The Relationship between Attachment Styles and Employee Creativity: Evidence from the Engineering Industry

By

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DECLARATION

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Doctor of Philosophy is entirely my own work, and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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FOR JONAH AND SAMUEL

You are the bows from which your children as living arrows are sent forth...
Let your bending in the archers hand be for gladness; For even as He loves the arrow that flies, so He loves also the bow that is stable. - Kahlil Gibran

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ABSTRACT

The main aim of this study is to examine the relationship between attachment styles and employee creativity. Attachment styles are relationship-based trait dispositions that reflect an individual's tendency to relate to others in relationships and differ by the degree of attachment anxiety (i.e. a negative view of self) and avoidance (i.e. a negative view of others). Attachment styles are believed to act as distal antecedents of creativity through their influence on employees' perception of their organisational social exchange relationships [i.e. leader-member exchange (LMX), team-member exchange (TMX), and perceived organisational support (POS)] and their information exchange behaviour. These intervening variables represent motivational and cognitive processes through which attachment styles influence employee creativity.

This study adopted a cross-sectional survey design to gather data from 192 engineering employee-supervisor dyads from 12 organisations in Ireland. The results from hierarchical regression analysis show that attachment anxiety and avoidance had a significant negative effect on employees' perception of TMX, POS and information exchange. However, only attachment avoidance exerted a significant negative effect on LMX. While TMX and LMX had a significant positive effect on information exchange, POS did not exert a significant effect. TMX and LMX fully mediated the effect of attachment avoidance on information exchange while TMX partially mediated the effect of attachment anxiety on information exchange. Social exchange relationships and information exchange had a significant positive effect on employee creativity. Moreover, the path from TMX and LMX to employee creativity was partially mediated by information exchange. The indirect effect of attachment avoidance and anxiety on employee creativity through TMX and information exchange behaviour was significant. Also, the indirect effect of attachment avoidance on employee creativity through LMX and information exchange was significant however not for attachment anxiety. Based on these findings, theoretical contributions and management recommendations are made and presented in-depth in the thesis.

CHAPTER ONE

INTRODUCTION AND OVERVIEW

1.1 INTRODUCTION

In a period of market globalisation, organisations are operating under conditions of uncertainty and change and recognise creativity as an important resource for market survival, competitive advantage, and long-term success (Amabile, 1997; Oldham & Cummings, 1996; Zhou & Shalley, 2008). Creativity enables organisations to adapt to changing conditions and respond to, and create, opportunities in the market to maintain growth and competitiveness (Shalley, Zhou, & Oldham, 2004).

This study focuses on engineering professionals across industries in Ireland and thus is particularly insightful for engineering-led organisations. A fundamental element of the engineering job role is the improvement of pre-existing systems and the development of new products, services, and processes (Griffin, 1997; Van Engelen, Kiewiet, & Terlouw, 2001). As engineers typically work in interdependent multi-disciplinary settings, relationship functioning and the flow of information can be conceived as a pre-requisite for optimal performance (Kratzer, Leenders, & Van Engelen, 2008). Rapid technological advancement, global competition, and economic uncertainty drive organisations to improve their creative capabilities (Reiter-Palmon & Illies, 2004). Peter O'Neill, Managing Director of IBM Ireland, posits that engineering-led organisations need to centre their attention on creativity and adaptability to successfully deal with the current change of pace in industry (Jackson, 2012). However, a nationwide study conducted by Engineers Ireland in 2011 reports that 78% of engineering professionals believe that Ireland is not allocating ample funds to boost innovation to support economic recovery.[1]

[1] A total of 2,212 engineering professionals participated in this study and represent 15% of the engineering population in Ireland.

P.J. Rudden, President of Engineers Ireland, called attention to this and the need for Irish engineers '*to prove their value as innovators and creators'*:

> *"Engineers in Ireland have an enormous opportunity in economically stagnated economies to prove their value as innovators and creators… people expect originality, ingenuity, and novelty from new or improved products and services. This presents the engineer with a challenge and even an opportunity to prove the added value of creativity and innovation." (Engineers Ireland Conference* 'Engineering Enterprise in Times of Change' keynote address; April, 2012, Belfast)

Engineering solutions are believed to have an important impact on the economy and society through the production and development of creative innovations (DeJong, Rhe, Mourtos, 2005). Thus, maximising engineer's creative potential is not only critical for Ireland's local infrastructure and economy but our competitive position and attractiveness in the global market. Given the value of this key organisational resource, both practitioners and researchers alike are seeking out factors that promote or inhibit this behaviour. To date, research has unearthed a variety of personal and contextual factors that influence employee creativity. While this research has been successful in identifying personal dispositions that relate to higher levels of creative performance, aspects of the individual that inhibit creativity is under-represented. This study aims to fill this void by considering the role of employee attachment styles (i.e. attachment anxiety and avoidance) as distal antecedents of creativity. High levels of attachment anxiety and avoidance are believed to predispose employees to unfavourably evaluate their workplace relationships at the supervisor, work group, and organisational level and hinder their information exchange and creativity. In considering attachment styles, the study can explain why some employees are less creative than others and the complex relational process through which this happens. To the author's knowledge, no previous study has explored the link between attachment styles and employee creativity. This study provides a comprehensive understanding of attachment dynamics active in organisations and the implications of this for relationship development, information exchange, and creativity. Knowledge stemming from this study enables organisations to add value to their existing resources by harnessing their creative capacity and competitive position in a dynamic changing marketplace.

In this chapter, an overview of the research conducted in this study is provided. To set the stage, a definition of attachment styles is provided. Next, the main objectives of the study are presented. This is followed by a graphical depiction of the theoretical model and a summary table of the research hypotheses. The significance of the present study is also discussed. Finally, the chapter concludes with an overview of the structure of the thesis.

Attachment styles are relationship-based trait dispositions that reflect an individual's propensity to relate to others in relationships (Richards & Hackett, 2012). These dispositional traits consist of cognitive-affective-motivational schemas that shape expectations, evaluations, and behavioural tendencies in relationships (Collins & Feeney, 2004). Individual differences in attachment typically arise from early experiences of caregiver availability (secure style), inconsistency (anxious style), or consistent unavailability (avoidant style). However, attachment styles can also be influenced by critical incidences later in life (Bowlby, 1988; Davila, Bradbury, Cohan, & Tochluk, 1997). In adulthood, an individual's attachment style generally stabilises (Mikulincer & Shaver, 2005) and is best conceptualised in dimensions of anxiety and avoidance (Brennan, Clark, & Shaver, 1998).

Adults high in attachment anxiety possess a negative view of self and a strong need for interpersonal support and closeness. However, anxious adults tend to be preoccupied about the inconsistent availability of others and fear rejection or abandonment (Brennan *et al.*, 1998; Mikulincer & Shaver, 2005). In contrast, adults high in attachment avoidance possess a negative view of others, are uncomfortable with relational dependency, and suppress their attachment needs in preference for self-reliance (Brennan *et al.,* 1998; Mikulincer & Shaver, 2005). Finally, secure adults possess low levels of both attachment anxiety and avoidance and thus are confident about the availability of support from others and approach relationships in an optimistic manner (Brennan *et al.,* 1998; Mikulincer & Shaver, 2005).

