help individuals enhance their creative self-efficacy. Among these variables, individual polychronicity has the most

significant impact, followed by the supervisors' management style. The variable that has the least influence is organisational creativity. This raises important and interesting theoretical issues. Scholars have explored the relationship between creative self-efficacy and creative performance, but not creative self-efficacy itself (e.g. Jaussi *et al.*, 2007; Lopez, 2003; Choi, 2004). This research shows that whether people are doing things simultaneously or not can affect their belief in their creativity. An individual's creative self-efficacy is also related to the individualistic/collectivistic culture and management/non-management position. Previous studies had focused on how the supervision and organisational environments influence an individual's creative performance (e.g. Mumford *et al.*, 2002; Redmond *et al.*, 1993; Scott & Bruce, 1994). The research findings show that these variables also contribute to creative self-efficacy. Supervisory and organisational environment have not been studied in relation to creative self-efficacy before.

This research opens up new areas of exploration into the relationship between polychronicity and creative studies. This thesis proposes that polychronic individuals not only acquire creative personalities, they also have strong belief in their capability for creative performance.

Furthermore, the combination of individual polychronicity, supervisors' supportive and non-controlling management style, and creative organisational environment for creative self-efficacy highlights the "match" theory between individuals and their environment. High creative self-efficacy results from polychronic individuals having supportive supervisors. Such supervision also has an effect on the organisational environment such as organisational structure, interaction with co-workers, risk-taking

orientation and a trusting and caring atmosphere. Out of these four organisational environmental factors, only the interactions with co-workers and risk-taking orientations have an impact on the individual's creative self-efficacy. Organisational structure and trusting and caring atmosphere can affect creative performance.

The main contribution of this thesis is to establish a connection between individuals' beliefs in their creative capability and their influence on the work environment. The practical implication is that to increase creative activities, managers should identify more polychronic employees. These employees need to be placed in departments that have a flexible and supportive environment, where supervisors do not put too much control on employees.

As for the monochronic employees, managers can allocate more sequenced tasks or jobs requiring detailed planning and fixed schedules. This thesis suggests that there is more potential for polychrons to be creative and are best suited for jobs requiring it. They will be less suitable for jobs requiring work to be done sequentially and when there is more attention to detail.

This study further suggests that in order to increase employees' creative self-efficacy, supervisors need to be good supporters and communicators. Effective supervisors and managers ought to have good listening skills, and manage their employees' time flexibly. Effective supervisors should also support their employees' needs through team building and social activities and being available when the employees need coaching or other forms of help.

The practices mentioned above can be learned. Therefore, organisations need to develop training courses and training materials that help their supervisors both learn about and implement effective management practices. The results of the current study suggest that these investments in training of supervisors can result in higher levels of employee creative self-efficacy, creative performance, organisational commitment, and ability to cope, as well as lower levels of job stress.

7.3 Limitations and areas for future research

The results of this thesis clearly demonstrate the three positive relationships below:

- relationship between individual polychronicity and creative self-efficacy;
- relationship between supervisors' supportive and non-controlling management style and creative self-efficacy;
- relationship between creative organisational environmental factors (the interaction with co-workers, risk-taking orientation) and creative self-efficacy.

The findings apply to a research sample comprising of middle aged, experienced, and highly educated employees, who are studying management courses at university. This raises the question of whether the conclusions can be generalised to a more diverse population. Because this study does not consider the effects of specific tasks and industries, it cannot draw conclusions on differences within occupation or industry. Consequently, it must be left to future research to explore differences in creative self-efficacy between high-technology and non-technology workers, or whether creative self-efficacy in the educational industry and service industry is fundamentally different.

The cross-sectional nature of the survey design limits the ability to draw causal inferences. Although such a design is useful for identifying whether set of relationships exists, it does not address why they exist. Future research efforts (e.g. in-depth) case studies will be needed to advance the understanding of creative self-efficacy.

The factor analysis shows there are six instead of four factors required for an instrument for creative organisational environment. As such, the comparison with the original study is limited. Specific questions about why certain items have more direct links to creative self-efficacy than others are left unanswered. More research needs to be done to improve measurement of the theoretical construct.

The small sample size to examine the differences on individualistic and collectivistic culture on creative self-efficacy is also a limitation. The results show there is a marginal difference between these two groups. The number of people belonging to the individualistic culture, which includes NZ European/Pakeha and people from other English speaking countries (e.g. Britain and Australia), is 74 percent of total participants. The number of people belonging to the collectivistic culture, which includes people from Maori or Pacific Island, India, China and other Asia countries, is only 26 percent of total participants. This raises the question of whether cultural differences could be seen with larger numbers coming from collectivistic cultures. Hence, future research should be done on equally large cultural groups.

This research depends heavily on self-reports to measure the relationships between each variable, which might have led to inaccurate responses because of the social

desirability factor. Respondents may be answering according to what they feel ought to be the right answer. Therefore, future studies should attempt to use several sources to obtain more accurate data.