Table 1.1: Definition of Key Concepts

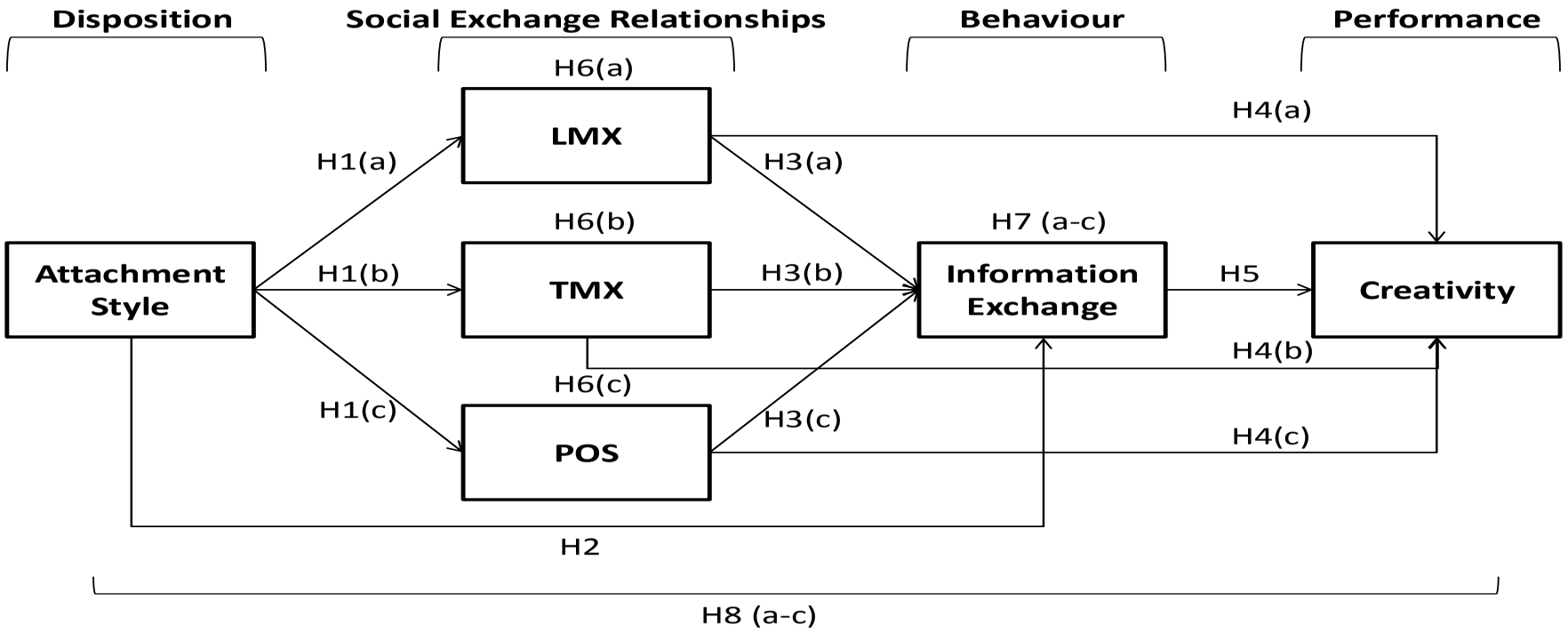
Concept	Definition
Attachment Style	A relationship-based trait disposition that reflects an individuals propensity to relate to others (Richards & Hackett, 2012) and differs by the degree of attachment anxiety (negative view of self) and avoidance (negative view of others) (Bartholomew & Horowitz, 1991; Brennan *et al.,* 1998).
Leader-member exchange	The quality of the dyadic social exchange relationship between supervisors and subordinates (Graen, Dansereau, Minami, & Cashman, 1973).
Team-member exchange	*'An individual's perception of his or her exchange relationship with the peer group as a whole'* (Seers, 1989: 119).
Perceived organisational support	An employee's perception of the degree to which their organisation values their contribution and cares about their wellbeing (Eisenberger, Huntington, Hutchinson, & Sowa, 1986).
Information exchange	'[The] *conscious and deliberate effort to exchange work-related information, expertise, knowledge, and ideas within and outside the work unit*' (Gong, Cheung, Wang, & Huang, 2010: 2).
Employee Creativity	The generation of domain specific novel and useful ideas, products, or procedures (Amabile, 1988; Ford, 1996; Oldham & Cummings, 1996).

1.2 OBJECTIVES OF THE RESEARCH

The main objective of this study is to examine the relationship between attachment styles and employee creativity. Given the relational orientation of attachment, this relationship is believed to be an indirect one through employees' perception of the quality of their organisational social exchange relationships (i.e. leader-member exchange, team-member exchange, and perceived organisational support) and information exchange behaviour. The study proposes a sequential mediation path such that attachment styles influence relationship perceptions which determine the level of information exchange and in turn creative performance. In doing so, the study considers motivational (i.e. social exchange relationships) and cognitive (i.e. information exchange) factors as part of the process through which attachment styles indirectly influence creativity (Gong *et al.*, 2010).

To explain the role of attachment styles in employee creativity, the study adopts Ford's (1996) theory of creative action as an interpretative framework. Ford proposes that an employee's sensemaking is a critical component of the process leading to creative action. The sensemaking process involves the extraction of social cues from the environment to make sense of a situation through subjective interpretation and meaning ascription (Ford, 1996; Weick, 1995). As attachment styles are relational schemas, these traits may play a significant role in guiding employees' subjective interpretation of their relational environment. Through this, attachment styles are believed to influence employees willingness to exchange information, and in turn, their creative behaviour. The theoretical model depicting the hypothesised relationships is presented in Figure 1.1 on the next page.

Figure 1.1: Theoretical Model of the Present Study



LMX: Leader-member Exchange
TMX: Team-member Exchange
POS: Perceived Organisational Support

1.3 RESEARCH HYPOTHESES

Table 1.2 below provides a summary of the eight research hypotheses that test the research model developed in the present study.

Table 1.2: Summary of Research Hypotheses

H1:	Both attachment anxiety and avoidance will have a negative relationship with a) LMX, b) TMX, and c) POS.
H2:	Both attachment anxiety and avoidance will have a negative relationship with information exchange.
H3:	a) High quality LMX will have a positive relationship with information exchange. b) High quality TMX will have a positive relationship with information exchange. c) High quality POS will have a positive relationship with information exchange.
H4:	a) High quality LMX will have a positive relationship with employee creativity. b) High quality TMX will have a positive relationship with employee creativity. c) High quality POS will have a positive relationship with employee creativity.
H5:	Information exchange will have a positive relationship with employee creativity.
H6:	The effect of attachment anxiety and avoidance on information exchange will be mediated by a) LMX, b) TMX, and c) POS.
H7:	Information exchange will mediate the relationship between: a) LMX and employee creativity, b) TMX and employee creativity, c) POS and employee creativity.
H8:	Both attachment anxiety and avoidance will have an indirect effect on employee creativity through: a) LMX and information exchange, b) TMX and information exchange, c) POS and information exchange.

1.4 SIGNIFICANCE OF THE PRESENT STUDY

The most significant aspect of the present study lies in its contribution to the organisational creativity field. A number of studies have advanced our understanding of the important role of employees' personal characteristics for creative performance (e.g. Fuller & Marler, 2009; George & Zhou, 2001; Gong *et al.,* 2010; Kim, Hon, & Grant, 2009; Kim, Hon, & Lee, 2010; Oldham & Cummings, 1996; Zhou, 2003; Zhou & Oldham, 2001). This study aims to contribute to this work by considering attachment styles as an alternative personal disposition that impact employee creativity. In this literature, few studies have considered the role of employees' sensemaking in the process that leads to creativity (e.g. Farmer, Tierney, & Kung-McIntyre, 2003; Madjar, Greenberg, & Zheng, 2011; Tierney & Farmer, 2004; Unsworth & Clegg, 2010). Ford's (1996) theory argues that employees' subjective interpretation of their social environment plays a central role in shaping their reality and creative action. The present study proposes that attachment styles act as an antecedent to this sensemaking process by guiding employees' interpretation and evaluation of social exchange relationships which in turn influences their information exchange and creativity. In doing so, the study develops this theoretical perspective of creativity that is underdeveloped in comparison to other creativity theories [i.e. Amabile (1996) and Woodman, Sawyer, & Griffin (1993)].

1.4.1 The Significance of Attachment for Employee Creativity

John Bowlby (1969), in his theory of attachment, suggests that attachment and exploration are interconnected components in the behavioural system and act as a fundamental source of motivation. Despite this contention, adult attachment research that progressed from Bowlby's theory focuses largely on the influence of attachment in relationship functioning while the attachment-exploration link has received minimal empirical attention. In the 1990's however a collection of scholars began to test the attachment-exploration hypothesis in adulthood. The findings that emerged from this

research provide initial support for Bowlby's hypothesis. Overall, it appears that variability in curiosity, novelty seeking, creative problem-solving, and exploratory interest fluctuates based on an individual's attachment style (Aspelmeier & Kerns, 2003; Elliot & Reis, 2003; Green & Campbell, 2000; Johnston, 1999; Mikulincer, 1997; Mikulincer & Sheffi, 2000). Attachment insecurities (i.e. attachment anxiety and avoidance) are related to lower levels of creativity-related activities which is a consequence of their preoccupation with relationships. In contrast, the positive relationship between secure attachment and creativity-related activities suggests that secure adult's internalised sense of security provides them with the cognitive freedom and ability to focus on personal growth and exploration.

Why is this relevant to the organisational creativity scholar?

Organisational creativity researchers have arrived at a consensus regarding the important role of personal characteristics and the social environment for employee creativity (Amabile, 1996; Ford, 1996; Woodman *et al.,* 1993). Creativity is no longer viewed as something that exists within a person but is a product of their interaction with the social domain. In the attachment field, researchers have provided compelling evidence for the fundamental role of attachment styles in explaining variance in relationship functioning (Mikulincer & Shaver, 2007). Given the relational orientation of attachment styles and preliminary evidence for the attachment-exploration link, this study argues that attachment styles may explain why some employees are more creative than others and investigates the complex relational process through which this happens.

How does it happen?

To explain the process through which attachment styles impact employee creativity the study adopts Ford's (1996) theory of creative action as an interpretive framework. According to Ford's (1996) theory, employees' sensemaking process plays a fundamental role in informing their decision to take creative action. In this process, the interpretation and derived

meaning of social cues from the environment contribute to the formation of expectations and perceived personal consequences of creative action. Expectations consist of the perceived receptiveness of the environment and capability beliefs regarding the success of their creative action. Based upon this subjective evaluative process, an individual decides whether or not to pursue creative action. In this study, attachment styles are viewed as an antecedent to this sensemaking process by guiding employees' selection and interpretation of social cues from the environment. Specifically, it is proposed that insecure attachment styles predispose employees' negative interpretation and evaluation of their social exchange relationship quality which in turn influences the formation of unfavourable expectations and perceived consequences of their creative action. The study also considers information exchange as an explanatory cognitive process through which attachment styles and social exchange relationships influence creativity.