Finally, as the emphasis of this thesis was on individual creative self-efficacy rather than individual creative performance, future research is needed to include the quantity and quality of creative outputs. In this respect, an interesting area of research would be to explore the conditions under which variables in the creative process would result in enhanced creative performance.

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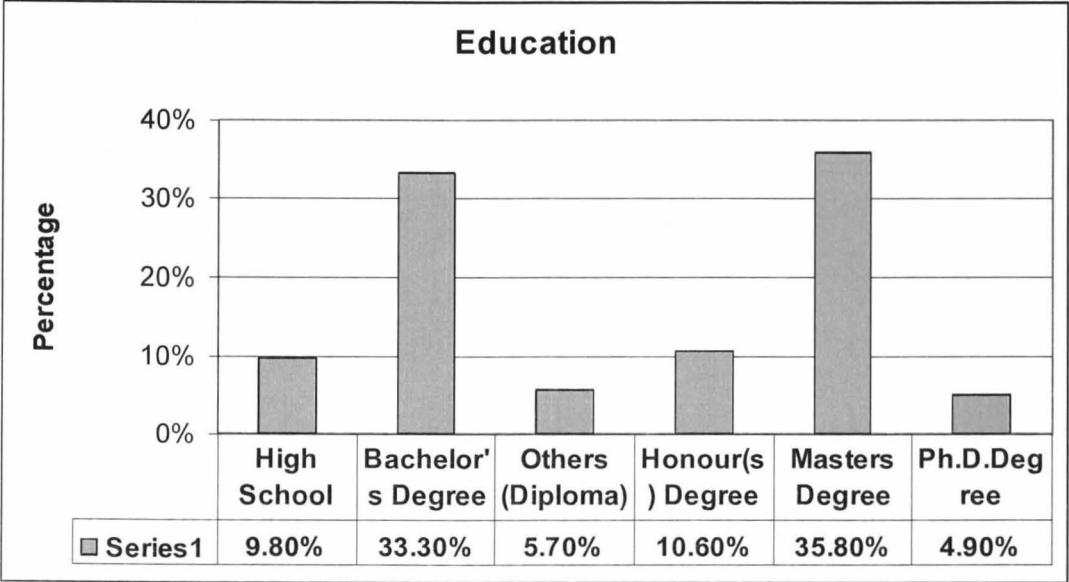
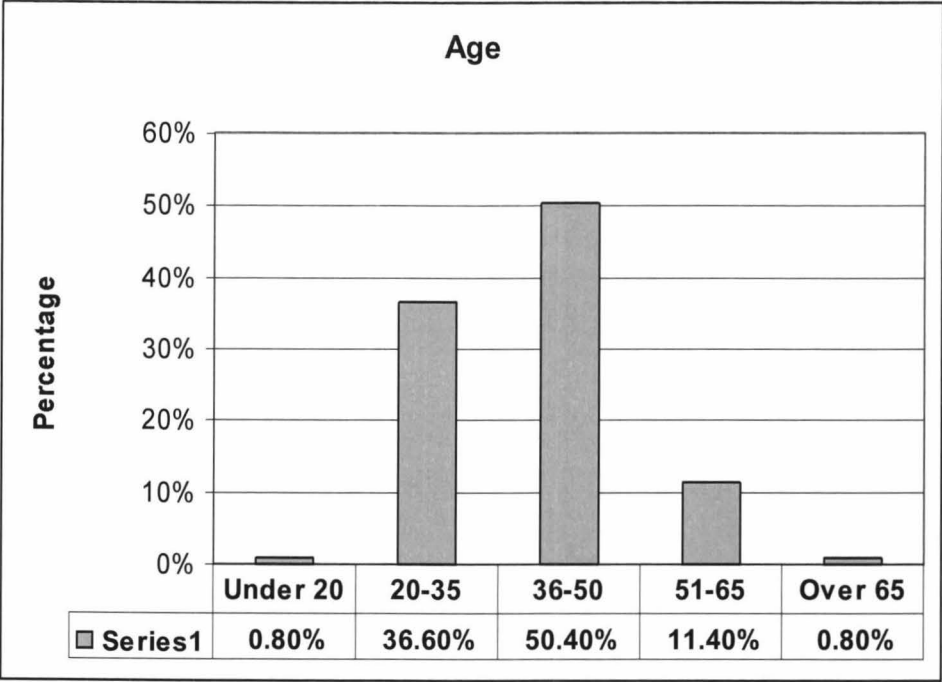
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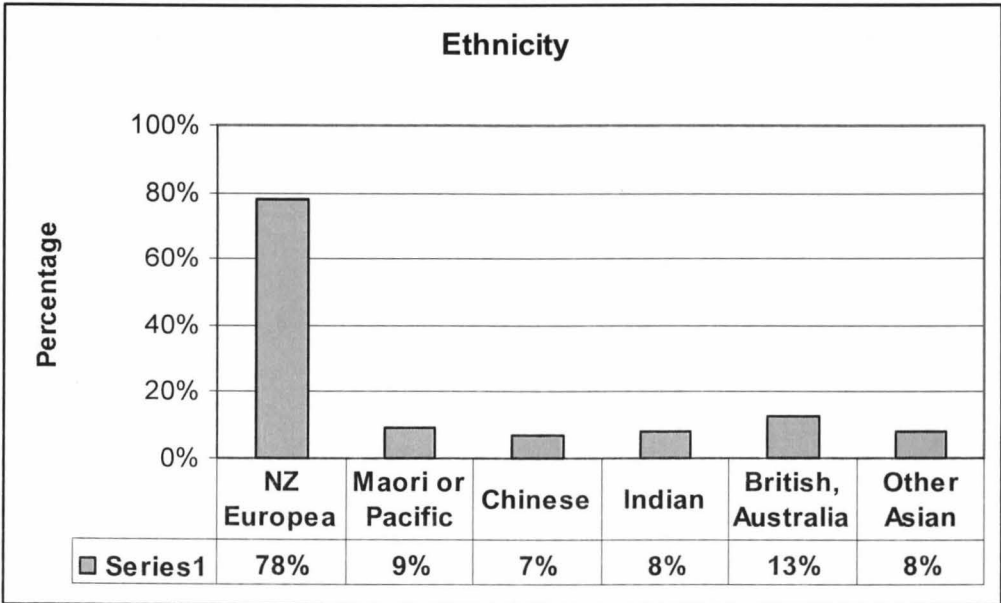
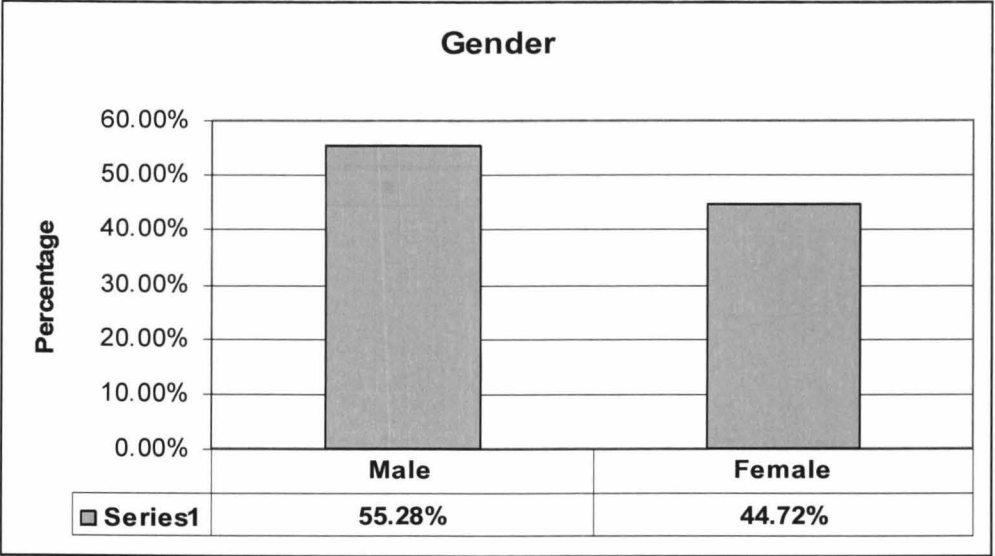
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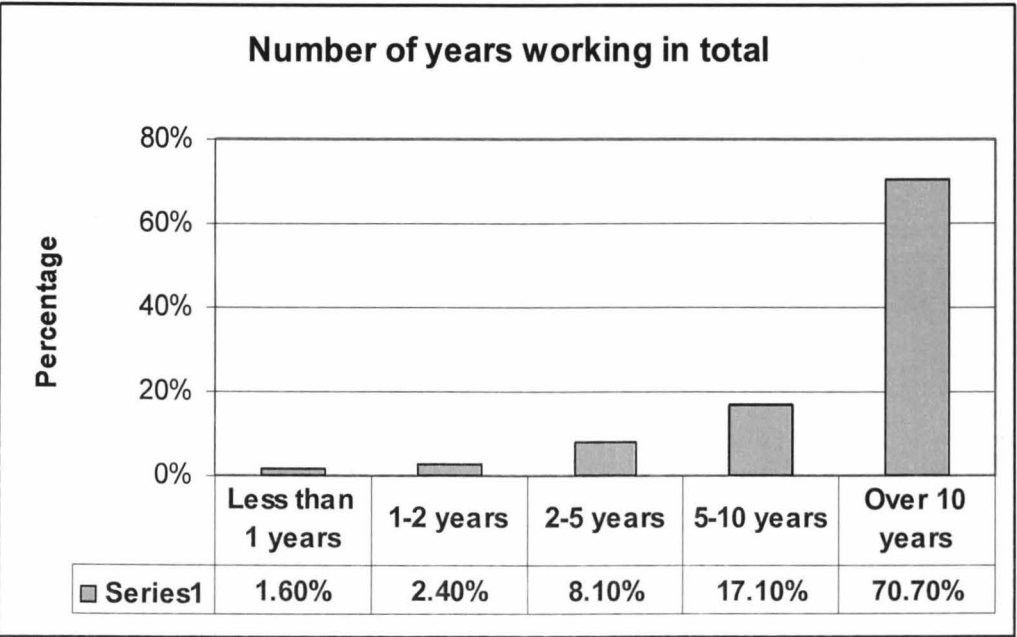
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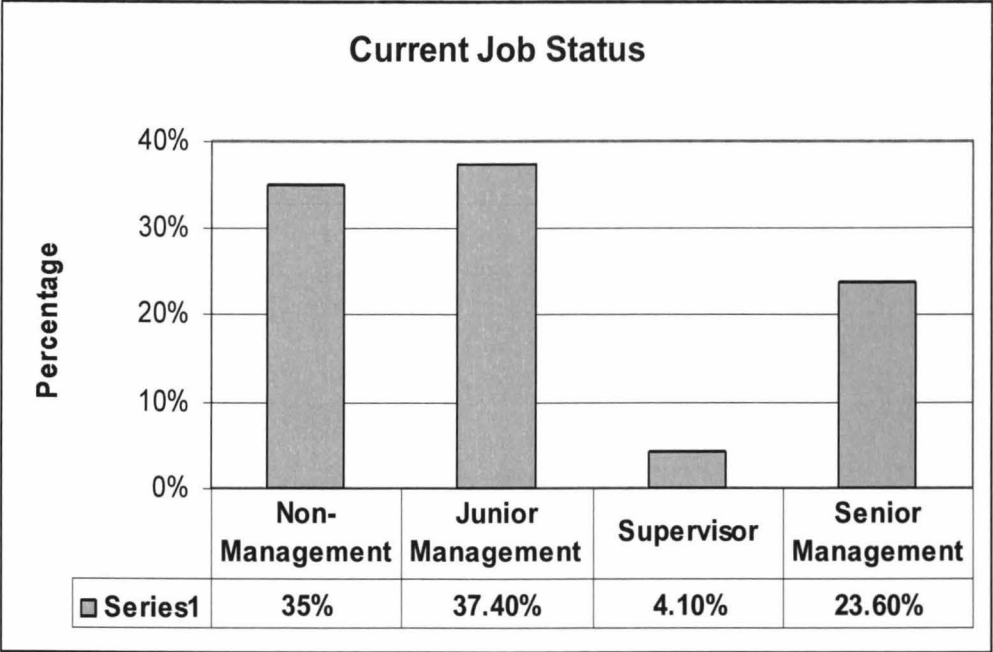
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APPENDIX A: GRAHS FOR THE BIO-DATA VARIABLES