Why hasn't this been explored until now?

This is a consequence of two things. Firstly, the attachment-exploration link has received limited empirical attention in the attachment field. Thus, it is unlikely that organisational creativity researchers have heard the calls of these few voices. Secondly, there appears to be a lack of conversation between attachment and organisational behaviour field. However, this bridge is building following the seminal work of Hazan and Shaver (1990) - *Love and Work.* Since, there has been a surge of theorising and empiricism that considers the role of attachment styles in organisational behaviour most predominantly in the leadership field. This research shows that attachment styles play a significant role in shaping employees' leadership perceptions and preferences among other behavioural outcomes. As research in this area is building, organisational creativity scholars have developed theories of creativity unaware of explanatory potential of attachment styles for employee behaviour. Thus, the richness of this study is in its empirical exploration of the relationship between attachment styles and creativity. In explaining the process through which attachment styles

impact creativity another significant aspect of the study can be found in its contribution to the social exchange and knowledge sharing fields.

1.4.2 Other Significant Aspects of the Study

This study offers significant insights to the social exchange and knowledge sharing literatures. The relationship between attachment styles and leader-member exchange (LMX) perceptions has been considered in a recently published study (i.e. Richards & Hackett, 2012). The current study builds on this enquiry by examining the effect of attachment styles on LMX perceptions in a sample of Irish engineers. To the author's knowledge no prior work has explored the effect of attachment styles on team-member exchange (TMX) and perceived organisational support (POS). In both these fields, research is extremely underdeveloped in the consideration of personal dispositions. This study is significant as it fills this void by considering the relevance of attachment styles for shaping employees' construal of these relationships. In doing so, the study also responds to Harms' (2011) call who states that excellent opportunities exist in exploring the relationship between employee attachment styles and POS.

In general, knowledge sharing literature tends to focus predominantly on organisational factors as antecedents to this behaviour (Matzler, Renzl, Muller, Herting, & Moordian, 2008). However, research has begun to examine the relationship between personal dispositions and knowledge sharing behaviour and intentions. The present study is the first to consider the role of attachment styles in influencing employees' willingness to engage in information exchange behaviour. Also, this study considers social exchange relationships as mediating mechanisms through which attachment styles influence information exchange. No research to date has examined the mediating role of these relationships for explaining the path through which attachment styles influence employee behaviour.

The influence of social exchange relationships on employee creativity has also received limited research attention. While some researchers have studied the effect of LMX on employee creativity, the results have been conflicting and they call on other scholars to explore this link. An extensive search of the literature revealed a single published study that considers TMX as a determinant of employee creativity (i.e. Liao, Liu, & Loi, 2010). This study builds on Liao and colleagues (2010) work and furthers it by examining information exchange as an alternative pathway through which TMX influences creativity. The present study's significance is also demonstrated in its enquiry into the relationship between POS and employee creativity. Though two prior studies have explored this relationship (i.e. Eisenberger, Fasolo, & Davis-Lamastro, 1990; Khazanchi & Masterson, 2011), their findings have been contradictory. Thus, this study builds on this work by exploring the relationship in an Irish engineering context. Finally, by examining the indirect path from social exchange relationships to employee creativity through information exchange this study extends the work of Khazanchi and Masterson (2011) by considering the giving and receiving of information within and outside one's work unit. Also, the study responds to Gong and colleagues (2010) calls to further examine the relationship between information exchange and creativity.

1.5 STRUCTURE OF THE THESIS

This thesis consists of eight chapters and is structured as follows. *Chapter two* provides a review attachment theory and research that has linked attachment styles to organisational behaviour and creativity-relevant constructs. *Chapter three* presents a definition of employee creativity, an overview of the major creativity theories, and previous research that examines personal and social determinants of employee creativity. *Chapter four* provides an overview of the literature pertaining to the mediating mechanisms considered in this study: organisational social exchange

relationships and information exchange behaviour. *Chapter five* presents the theoretical framework underlying the present study and literature reviewed in the preceding chapters is integrated to produce the research hypotheses. *Chapter six* outlines the study's research methodology. This includes an overview of the philosophical foundations, the research process, the psychometric properties of the measurement instruments used, and control variables included in the study. An overview of the data analysis strategy employed to test the research hypotheses is also provided. *Chapter seven* presents the results stemming from this data analysis. Finally, *chapter eight* consists of a discussion of the study's findings and offers a host of contributions to theory and recommendations for management practice. The chapter concludes with an overview of the limitations and recommendations for future research.

1.6 CONCLUSION

This chapter provided an overview of the study and an introduction to attachment styles. The research objectives were clarified and a graphical depiction of the theoretical model and a summary of the hypotheses were presented. This was followed by a discussion of the significance of the study and an outline of the thesis structure was presented. In the next chapter, literature relating to attachment theory is reviewed.

CHAPTER TWO

ATTACHMENT THEORY

2.1 INTRODUCTION

This chapter begins with an overview of the foundations of attachment theory and the development of this theory in contemporary literature. This is followed by a definition of attachment styles and the different perspectives of attachment taken in research (i.e. a trait or psychological state). A discussion on adult attachment styles and the different regulatory strategies underlying these is provided. Next, the ongoing debate regarding the stability of attachment styles is considered. Previous research that examines the role of attachment in organisational settings is also reviewed. The chapter concludes with an overview of work that links attachment styles to creativity relevant constructs.

2.2 THE FOUNDATIONS OF ATTACHMENT THEORY

Attachment theory is considered to be one of the most influential theories in psychology and has been the focus of hundreds of articles and several books (Fraley & Shaver, 2000; Mikulincer & Shaver, 2007; Rholes & Simspon, 2004). According to Fraley and Shaver (2000: 1), this popularity stems from its ability to explain *'the development, maintenance, and dissolution of close relationships while simultaneously offering a perspective on personality development, emotion regulation, and psychopathology'*. The theory also offers an integrated perspective of individual differences by drawing upon diverse fields such as ethology, physiological psychology, control systems theory, developmental psychology, cognitive science, and psychoanalysis (Fraley & Shaver, 2000).

John Bowlby (1969) developed his theory of attachment to explain the origin, function, and development of children's early socio-emotional behaviour. When children are separated from their primary attachment figures (i.e. caregivers or parents) a normative sequence of action takes place that differentiates children in terms of their separation anxiety and coping mechanisms (Bowlby, 1969). Bowlby (1988) argued that children draw upon evolved behaviours with the purpose of maintaining proximity to their attachment figure to ensure protection and comfort and thus satisfy their survival and social needs (Fraley, 2002; Kirkpatrick, 1998). The presence of a security enhancing attachment figure provides three main functions: comfort of being physically or psychologically close, a safe haven in times of distress, and a secure base from which exploration can occur (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth, 1989). The provision of security helps a child overcome anxiety in times of distress and acts as a catalyst for personal growth (i.e. the pursuit of their goals in a safe and non-threatening environment) (Fraley, 2002; Hazan & Zeifman, 1994). As a child matures, their attachment behavioural system focuses more on securing psychological closeness and outgrows the need for physical proximity (Shaver & Hazan, 1988).

2.2.1 Attachment Styles in Early Childhood

Mary Ainsworth, a student of Bowlby's, led a controlled experiment called the *strange situation technique* to test Bowlby's theory (Ainsworth *et al.*, 1978). This experiment involved placing a 12 month old infant and mother in a room to play and interact with various toys. After a period of time, an adult stranger enters the room and the parent exits immediately. During this period of separation, the duration of the infants expressed distress and ability to adapt to the adult stranger in the absence of their caregiver was observed. Upon the parents return, infants' response to the reunion varied as predicted by Bowlby's normative attachment behavioural system. While the majority infants expressed a normative degree of separation anxiety, variation existed in their behavioural response to the reunion. Ainsworth referred to these patterned differences as secure, anxious/ambivalent, and avoidant attachment styles (Hazan & Shaver, 1994; Main, 1990).