**APPENDIX B: HEC APPLICATION FORM, INFORMATION
SHEET, QUSTIONNAIRE AND THE E-MAIL FOR HEC
APPLICATION APPROVAL**

HUMAN ETHICS COMMITTEE

Application for Approval of Research Projects

1 NATURE OF PROPOSED RESEARCH:

- (a) **Student Research** (delete one)
- (b) If Student Research Degree **Master in Management Studies**
Course Code **MMMS591 (Thesis)**
- (c) Project Title: **Examining the joint effect between individual's polychronicity and supervisory style on creative self-efficacy**

2 INVESTIGATORS:

- (a) Principal Investigator

Name **Xiaofang Ma**

e-mail address **maxiao@student.vuw.ac.nz**

School/Dept/Group **Victoria Management School**

- | | | |
|-----------------------|------|----------|
| (b) Other Researchers | Name | Position |
|-----------------------|------|----------|

Not applicable (no other researchers involved)

- (c) Supervisor (in the case of student research projects)

Dr. Eric Chong and Dr. Ofer Zwikael

3 DURATION OF RESEARCH

- (a) Proposed starting date for data collection - **After HEC approval has been granted**

(Note: that NO part of the research requiring ethical approval may commence prior to approval being given)

- (b) Proposed date of completion of project as a whole **May 7, 2008.**

4 PROPOSED SOURCE/S OF FUNDING AND OTHER ETHICAL CONSIDERATIONS

(a) Sources of funding for the project
 Please indicate any ethical issues or conflicts of interest that may arise because of sources of funding e.g. restrictions on publication of results
N

(b) Is any professional code of ethics to be followed **N**
 If yes, name

(c) Is ethical approval required from any other body **N**
 If yes, name and indicate when/if approval will be given

5 DETAILS OF PROJECT

Briefly Outline:

(a) The objectives of the project

- * To contribute to the individual polychronicity literature by testing the relationship between individual polychronicity and creative self-efficacy in the different organisational context.**
- * To contribute to creativity literature as to whether polychronic personality has similar effects on creative self-efficacy across all contextual conditions or if effects are stronger in some contexts than in others.**

(b) Method of data collection

I will contact targeting companies first by phone and email to ask for participation. Then the employees and managers working in the functional departments, such as marketing, product development, manufacturing and human resource management, will be asked to fill out the online questionnaire. The questionnaire will be provided either on a specific website system or as thesis questionnaires. Web-based survey will be linked by an email to your department. Thesis questionnaires will be handed out by the researcher. The participants will be asked to fill out the thesis questionnaires in a few minutes and returned to a box. In any way, this process of data collection will be anonymous. For the personal information, either web-based survey or thesis questionnaire will only cover the age, job tenure, ethical background, education, and the position in the company. The participants' identities will not be recorded.