Upon reunion with the caregiver, secure children were comforted without difficulty and reassumed exploratory play. This healthy response to separation is believed to result from their experience with a consistent, responsive, and available caregiver (Main, 1990). In contrast, anxious/ambivalent children appeared overwhelmed by separation anxiety, had difficulties being soothed by their caregiver, and did not resume play. Instead, they exhibited behaviours such as anger, anxiety, and hostility towards their caregiver. In the event of prolonged caregiver absence, the anxious child experienced burnout leading to despair, withdrawn, and vacant behaviour (Hazan & Shaver, 1994). This behavioural response is believed to be a consequence of inconsistent caregiver availability, responsiveness, and support (Main, 1990). Finally, the avoidant child appeared unaffected by their caregivers' absence and showed little distress. Upon reunion, the child avoided eye contact and physical closeness which is a consequence of consistent caregiver unavailability and non-responsiveness (Main, 1990). Ainsworth and colleagues (1978) concluded that these different behavioural reactions reflect an adjusted behavioural system which is formed based upon the quality of caregiver supportiveness. Later, Main and Solomon (1990) added a disorganised/disorientated attachment style. This style is characterised by awkward behaviour and fluctuations between the other insecure attachment styles (Main & Solomon, 1990). According to Bowlby (1979: 129), *'attachment behaviour is held to characterise human beings from the cradle to the grave'*. This resulted in a surge of research examining adult attachment patterns.

2.3 DEVELOPMENTS IN CONTEMPORARY ATTACHMENT THEORY

In the 1980's, two independent streams of research began to examine adult attachment styles: developmental psychology and social psychology. Though these separate fields focus on individual differences, they are premised on different underlying assumptions and differ in two fundamental ways. Firstly, these research streams focus on different domains. Developmental psychologists focus on retrospective interpretations of the parent-child relationship while the social psychological approach focuses on recent relationship experiences in adulthood

(Bartholomew, 1990). Social psychologists conceptualise attachment styles as a general expectation and preference in adult relationships which guide a person's information processing and behavioural patterns (Lopez, 2003). Methodologically, developmental psychologists use clinical interviews via the adult attachment interview (AAI) to access the parent-child relationship while social psychologists use self-report measures to access attachment-related thoughts, feelings, and attitudes in adult relationships (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010).

Secondly, developmental psychologists assume that adult attachment is not fully conscious and vulnerable to defence distortion. Thus, a qualitative enquiry that facilitates an objective assessment by independent raters is used in developmental psychology. Social psychologists argue that attachment styles can be reliably reported using self-report measurement instruments to describe relationship patterns (Bartholomew, 1990; Lopez, 2003). Bartholomew and Moretti (2002) suggest that self-report measures reliably access attachment styles in normative populations where respondents are not overwhelmed by the intensity of insecurity found in clinical samples. Moreover, self-report measures access feeling and behaviours about relationships that act as convenient surface indicators of an individual's underlying attachment style (Shaver & Mikulincer, 2007). The use of self-report measurement instruments also facilitates a wider application given the ease of administration and does not require expertise training for analysis (Reese, Reese, Kieffer, & Briggs, 2002). As a result, self-report measures tend to be the most predominant method of accessing attachment styles in research (Mikulincer & Shaver, 2007). Consistent with previous research, this study aligns with the social psychological view and adopts a self-report measure to access attachment styles.

2.4 WHAT ARE ADULT ATTACHMENT STYLES?

In the present study, adult attachment styles are defined relationship-based trait dispositions that reflect an individual's propensity to relate to others (Richards & Hackett, 2012). In adulthood, attachment styles differ based on two underlying dimensions: attachment anxiety and avoidance (Brennan *et al.*, 1998). Individuals higher in attachment anxiety possess a negative view of self, a strong dependency on the support and acceptance from others, and are insecure about rejection in relationships (Brennan *et al.*, 1998; Mikulincer & Shaver, 2005). Those higher in attachment avoidance possess a negative view of others, a discomfort with relational intimacy, and thus avoid interpersonal relationships in preference for self-reliance (Brennan *et al.*, 1998; Mikulincer & Shaver, 2005). Individuals low in both attachment anxiety and avoidance are believed to possess a secure attachment style and view relationships with a healthy and optimistic manner (Brennan *et al.*, 1998). Attachment styles are distinct both theoretically and empirically from broad personality traits such as the Big Five personality traits and have been shown to explain variance above and beyond these traits (Mikulincer & Shaver, 2007; Noftle & Shaver, 2006; Shaver & Brennan, 1992).

2.4.1 A Trait or Psychological State?

A fundamental assumption of attachment theory is that in adulthood attachment styles are stable dispositional traits that reflect an individual's propensity to relate to others (Fraley, Vicary, Brumbaugh, & Roisman, 2011). Though the majority of researchers adopt this view (e.g. Harms, 2011; Keller-Hansbrough, 2012; Mikulincer & Shaver, 2003; Noftle & Shaver, 2006; Richards & Hackett, 2012; Shaver & Mikulincer, 2005), issues relating to the stability of attachment styles has led to the development of another perspective. These researchers query whether attachment styles are context sensitive (i.e. state-like) rather than stable (i.e. traits) and relationship specific rather than global (Finkel, Burnette, & Scissors, 2007). From this, two perspectives have emerged- trait versus state models of attachment (Fraley *et al.*, 2011). From the state perspective, attachment styles are viewed as an emotional state that reflects an individual's response to a specific relationship

(Waters, Crowell, Elliott, Corcoran & Treboux, 2002). This view suggests the possibility that individuals can possess different attachment styles in different relationships (Baldwin & Fehr, 1995). Kobak (1994) also argues that attachment styles and relational experiences can reciprocally influence each other. In contrast, the trait approach builds on Bowlby's (1973) view that attachment develops into a relatively stable trait in adulthood, Ainsworth and colleagues (1978) typology of infant attachment styles, and Hazan and Shaver's (1987) application of these attachment styles to explain adult relationships (Finkel *et al.*, 2007). In adulthood, attachment styles are believed to be generally resistant to change (Bargh & Chartrand, 1999; Hazan & Shaver, 1987; Sroufe, Egeland, & Kreutzer, 1990). However, the trait perspective does acknowledge the possibility for change under strong situations and psychotherapy (Davila *et al.,* 1997). In line with this perspective, the present study defines attachment styles as trait dispositions that reflect a person's dispositional belief and expectations in relationships in general (Richards & Hackett, 2012). The attachment measure adopted in this study (i.e. the Attachment Style Questionnaire- Short Form; Alexander, Feeney, Hohaus, & Noller, 2001) reflects this view and accesses attachment styles in relationships in general.

2.5 ATTACHMENT STYLES IN ADULTHOOD

Bowlby's theory of attachment and empirical developments that followed (i.e. Ainsworth *et al.,* 1978) provided a theoretical base for research in adult attachment. While Bowlby and Ainsworth focused mainly on childhood attachment, they believed that attachment dynamics are also evident in adulthood. However, this was not explored empirically until the work of Hazan and Shaver (1987). Hazan and Shaver applied Ainsworth's attachment typology to adult romantic relationships and classified adults into three attachment categories: secure, anxious, and avoidant attachment style. From their research, the authors found that secure adults express more positive descriptions of their childhood relationships with their parents than their insecure peers. Moreover, secure adults experience happy, friendly, and trusting romantic relationships; hold positive

beliefs about love; view relationship development optimistically; and typically maintain longer relationships (Hazan & Shaver, 1994). In contrast, anxious adults described their experience in relationships as involving obsession, lacking reciprocation, and express exaggerated emotional responses such as jealousy and possessiveness when they perceived a potential threat to their relationship. These individuals also experience multiple relationships which rarely lasted long-term (Hazan & Shaver, 1994). In contrast, avoidant adults reported a fear of intimacy, distrust, and frequent withdrawal from their partner. Their experience of romantic relationships is rare and/or inconsistent (Hazan & Shaver, 1994).

Hazan and Shaver's (1987) seminal work provided researchers with a strong foundation to further investigate attachment in adulthood. However, a limitation of their work was their failure to acknowledge the variation among people within each attachment category (Mikulincer & Shaver, 2007). Levy and Davis (1988) used continuous ratings of Hazan and Shaver's (1987) attachment categories and found that secure and avoidant attachment were more negatively correlated than secure and anxious attachment. The authors concluded that a two-dimensional structure may better represent individual differences in attachment. Consistent with these observations, Brennan and colleagues (1998) analysis confirmed the existence of two higher order factors across attachment measures- attachment anxiety and avoidance. These authors found that prior work adopting a categorical typology of attachment could be conceptualised within this two dimensional space (i.e. Ainsworth *et al.*, 1978; Collins & Read, 1990; Hazan & Shaver, 1987). Fraley and Waller (1998) endorse the dimensional approach and argue that an examination of individual differences within a two dimensional space represents the underlying structure of attachment more accurately than the categorical approach. Contemporary researchers examining adult attachment generally adopt this two dimensional approach as it is considered the most effective means of accessing sensitive difference across individuals (Brennan *et al.*, 1998; Fraley & Waller, 1998; Harms, 2011; Mikulincer & Florian, 2000; Shaver & Mikulincer, 2004). In line with the direction that attachment research has taken, the present study conceptualises individual differences in attachment in terms of these two dimensions.