(c) The benefits and scientific value of the project

* The thesis can help to test whether creative behaviour are widely encouraged in New Zealand organisation, as New Zealand treats creativity as its competitive advantage towards the world.

* Organisations, researchers, students and the community will be able to learn about how to build up the strategic fit between creative organisational environment and individual behaviour by reading the research thesis.

* Further explanations as to how can improve employees' creativity in the organisations will be provided.

(d) Characteristics of the participants

- **Employees and managers in the organisation**
- **People are currently working in the functional areas such as Marketing and Sale, Production and Operations, Research and Development, Strategy and Human Resource Management.**

(e) Method of recruitment

Recruitment of individual who will respond to the questionnaire, the individual could be the cross-sector of staff – senior management, junior management, supervisors and non-managerial staff. The methods to investigate who are the key participants are by using cover letters and phone calls.

(f) Payments that are to be made/expenses to be reimbursed to participants

None, there will be no payments made.

(g) Other assistance (e.g. meals, transport) that is to be given to participants

None

(h) Any special hazards and/or inconvenience (including deception) that participants will encounter

None

(i) State whether consent is for (delete where not applicable):

- | | |
|---|----------|
| (i) the collection of data | Y |
| (ii) attribution of opinions or information | N |
| (iii) release of data to others | N |
| (iv) use for a conference report or a publication | Y |
| (v) use for some particular purpose (specify) | Y |

MMS Thesis

Attach a copy of any questionnaire or interview schedule to the application **[Attached]**

The information sheet is on Appendix A. The Cover letter is on Appendix B. The questionnaire (Appendix C) will be designed online or written in the thesis.

(j) How is informed consent to be obtained (see sections 4.1, 4.5(d) and 4.8(g) of the Human Ethics Policy)

- (i) the research is strictly anonymous, an information sheet is supplied and informed consent is implied by voluntary participation in filling out a questionnaire for example (include a copy of the information sheet) Y
- (ii) the research is not anonymous but is confidential and informed consent will be obtained through a signed consent form (include a copy of the consent form and information sheet)

N

- (iii) the research is neither anonymous or confidential and informed consent will be obtained through a signed consent form (include a copy of the consent form and information sheet)

N

- (iv) informed consent will be obtained by some other method (please specify and provide details)

N

With the exception of anonymous research as in (i), if it is proposed that written consent will not be obtained, please explain why

(k) If the research will not be conducted on a strictly anonymous basis state how issues of confidentiality of participants are to be ensured if this is intended. (See section 4.1(e) of the Human Ethics Policy). (e.g. who will listen to tapes, see questionnaires or have access to data). Please ensure that you distinguish clearly between anonymity and confidentiality. Indicate which of these are applicable.

- (i) access to the research data will be restricted to the investigator N
 - (ii) access to the research data will be restricted to the investigator and their supervisor (student research) Y
 - (iii) all opinions and data will be reported in aggregated form in such a way that individual persons or organisations are not identifiable
- Y
- (iv) Other (please specify)

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- (l) Procedure for the storage of, access to and disposal of data, both during and at the conclusion of the research. (see section 4.12 of the Human Ethics Policy). Indicate which are applicable:

(i) *all written material (questionnaires, interview notes, etc) will be kept in a locked file and access is restricted to the investigator*

Y

- (ii) all electronic information will be kept in a password-protected file and access will be restricted to the investigator

Y

- (iii) all questionnaires, interview notes and similar materials will be destroyed:

(a) at the conclusion of the research **N**

or (b) 2 years after the conclusion of the research **Y**

- (iv) any audio or video recordings will be returned to participants and/or electronically wiped

N

- (v) other procedures (please specify):

If data and material are not to be destroyed please indicate why and the procedures envisaged for ongoing storage and security

As the thesis will be conducted on a strictly anonymous basis, there will be no confidentiality issues because individuals will not be identified.

- (m) Feedback procedures (See section 7 of Appendix 1 of the Human Ethics Policy). You should indicate whether feedback will be provided to participants and in what form. If feedback will not be given, indicate the reasons why.

Feedback will be provided at the completion of the research thesis if requested by any of the participants. If feedback is requested, it will be provided through a written summary of the research findings.

(n) Reporting and publication of results. Please indicate which of the following are appropriate. The proposed form of publications should be indicated on the information sheet and/or consent form.

- (i) publication in academic or professional journals Y
- (ii) dissemination at academic or professional conferences Y
- (iii) deposit of the research thesis or thesis in the University Library (student research) Y
- (iv) other (please specify)

Signature of investigators as listed on page 1 (including supervisors) and Head of School.

NB: All investigators and the Head of School must sign before an application receives confirmed approval

.....
Date.....

.....
Date.....

.....
Date.....

Supervisors:

.....
Date.....

.....
Date.....

Head of School:

.....
Date

Research Thesis
INFORMATION SHEET

Examining the joint effect between individual's polychronicity and supervisory style on creative self-efficacy

WHAT IS THE RESEARCH THESIS ABOUT?

Overview

You are invited to take part in a research study that will assess the degree to which your work environment promotes creativity. Around fifty-eight different organisations in Wellington will be investigated to carry out the research thesis. The topic is related to the joint impact between individual behaviour and environment on an individual's work behaviour. The study is being conducted by Xiaofang Ma (Fongfong) as part of the thesis requirements for the Masters of Management Studies (Organisational Behaviour) degree being undertaken at Victoria University of Wellington.

The research has been approved by the Human Ethics (HEC) Committee. If you agree to participate in this study, you will be asked to fill out a questionnaire (about 6-10 minutes in length). You may withdraw from the study at any time and before the final analysis of data (1/12/2007) without providing reasons and without penalty of any sorts.

In terms of confidentiality, the research will be conducted in a strictly anonymous basis, your identity and the name of your organisation will not be collected or recorded in this research thesis.

The feedback will be provided if requested by any of the participants. It will be asked through email from the organisations. After the accomplishment of the thesis, the researcher will send a written summary to the requested organisations by email. The whole process will stay in anonymous.

How will you be affected?

- I am looking for a range of managers and employees in various functional areas which involves creative behaviour. This will be a good opportunity for you to identify the creative potential of both you and your organisation. Effective creative strategies may emerge.
- You will be asked questions that are related to the individual's multi-task style, your direct supervisors' management style, innovative environment and your creative self-efficacy.

The researcher:

Xiaofang Ma (Fongfong) has lived in New Zealand for three years to pursue the Masters Degree. She has studied Human Resource Management at He Nan Finance and Economics University of China, and Human Resource Management and Industrial Relations in Victoria University of Wellington (VUW). She initially became interested in Organisational Behaviour, especially the relations between individual and work behaviour, when she was in China. Realising that creativity is a part of Organisational Behaviour and an important strategy in New Zealand encourages her to conduct the research in order to help organisations in NZ and the community as a whole.

Thank you! If you have any questions regarding this research, please contact myself or my supervisors.

Xiaofang MA (Fongfong)

Contact information:**RESEARCHER**

Xiaofang Ma (Fongfong)

Phone number: 04 472 0373

Mobile: 0211008465

E-mail: maxiao@student.vuw.ac.nz

SUPERVISORS

Dr. Eric Chong

Victoria University of Wellington

Phone number: 04 463 6942

E-mail: Eric.Chong@vuw.ac.nz

Dr. Ofer Zwikaël

Victoria University of Wellington

Phone number: 04 463 5143

E-mail: ofer.zwikael@vuw.ac.nz

Cover Letter

<Date>

<Organisation>

Dear <Name>,

What is the relationship between the individual multitasking style (polychronicity), the managers' supervisory style, and creative output (individual creative self-efficacy)?

Harnessing *creativity* provides a competitive advantage in an ever-changing environment. However, creativity has not been considered as an "urgent need" in organisations. There are immediate needs like re-structuring, cutting costs, fighting off an acquisition bid, dealing with a crisis, etc. In every case, attention to creativity loses out to other "Urgent Matters".

The current research indicates that creativity is part of thinking and it is ongoing process. This study researches the impact of organisational environment on individual behaviours and on creativity. The findings will help managers to assess their creative climate and the creative process within their organisations.

At the completion of the thesis a summary of the findings will be made available on request. It will include the current organisational innovative climate, its impact on individual multitasking style, creative performance, and the recommendations for the organisation's future development.

The research I am undertaking is part of a thesis for the Masters of Management Studies degree at Victoria University. If you would like any further information, please contact either myself (telephone 0211008465, email maxiao@student.vuw.ac.nz) or Dr. Eric Chong (telephone 04 463 6942, email Eric.Chong@vuw.ac.nz) or Dr. Ofer Zwikael (telephone 04 463 5143, email ofer.zwikael@vuw.ac.nz)

I would be extremely grateful for your participation in this study. Thank you in advance for your time and consideration.

Yours sincerely,
Xiaofang Ma

Examining the effect of individual's polychronicity and supervisor's management style on creativity

QUESTIONNAIRE

For each item written below, please circle the most suitable answer according to the following scale:

Part A- Individual Multi-Tasking Style (Polychronicity) (7-Liket Scale)

Individual Multi-Tasking Style (Polychronicity)	Strongly Disagree							Strongly Agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1. I like to juggle several activities at the same time.														
2. I would rather complete an entire project every day than complete parts of several project.														
3. I believe people should try to do many things at once.														
4. When I work by myself, I usually work on one project at a time.														
5. I prefer to do one thing at a time.														
6. I believe people do their best work when they have many tasks to complete.														
7. I believe it is best to complete one task before beginning another.														
8. I believe it is best for people to be given several tasks and assignments to perform.														
9. I seldom like to work on many tasks or assignments at the same time.														
10. I would rather complete parts of several projects every day than complete an entire project.														