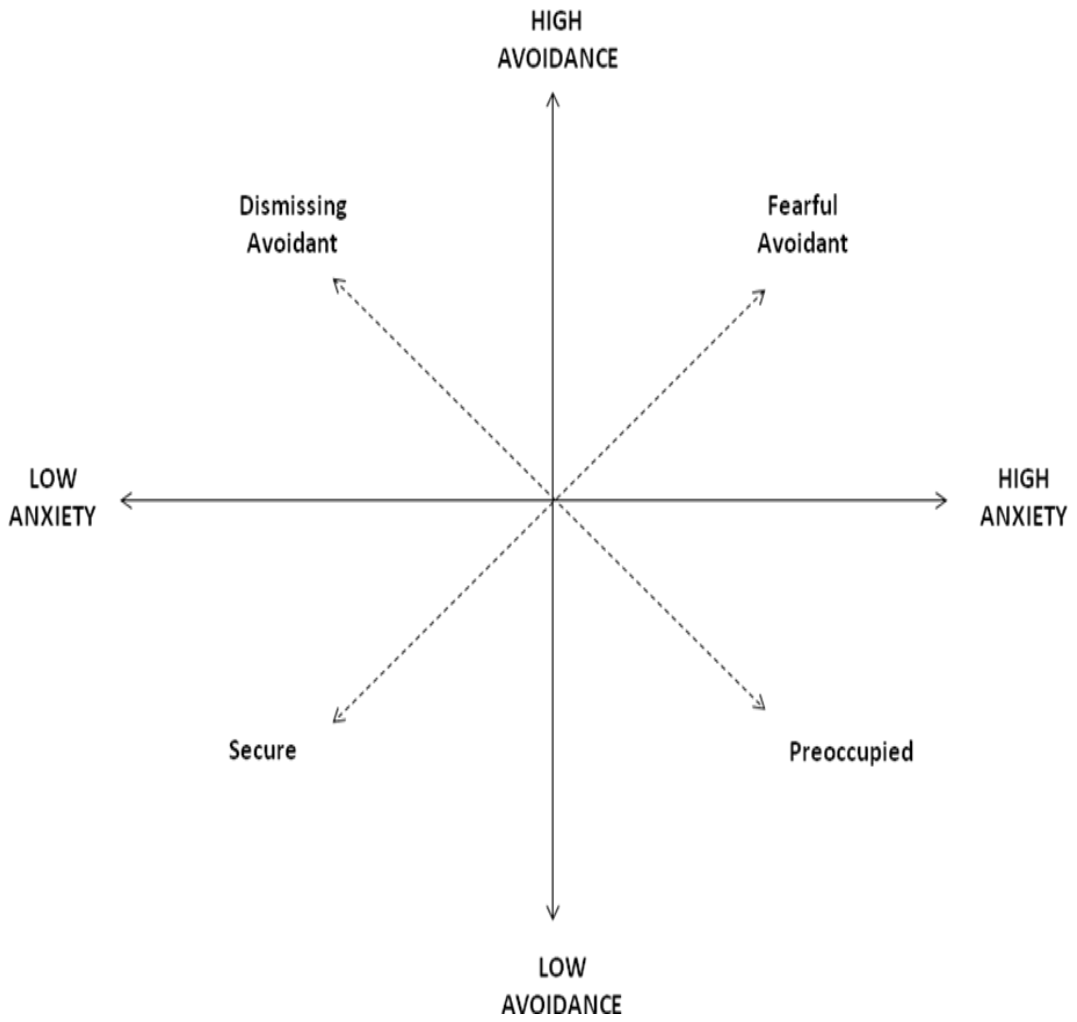
2.5.1 Two-dimensional Conceptualisation of Attachment

The first dimension, attachment anxiety, reflects an individual's *view of self in relation to others* and ranges on a continuum from positive to negative perceptions. Individuals high in attachment anxiety posses a negative view of self. These individuals view themselves as unworthy and worry about the availability of others in times of need (Bartholomew & Horowitz, 1991; Brennan *et al.*, 1998). Moreover, anxious adults possess a strong need for approval and intimacy and fear others will reject them (Feeney, Noller & Hanrahan, 1994). Anxious adults are more social than their avoidant peers however this is driven primarily by a self-serving motive to satisfy their attachment needs (Bartholomew & Horowitz, 1991). Low self-esteem and fear of rejection is synonymous with this attachment style (Collins & Read, 1990; Feeney & Noller, 1990). The avoidance dimension represents an individual's *view of others in relation to self* and ranges from positive to negative perceptions. Individuals high in attachment avoidance generally view others as untrustworthy, unavailable, and unresponsive (Mikulincer & Shaver, 2005). Bartholomew (1990) suggests that different combinations of these two attachment dimensions produce four categories: secure, preoccupied, and dismissive and fearful avoidant.

Individuals low in both attachment anxiety and avoidance are defined as secure adults and hold positive views of self and others. Secure adults are comfortable with intimacy and autonomy, view others as trustworthy and responsive, feel well liked by others, and possess relatively high self-esteem (Bartholomew, 1990; Brennan *et al.*, 1998). Preoccupied adults possess a negative self view and positive view of others which creates an over dependence in others and consistent need for affirmation which manifests as clingy behaviour (Bartholomew, 1990; Bartholomew & Horowitz, 1991). Bartholomew (1990) sub-divided avoidant adults into two categories depending on their level of anxiety and avoidance. Dismissive avoidant adults possess positive views of self and a negative view of others (Bartholomew, 1990). As a consequence, these individuals tend to be dismissive of intimacy, often withdraw from social interaction, and place less importance in their emotional experiences (Bartholomew, 1990). In times of emotional distress, they revert to self-reliant, albeit dysfunctional, coping mechanisms and obviate the need for social

support (Collins & Feeney, 2000; Guerrero, 1996). Finally, fearful avoidant adults possess a negative view of self and others resulting in conflicted needs and behaviour. Despite their desire to form close bonds, their general negative view others cause them to fear intimacy due to the perceived consequences of closeness and reliance in others (Mikulincer & Shaver, 2007). As a result, they exhibit confused disorganised behaviours of both social avoidance and clinginess (Bartholomew & Horowitz, 1991). Bartholomew's (1990) model provides a means of conceptually interpreting the interplay between the two attachment dimensions-anxiety and avoidance. Figure 2.2 below graphically depicts Bartholomew's (1990) model and is adapted from Mikulincer and Shaver (2007).

Figure 2.2: Two Dimensional Conceptualisation of Attachment



Source: Mikulincer and Shaver (2007: 89)

2.5.2 Regulatory Strategies underlying Attachment Styles

Adult attachment styles are believed to be underlined by different attachment related regulatory strategies. These strategies develop with a regulatory goal in mind and cognitive and affective processes are shaped to facilitate this goal attainment (Mikulincer, Shaver & Pereg, 2003). Mikulincer and colleagues (2003) identify unique strategies associated with the different attachment styles. Anxious adults (i.e. those who possess a negative self-perception) engage in hyperactivating strategies with the goal of seeking proximity to others to alleviate attachment related distress (Mikulincer *et al.,* 2003; Shaver & Mikulincer, 2002). These strategies involve hypervigilant appraisals of social and emotional cues to detect potential threats (i.e. rejection) to their relationships (Shaver & Mikulincer, 2002). As a result of this hypervigilance, anxious adults develop exaggerated beliefs regarding the negative consequences of attachment unavailability and/or relational rejection. This manifests behaviourally as over-dependence, controlling behaviour, and a strong desire for others to reciprocate (Shaver & Mikulincer, 2002).

A deactivating regulatory strategy is synonymous with avoidant adults (i.e. those who possess a negative view of others). Avoidant adults believe that seeking proximity to others is futile and thus possess a primary goal to suppress or deactivate their attachment needs to avoid further distress due to attachment unavailability (Mikulincer *et al.*, 2003; Shaver & Mikulincer, 2002). To cope with this attachment related distress, avoidant adults develop defensively inflated self-conceptions and devalued perceptions of others (Mikulincer *et al.*, 2003). This manifests as a preference for self-reliance and avoidance of emotional involvement, intimacy, and dependency in relationships (Mikulincer *et al.*, 2003). Fearful adults' negative view of self and others creates a simultaneous desire for closeness and distrust in others. Thus, fearful avoidant adults tend to possess a disorganised attachment-related strategy which sways between hyperactivating and deactivating strategies (Mikulincer *et al.*, 2003). This results in an open attachment system while their behavioural strategies suggest deactivation (Shaver & Mikulincer, 2002).

In contrast, secure adults develop effective coping mechanisms to deal with distress, due to their internalised sense of security, and are more resilient than their insecure peers (Mikulincer *et al.*, 2003). Secure adults access a 'secure base script' in times of distress which consists of three main coping mechanisms: the acknowledgement and display of distress (emotion-focused), support seeking (problem-focused), and engagement in instrumental problem-solving (problem-focused) (Mikulincer *et al.*, 2003). These are considered healthy coping mechanisms as the emotion-focused component alleviates distress and enables the activation of the problem-focused coping component (Epstein & Meier, 1989; Mikulincer *et al.*, 2003). As a result, secure adults' expectations of distress management tend to be optimistic and thus these individuals deal with distress in a constructive and transformational manner (Mikulincer & Florian, 1998). Under periods of prolonged stress, when secure adult's internalised resources no longer serve as a coping mechanism, these individuals typically draw upon the support from others with optimistic expectations. This ability to engage with others stems from their belief that others are trustworthy and reliable. Negative behaviours from others are viewed as temporary and thus secure adults respond in a reasonable manner (Mikulincer *et al.*, 2003).