Part B- Supervisory Style

Supervisory Style	Strongly Disagree							Strongly Agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1. My supervisor helps me solve work-related problems.														
2. My supervisor encourages me to develop new skills.														
3. My supervisor keeps informed about how employees think and feel about things.														
4. My supervisor encourages employees to participate in important decisions.														
5. My supervisor praises good work.														
6. My supervisor encourages employees to speak up when they disagree with a decision.														
7. My supervisor refuses to explain his or her actions (reversed-coded).														
8. My supervisor rewards me for good performance.														
9. My supervisor always seems to be around checking my work (reversed-code).														
10. My supervisor tells me what shall be done and how it shall be done (reversed-coded).														
11. My supervisor never gives me a chance to make important decisions on my own (reversed-coded).														
12. My supervisor leaves it up to me to decide how to go about doing my job.														
13. My supervisor always provides me with clear structures when assigning me a new project.														

14. My supervisor always encourages me to learn new things.	1	2	3	4	5	6	7
15. My supervisor frequently consults me to ask for my opinion before making decisions.	1	2	3	4	5	6	7
16. In my organization, managers believe that time spent to reach collective decisions is valuable time.	1	2	3	4	5	6	7

Part C- Creative Self-Efficacy

Creative Self-Efficacy	<div> <i>Strongly Disagree</i> <i>Strongly Agree</i> </div>						
1. I feel that I am good at generating novel ideas.	1	2	3	4	5	6	7
2. I have confidence in my ability to solve problems creatively.	1	2	3	4	5	6	7
3. I have a knack for further developing the ideas of others.	1	2	3	4	5	6	7

Part D- Organisational Context

Organisational Context (Structure, control, and hierarch)	<div> <i>Strongly Disagree</i> <i>Strongly Agree</i> </div>						
1. It is very important to follow rules and procedures in my organisation.	1	2	3	4	5	6	7
2. At my place of work, power is in the hands of relatively few people.	1	2	3	4	5	6	7
3. My work environment is structured with all activities and projects carefully planned.	1	2	3	4	5	6	7
4. Procedures and structures are too formal in my organization.	1	2	3	4	5	6	7

Organisational Context (Support, interaction, communication and consultation)	<div>Strongly</div> <div>Strongly</div> <div>Disagree</div> <div>Agree</div>						
5. In my workgroup, people usually only share information with other team members if they see that doing so will lead to some personal benefit.	1	2	3	4	5	6	7
6. In my organisation, people do not usually share information with people in other workgroups unless they see an advantage for their own workgroup.	1	2	3	4	5	6	7
7. At work, I feel that I have a responsibility to share my expertise with others.	1	2	3	4	5	6	7
8. Success in my organisation requires initiative and providing ideas, more than commitment to rules and procedures.	1	2	3	4	5	6	7
Organisational Context (Risk-taking orientation)	<div>Strongly</div> <div>Strongly</div> <div>Disagree</div> <div>Agree</div>						
9. Top management does not want to take risks in my organization.	1	2	3	4	5	6	7
10. There is much emphasis in my organization on doing things the way we have always done them.	1	2	3	4	5	6	7
11. People are encouraged to take risks in my organisation.	1	2	3	4	5	6	7
Organisational Context (Atmosphere)	<div>Strongly</div> <div>Strongly</div> <div>Disagree</div> <div>Agree</div>						
12. I enjoy doing my work so much that I forget other things.	1	2	3	4	5	6	7
13. I feel a sense of time pressure in my work.	1	2	3	4	5	6	7

Organisational Context (Atmosphere)	Strongly Disagree							Strongly Agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14. There is truly an atmosphere of fun and playfulness at my workplace.														
15. There is free and open communication in my organisation.														
16. People are quite concerned about negative criticism of their work in my organisation.														
17. In my organisation, there is an atmosphere of caring about building up employees' skill and expertise.														
18. The members of my workgroup feel a strong sense of commitment to working for our organisation.														

Part E- Yourself

1. Your age (years)

<input type="checkbox"/> Under 20	<input type="checkbox"/> 20-35	<input type="checkbox"/> 36-50
<input type="checkbox"/> 51-65	<input type="checkbox"/> Over 65	

2. Educational level

<input type="checkbox"/> High School	<input type="checkbox"/> Bachelor's Degree	<input type="checkbox"/> Master's Degree
<input type="checkbox"/> Ph. D. Degree	<input type="checkbox"/> Others ____ (please specify)	

3. Your gender

<input type="checkbox"/> Female	<input type="checkbox"/> Male	
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4. How would you describe your ethnicity?