2.6 STABILITY OF ADULT ATTACHMENT STYLES

As previously mentioned, attachment styles in adulthood are believed to be generally resistant to change however it is possible (Bowlby, 1988). Attachment styles are influenced by early interactions with caregivers and later significant interactions can challenge the validity of early attachment schemas (Bowlby, 1988). Hazan and Shaver (1987) found that the emotional bond and behaviour exhibited in romantic adult relationships is remarkably similar to the attachment dynamic between a child and their caregiver identified by Ainsworth and colleagues (1978).[2]

[2] Ainsworth and colleagues (ibid) found that 60% of American children exhibited secure attachment to their caregiver, whilst 20% showed anxious-ambivalent attachment, and 20% showed evidence of avoidant attachment. Similarly, Hazan and Shaver (1987) found that 56% of adult participants were securely attached, 19% were anxious-ambivalent, and 25% were avoidant.

Individuals that reported secure attachment in their adult relationships recalled secure childhood relational experiences with their primary caregivers. This was also evident for the anxious and avoidant adult with the former recalling more difficult childhood memories and the latter not recalling many meaningful experiences (Hazan & Shaver, 1994; Hazan & Shaver, 1987). Meta-analytic investigations report the general stability of adulthood attachment style over periods ranging from a few weeks to several years (Fraley, 2002; Fraley & Brumbaugh, 2004).

Though adult attachment styles are believed to resist change significant critical events can cause a shift in attachment style. Critical negative events can be injurious to an individual's attachment security and positive events can cause personal growth and enhance internalised security (Bowlby, 1988; Mikulincer & Shaver, 2001). Changes towards insecure attachment is attributed to traumatic stressful events such as the death of a parent, parental divorce, parents' poor mental health, abusive relationships (Davila *et al.,* 1997), and the breakdown of romantic relationships (Kirkpatrick & Hazan, 1994). Fraley and Brumbaugh (2004) opine that changes can be conceptualised as temporary deviations from their dominant attachment style. After the stressful event is over, individuals are believed to gravitate back to their latent attachment style. Though this seems plausible, it is speculative and has not received empirical investigation. Conversely, positive change towards personal growth can result from intensive psychotherapy (Travis, Bliwise, Binder, & Horn-Moyer, 2001) and experiences of security enhancing relationships (Davila *et al.*, 1997; Lopez & Brennan, 2000; Mikulincer & Shaver, 2003). Such experiences are believed to enable the possibility of a 'broaden and build' cycle of attachment security (Mikulincer & Shaver, 2003). This enhances an individual's sense of emotional stability, self-esteem and confidence, and reduces the use of defensive strategies to cope with distress (Mikulincer & Shaver, 2003).

2.7 ATTACHMENT STYLES IN ORGANISATIONAL RESEARCH

Hazan and Shaver (1990) were the first to investigate the effect of adult attachment styles on workplace attitudes and behaviour and set the stage for future research in the area. Hazan and Shaver found that anxious adults prefer to work with others, tend to take on excessive responsibilities, and report feeling under appreciated by their co-workers. This behaviour is driven by their desire to please others and thus secure closeness in work relationships (Bartholomew & Horowitz, 1991). Their feelings of being under appreciated can be attributed to their general perceptions of unequal reciprocation in relationships (Hazan & Shaver, 1987). Anxious adults were also found to let relationship issues interfere with their work (Hazan & Shaver, 1990). In contrast, avoidant adults prefer to work alone, use work commitments as an excuse to avoid social interaction, and are generally dissatisfied with work relationships (Hazan & Shaver, 1990). Finally, secure adults were found to approach work with confidence, felt appreciated by co-workers, valued work relationships, were unburdened by fears of failure, and worked well autonomously and with others (Hazan & Shaver, 1990). Since this seminal work, a surge of research has begun to examine the role of attachment styles to explain workplace dynamics.

2.7.1 Attachment Styles and Leadership

Research has begun to examine how followers relate to their leaders from an attachment perspective. Keller and Cacioppe (2001) and Keller (2003) adopted a sensemaking perspective and argued that followers possess implicit leadership theories consistent with their attachment style. According to Keller (2003), attachment styles may impact the extent to which individuals engage in the sensemaking process. For instance, avoidant adults may possess more simplistic implicit leadership models in comparison to secure and anxious adults as they have been found to be more resistant to new information (Green-Hennessy & Reis, 1998). Avoidant adults' disuse of new information in judgement formation may limit their sensemaking engagement and thus use previously constructed implicit leadership models to form an opinion of their leader (Keller, 2003). Given this, avoidant adults are expected to construct leadership expectations consistent with

their perceptual schema of others as consistently unavailable and untrustworthy (Keller & Cacioppe, 2001) and anticipate unfavourable performance appraisals from their leader (Keller, 2003). Keller and Cacioppe (2001) also argue that anxious adults may possess implicit theories of leaders as inconsistent in their responsiveness, supportiveness, and attentiveness and undervalue their performance (Keller, 2003). Secure adults are believed to possess implicit theories of leaders as sensitive, supportive, and attentive (Keller & Cacioppe, 2001) who value and positively appraise their performance (Keller, 2003). This leads to greater receptivity to their leaders and conscientiousness in their followership (Keller & Cacioppe, 2001).

In a similar vein, Mayseless and Popper (2007) propose that secure adults perceive leaders as benevolent and possess optimistic expectations of their leaders. Using Bartholomew and Horowitz's (1990) sub-categorisation of avoidant attachment, Mayseless and Popper (2007) propose that dismissive and fearful adults possess unique leadership expectations and perceptions. Dismissive avoidant adults' negative expectations of others cause them to prefer leaders who keep their social distance. While fearful avoidant adults (i.e. those who possess high levels of both anxiety and avoidance) may cling to their leaders in a submissive manner and exhibit both dependency and disappointment in their leadership experience (Mayseless & Popper, 2007). Anxious adults are also believed to exhibit clingy and dependent behaviour however are more demanding of their leaders than their fearful avoidant peers (Mayseless & Popper, 2007).

Attachment Styles and Leadership Perceptions: Evidence from Research

Consistent with the theoretical propositions made above, securely attached adults have been shown to view leaders as more sociable and considerate than their insecure peers (Berson, Dan, & Yammarino, 2006). Similarly, Simmons, Gooty, Nelson, and Little (2009) found a significant relationship between secure followers and trust in their supervisors. In contrast, Davidovitz, Mikulincer, Shaver, Ijzak, and Popper (2007) found that avoidant followers view their leader as personalised and are more critical of their leaders' emotional and task-focused behaviour even when their leader was securely attached and adopted a socialised leadership approach. In

other work, both leader and follower attachment insecurity has been negatively associated with perceptions of LMX relationship quality (Richards & Hackett, 2012). Drawing upon similarity attraction theory (Byrne, 1971), Shalit, Popper, and Zakay (2010) suggest that followers are more attracted to leaders that are similar to themselves. Results show that secure followers prefer socialised charismatic leaders that focus on personal development, collaboration, and team work. In contrast, avoidant adults prefer charismatic leaders who were personal achievers and task orientated. However, Davidovitz and colleagues (2007) found that the poorest functioning leader-follower dyad exists when avoidant followers operate under avoidant leaders indicating that leader-follower interactions are beyond simple similarity particularly in stressful situations.

Attachment Styles and Leadership Satisfaction

Research has also examined the differential effect that leadership has on followers' instrumental and socio-emotional functioning. Schirmer and Lopez (2001) report that both secure and anxious followers working under supportive leadership reported similar levels of stress and satisfaction. However, when the level of support reduced, anxious individuals reported higher levels of stress and lower job satisfaction. In contrast, avoidant adults reported higher levels of job satisfaction when supportive supervision was low. The anxious adult's heightened distress reflects their over dependency on others while avoidant adult's nonresponsiveness demonstrates their preference for self-reliance. Davidovitz and colleagues (2007) also found that emotionally distant avoidant leaders had an injurious effect on the emotional and instrumental functioning of anxious followers. Conversely, secure followers were able to preserve their mental health under an avoidant leader however this only lasted two months. As the stressors continued secure followers mental health deteriorated under an avoidant leader. This pattern of results supports the view that attachment styles play an important role in leadership expectations, perceptions, preferences, and response to leadership. Another important aspect of the social environment is the work group in which employees are embedded. In this study, the influence of employee attachment style is believed to extend to this social arena and is discussed in the next section.