<input type="checkbox"/> NZ European / Pakeha	<input type="checkbox"/> Maori or Pacific Island	<input type="checkbox"/> Chinese
<input type="checkbox"/> Other European _____(please specify)	<input type="checkbox"/> Other Asian _____(please specify)	<input type="checkbox"/> Indian

5. Number of years worked in this organisation

<input type="checkbox"/> Less than 1	<input type="checkbox"/> 1-2	<input type="checkbox"/> 2-5
<input type="checkbox"/> 5-10	<input type="checkbox"/> Over 10	

6. Current Job Status

<input type="checkbox"/> Senior Management	<input type="checkbox"/> Junior Management	<input type="checkbox"/> Supervisor
<input type="checkbox"/> Non-managerial		

7. Number of year work in total

<input type="checkbox"/> Less than 1	<input type="checkbox"/> 1-2	<input type="checkbox"/> 2-5
<input type="checkbox"/> 5-10	<input type="checkbox"/> Over 10	

From: Maggie Teleki-Rainey <Maggie.Teleki-Rainey@vuw.ac.nz>
Subject: HEC approval
Date: Fri, 19 Oct 2007 09:31:22 +1300
To: <maxiao@student.vuw.ac.nz>
CC: <Eric.Chong@vuw.ac.nz> <Ofer.Zwikel@vuw.ac.nz>
Attachments: 0

Hello there,

I have your HEC application form entitled "Examining the joint effect between individual's polychronicity and supervisory style on creative self-efficacy". Although we have your supervisor's signatures and a Head of School signature, I need to have your signature too to be able to officially record it as approved.

Do you want to either drop by my office to sign the hard copy that I have or fax thru just the page that required signatures to 04 463 5436

Thanks.
Maggie.

Maggie Teleki-Rainey
Senior Administrator, Faculty Research
Room - RH 1205
Faculty of Commerce and Administration
Victoria University of Wellington
Te Whare Wānanga o te Ūpoko o te Ika a Māui
PO Box 600
Wellington 6140
New Zealand
Phone : + 64 4 463 5943
E-Mail : Maggie.Teleki-Rainey@vuw.ac.nz
Web : www.vuw.ac.nz



Please consider the environment before printing this e-mail

APPENDIX C: CODING OF BIO-DATA VARIABLES

1. Age (years)		2. Educational Level		3. Ethnicity	
[1]	Under 20	[1]	High School	[1]	NZ European/Pakeha
[2]	20-35	[2]	Bachelor's Degree	[2]	Maori or Pacific
[3]	36-50	[3]	Others	[3]	Chinese
[4]	51-65	[4]	Honour(s) Degree	[4]	Indian
[5]	Over 65	[5]	Masters' Degree	[5]	British, Australian or Other English spoken countries
		[6]	Ph.D. Degree	[6]	Other Asians
3. Gender		4. Number of years in this organisation		5. Current job status	
[1]	Male	[1]	Less than 1	[1]	Non-Management
[2]	Female	[2]	1 to 2	[2]	Supervisor
		[3]	2 to 5	[3]	Junior Management
		[4]	5 to 10	[4]	Senior Management
		[5]	Over 10		
6. Number of years work in total					
[1]	Less than 1				
[2]	1 to 2				
[3]	2 to 5				
[4]	5 to 10				
[5]	Over 10				

**APPENIX D: CODED ITEMS FOR
ORGANISATIONAL ENVIRONMENTAL FACTORS**

Organisational Structure	OCItem1	It is very important to follow rules and procedures in my organisation.
	OCItem2	At my place of work, power is in the hands of relatively few people.
	OCItem3	My work environment is structured with all activities and projects carefully planned.
	OCItem4	Procedures and structures are too formal in my organisation.
Interaction with co-workers	OCItem5	In my workgroup, people usually only share information with other team members if they see that doing so will lead to some personal benefit.
	OCItem6	In my organisation, people do not usually share information with people in other workgroups unless they see an advantage for their own workgroup.
	OCItem7	At work, I feel that I have a responsibility to share my expertise with others.
	OCItem8	Success in my organisation requires initiative and providing ideas, more than commitment to rules and procedures.
Risk-taking orientation	OCItem9	Top management does not want to take risks in my organisation.
	OCItem10	There is much emphasis in my organisation on doing things the way we have always done them.
	OCItem11	People are encouraged to take risks in my organisation.
A Trusting and caring atmosphere	OCItem12	I enjoy doing my work so much that I forget other things.
	OCItem13	I feel a sense of time pressure in my work.
	OCItem14	There is truly an atmosphere of fun and playfulness at my workplace.
	OCItem15	There is free and open communication in my organisation.
	OCItem16	People are quite concerned about negative criticism of their work in my organisation.
	OCItem17	In my organisation, there is an atmosphere of caring about building up employees' skill and expertise.
	OCItem18	The members of my workgroup feel a strong sense of commitment to working for our organisation.