2.7.2 Attachment Styles and Work Groups

From an attachment theory perspective, the work group can be conceived as a safe haven and a secure base that employees can draw upon for the provision of support and protection, exploration, and personal growth (Mayseless & Popper, 2007; Rom & Mikulincer, 2003). Individuals are believed to develop expectations and interact with their work group in manner consistent with their attachment style. In a seminal study, Smith, Murphy, and Coats (1999) proposed a conceptual link between attachment and group identification. The logic underling this proposition is that, similar to dyadic relationships, individuals develop different views of themselves as group members which influence their thoughts, emotions and behaviours towards that group (Smith *et al.*, 1999). Smith and colleagues found a significant relationship between group attachment and group engagement, evaluation, and identification. Individuals high in group attachment anxiety and avoidance scored markedly lower than their secure peers in group activity engagement, expressed more negative evaluations, and perceived less support from their groups. In addition, group attachment anxiety was associated with stronger emotional reactions directed at the group while group attachment avoidance was associated with lower levels of positive affect and identification with groups. While Smith and colleagues (1999) research was pioneering it focused solely on the notion of group level attachment. More recent work has examined the influence of individual level attachment styles on group dynamics.

In support of Smith and colleagues (1999) work, Rom and Mikulincer (2003) found that group attachment styles influence individual differences in group functioning. The authors also report that individual attachment style influences the formation of group attachment style, perception of group cohesion and group task performance. Specifically, individuals high in attachment anxiety and avoidance report lower self-evaluations of functioning in group activities. Attachment anxiety was associated with lower instrumental functioning while avoidant adults scored lower in socio-emotional functioning. Rom and Mikulincer (2003) argue that avoidant adults negative view of others cause them to distrust the motives of group members and thus express little interest in interacting with their group despite the potential

benefits that can be drawn from group efforts. In addition, they report that high levels of group cohesion weakened the negative effect of attachment anxiety on self-evaluations of instrumental and socio-emotional functioning in the group. The cohesiveness of the group may have provided a sense of approval and security which satisfies their attachment needs and thus enables them to focus on group tasks (Rom & Mikulincer, 2003). However, group cohesion did not moderate the negative effect of attachment avoidance on self-evaluations of instrumental and socio-emotional functioning in groups. This is not surprising given avoidant adults disinterest in others and non-responsiveness to relationships in general. In fact, in highly interdependent group activities, it was found avoidant adults deactivating regulatory strategy failed to suppress their emotions resulting in lower instrumental functioning (Rom & Mikulincer, 2003).

Preliminary research in the workplace setting has found that attachment styles influence employee group interaction. Davidovitz and colleagues (2007) found that avoidant attachment has a significant negative effect on individuals' appraisal of group cohesion and instrumental functioning in group activities. Moreover, avoidant adults are less likely to be chosen as a first source of support by their co-workers (Geller & Bamberger, 2009) as they lack the skills and motivation to act as effective caregivers (Collins & Feeney, 2000). In contrast, secure adults view themselves as effective team members (Berson *et al.,* 2006) and engage in greater support seeking behaviour than their avoidant peers (Richards & Schat, 2007). The preliminary evidence from this research suggests that employee perceptions, attitudes, and behaviour in group interaction vary in a manner consistent with their attachment style. A less developed research avenue that is considered in the next section is the role of employee attachment styles in guiding perceptions and attitudes towards their organisation.

2.7.3 Attachment Styles and Organisations

A growing body of research has begun to explore the influence of attachment styles on the employee-organisation relationship. Mayseless and Popper (2007) suggest that broadening the scope of attachment research to the organisation could pose a

fruitful research avenue. The authors propose that an organisation can serve as a symbolic attachment figure for organisational members and serve in many respects like a safe haven by providing a source of protection and support in times of need. Similarly, the psychological safety literature suggests that the provision of a safe organisational climate can encourage creativity and alleviate concerns about failure and encourage exploratory behaviour (Edmondson, 1999; Edmondson & Mogelof, 2006). Thus, the security enhancing capacity of an organisation can create a sense of safety and belongingness similar to that of group membership espoused by Smith and colleagues (1999) and Rom and Mikulincer (2003). The relationship between the employee and the organisation is more symbolic and dependent on the extent to which the organisation emulates trust, ethical business practices, consistency, and fairness. It is possible that perceptions of the organisation may be strongly influenced by attachment styles as employees 'interaction' with their organisation is more distal. As a result, employees may come to depend on their attachment style to guide their sensemaking of their organisations supportiveness.

Previous empirical research shows that employees respond to their organisations in a manner consistent with their attachment style. Mikulincer and Shaver (2007) report that attachment anxiety and avoidance is associated with lower levels of self and supervisory reports of organisational commitment and spontaneity. Moreover, avoidant adults were significantly related to higher levels of intentions to quit according to both self and supervisor reports. However, no effect was found for attachment anxiety. Attachment avoidance and anxiety has also been associated with lower levels of voluntary activities that benefit the organisation (Erez, Mikulincer, Van Ijzendoorn, & Kroonenberg, 2008) and organisational citizenship and commitment (Desivilya, Sabag, & Ashton, 2007; Richards & Schat, 2011). According to Richards and Schat (2011) anxious adults' preoccupation with immediate relationships in their social environment is believed to limit their motivation and capacity to engage in organisational citizenship behaviour. In contrast, avoidant adults' avoidance of social interaction is believed to obstruct their involvement in any voluntary interaction beyond what is necessary for their task performance (Richard & Schat, 2011). These studies provide preliminary

evidence that employee attachment styles influence their attitudes toward their organisation and engagement behaviours directed at the organisation. Next, the role of attachment styles in work related attitudes and behaviour is considered.

2.7.4 Attachment Styles and Work Attitudes and Behaviour

The accumulated research shows that both attachment anxiety and avoidance is associated with lower levels of work satisfaction in comparison to their secure peers. Krausz, Bizman, and Braslavsky (2001) found that employees with a secure attachment style report higher levels of work satisfaction in comparison to both anxious and avoidant employees. In other work, avoidant adults report satisfaction with task-focused aspects or their work and less satisfaction with interpersonal aspects (Hardy & Barkham, 1994). While secure and avoidant adults report higher self-confidence in their work, anxious adults report dissatisfaction with task-focused aspects and greater concern about their relationships and performance (Hardy & Barkham, 1994). Anxious adults also report higher levels of instrumental and emotional support seeking in the workplace (Richards & Schat, 2007; Schirmer & Lopez, 2001). Joplin, Nelson, and Quick (1999) found that anxious adults are more reliant on support from family and co-workers while avoidant adults are less likely to use these support networks. Sumer and Knight (2001) also found that secure adults transfer positive relational experiences and affect between work and family life however not negative spill-over. In contrast, anxious adults transfer negative experiences and affect however positive experiences are not transferred. This negative transference is driven by anxious adults' hypervigilant monitoring of negative events and worry about relationships (Mikulincer & Florian, 1998). In contrast, avoidant adults report no significant spill-over between these domains.

Secure employees report higher levels of physical and psychological wellbeing and low levels of social dysfunction (Joplin *et al.*, 1999). Secure adults tend to view stressful events as an opportunity for challenge and personal growth and seek help from others when needed (Mikulincer & Florian, 1998; Schirmer & Lopez, 2001). In contrast, anxious and avoidant employees report higher levels of psychological problems, insomnia, social dysfunction, and low job satisfaction. Ronen and

Mikulincer (2010) later found a significant effect of both attachment anxiety and avoidance on work-related burnout. However, the effect of attachment anxiety was moderated by team cohesion and perceptions of organisational fairness. In contrast, other research shows that secure adults report low levels of burnout and high levels of hope and support from others (Simmons *et al.*, 2009).

2.8 ATTACHMENT STYLES AND CREATIVITY-RELATED CONSTRUCTS

According to the theory of attachment, attachment and exploration are interlocking components within the behavioural system which act as a central source of motivation (Bowlby, 1969). Exploration consists of a sequence of behaviours which involves learning about new aspects of the environment (i.e. individuals and objects), interacting with the environment to acquire knowledge and skills, and developing new cognitive abilities (Bowlby, 1969; Green & Campbell, 2000). An antagonism is believed to exist between attachment and exploration such that both cannot be simultaneously activated. For example, when an individual feels secure in their environment, the attachment system remains dormant, or quiet, and the exploratory system can activate. However, if a threat is perceived, the attachment system is interrupted from its dormancy, reactivates, and thus disengages the exploratory system (Bowlby, 1969). Ainsworth and colleagues (1978) test of Bowlby's (1969) attachment-exploration hypothesis in the *strange situation* experiment found that children with a secure attachment style were significantly more curious and exploratory in their play that insecure children. Moreover, both Ainsworth (1990) and Bowlby (1988) argue that this attachment-exploration link is applicable in adulthood. Despite this contention and evidence from Ainsworth and colleagues (1978) experiment, with the exception of the following studies, little research has examined the relationship between adult attachment and exploratory activities in adulthood.

2.8.1 Attachment Styles, Cognitive Openness, and Curiosity

Mikulincer (1997) tested the relationship between adult attachment, cognitive openness, and trait curiosity (i.e. a tendency to seek out new information, and integrate new information in judgement forming). According to Kashdan and Finchan (2002: 373) curiosity is a fundamental motive for creativity and acts as a '*self-regulatory mechanism that facilitates intrinsic goal effort, perseverance, personal growth, and under the right conditions, creativity*'. Mikulincer found that secure and anxious adults report higher levels of curiosity with novel stimuli in comparison to avoidant adults. Secure adults were more curious than both insecure adults and report greater preference for cognitive openness. Secure adults were also more willing to rely on new information and reform their judgements with confidence. During interview, secure adults related their curiosity to personal growth, learning opportunities, potential to expand their knowledge, skills, and creativity (Mikulincer, 1997). From this, Mikulincer concluded that secure adults' trust in others coupled with their tolerance of the ambiguity that new information presents facilitates greater engagement in information search. While anxious adults did not report lower curiosity levels, they focused more on curiosity-related threats (i.e. discovering painful things, vulnerability in relationships, and hurting others) and less on curiosity-related benefits such as personal growth. When their curiosity is perceived to threaten relationships, anxious adults withdrew from information seeking (Mikulincer, 1997). Avoidant adults possess a lower tendency to explore new stimuli and negative attitudes towards information seeking as it is viewed as a process that requires interaction with others (Mikulincer, 1997). Overall, avoidant adults prefer to distance themselves from others, avoid information search, and repress their curiosity. Interestingly, avoidant adults only engaged in information search when avoiding it threatened social interaction (Mikulincer, 1997). In addition, avoidant and anxious adults were more cognitively closed than secure adults and avoidant adults were more likely to form judgements based on the first information received and ignore new information to adapt and reform their judgements. Johnston (1999) also found that avoidant adults show significantly lower levels of novelty seeking, curiosity, and impulsivity than secure adults while anxious adults show no significant difference in comparison to both groups.

2.8.2 Attachment Style and Creative Problem-solving

In an experimental study, Mikulincer and Sheffi (2000) found attachment style differences in creative problem-solving in response to inductions of positive affect. The authors found that secure adults respond positively to inductions of positive affect and exhibited improved creative problem-solving skills. The authors argue that secure adults' perception of positive affect signals positive affirmation from the environment resulting in deeper immersion in their creative tasks. Avoidant adults exhibited poorer creative problem-solving skills than their secure peers and did not demonstrate any difference in creative problem-solving under conditions of positive affect. Avoidant adults may interpret positive affect as irrelevant given their belief that others are inherently untrustworthy and unavailable and thus remain nonresponsive to the induction of positive affect (Mikulincer & Sheffi, 2000). Anxious adults also exhibited lower creative problem-solving skills and under conditions of positive affect their creative problem-solving worsened.[3] Anxious adults' hypervigilance to social cues highlights the primacy of their attachment system over exploratory behaviour. Mikulincer and Sheffi (2000) suggest that anxious adults deteriorated creativity under conditions of positive affect implies that positive affect may signal a false security that presents hurtful consequences given prior experiences of inconsistent care-giving.

2.8.3 Attachment Styles and Exploration

Green and Campbell (2000) also found significant differences between adult attachment styles and exploratory interest in social, environmental, and intellectual stimuli. Both anxious and avoidant adults reported lower levels of exploration on all three indices however avoidant adults generally yielded stronger effects. Anxious adults expressed less interest in environmental and intellectual exploration while the negative effect of anxiety on social exploration was insignificant. Avoidant adults expressed less interest in social exploration and to a less significant degree intellectual and environmental exploration. This is perhaps due to their avoidance

[3] The authors controlled for trait anxiety and found the effect of attachment anxiety on creative problem-solving remained the same. Trait anxiety did not have an effect on creative problem-solving thereby ruling out the possibility that trait anxiety underlies the effect of attachment anxiety.

of social interaction in preference for solitary activities (Hazan & Shaver, 1990; Shaver & Hazan, 1993). Reich and Seigel (2002) replicated Green and Campbell's (2000) study and found that anxious and avoidant adults engaged in lower levels of exploratory activities however a weaker relationship was found.

In a related study, Aspelmeier and Kerns (2003) examined the relationship between attachment styles and exploratory behaviour in academic settings. The authors found secure adults report positive views of social aspects of academic tasks (i.e. working with and seeking help from others) and view curiosity as desirable (i.e. novelty and social exploration). Anxious and fearfully avoidant adults were associated with greater anxiety about academic performance, unfocused approach to academic work, and negative perceptions of social aspects of academic tasks. In addition, fearful avoidant adults reported strong negative attitudes towards curiosity (i.e. novelty and exploration). In their study, dismissive avoidant attachment did not correlate with any exploratory indices. The authors experimental replication of this correlational study produced generally consistent results however secure adults did not exhibit significantly higher engagement in novel tasks (i.e. puzzle). Also, dismissive avoidant adults exhibited lower engagement in novel tasks and seeking out relationship information.

Elliot and Reis (2003) also explored the link between attachment styles and exploration using achievement orientation to operationalise exploration. The findings show a consistent pattern of association between adult attachment styles and achievement motivation. The authors found that secure attachment style was related to a high need for achievement, low fear of failure, high personal and mastery approach goals. Also, secure attachment was negatively related to performance and mastery avoidance goals. In contrast, both avoidant and anxious adults were positively related to fear of failure, however only attachment anxiety significantly predicted mastery avoidance and performance avoidance goals. In sum, Elliot and Reis (2003) conclude that secure adult attachment enhances motivation to explore in achievement settings (i.e. university) whilst insecure attachment obstructs exploratory behaviour.

Table 2.1: Summary of the Results of Research Examining Attachment Styles and Creativity-relevant Constructs

Author	Construct	Secure	Avoidant	Anxious	Methodology
Mikulincer (1997)	Trait curiosity, information search, and cognitive openness.	Higher curiosity, information seeking, and cognitive openness.	Lower curiosity, information seeking, and high cognitive closure.	High in curiosity-related threats, low in curiosity-related benefits, and high cognitive closure.	Correlational and Experimental studies; Student sample.
Johnston (1999)	Trait curiosity	Higher levels of curiosity compared to avoidant adults.	Lower levels of curiosity compared to secure adults.	No significant difference in curiosity from either secure or avoidant adults.	Correlational study; Random sample.
Mikulincer & Sheffi (2000)	Creative problem-solving skills	Higher creative problem-solving and improved performance under conditions of positive affect.	Lower creative problem-solving and no change in performance under conditions of positive affect.	Lower creative problem-solving and worsened performance under conditions of positive affect.	Correlational and experimental studies; Student sample.
Green & Campbell (2000)	Exploration (i.e. social, environmental, and intellectual), novel stimuli (i.e. Escher prints).	Securely primed adults report greater interest in all three exploratory indices and novel stimuli.	Lower exploratory interest in social stimuli. Avoidance primed adults report similar disinterest in exploration and lower interest in novel stimuli.	Lower exploratory interest in environmental and intellectual stimuli. Anxious primed adults report similar disinterest in exploration and lower interest in novel stimuli.	Correlational and experimental Studies; Student sample.
Aspelmeier & Kerns (2003)	Academic competency, social interaction, novel task (i.e. puzzle).	Positive attitudes towards curiosity and comfort with social aspects of academic tasks.	*Dismissive*: Lower exploration of relationship information and lower engagement in novel tasks. *Fearful*: Higher academic performance anxiety.	Higher academic performance anxiety and unfocused approach to work, low exploration of novel objects, and high exploration of relationship information.	Correlational and experimental; Student sample.
Elliot & Reis (2003)	Achievement motives and achievement goals.	High need for achievement, low fear of failure, high performance and mastery approach goals.	High fear of failure	High fear of failure, high levels of mastery avoidance and performance avoidance goals.	Correlational study; Student sample.

2.9 CONCLUSION

This chapter has provided an overview of attachment theory and defined adult attachment styles as a trait disposition from a two-dimensional perspective. In addition, different regulatory strategies underlying attachment styles are discussed. Research in the organisational setting has demonstrated consistent findings with respect to the link between attachment styles and leadership preferences, perceptions, and interactions. To a lesser degree attachment research has been applied to explain employee attitudes towards work groups and the organisation. However, preliminary findings show that attachment styles may play an important role in group and organisational perceptions and interaction.

A predictable pattern is also beginning to emerge across studies that examine the relationship between attachment styles and exploration. Overall, it appears that secure adults outperform insecure adults in creative problem-solving tasks, prefer exploratory behaviours, and are more curious that their insecure peers. Attachment anxiety and avoidance is associated with lower levels of curiosity and exploratory behaviour in general. The lower exploratory behaviours of insecure adults imply that their attachment system remains active and thus disables complete activation of their exploratory system (Bowlby, 1969). This preliminary evidence provides insights for the effect of attachment styles on creative behaviour and acts as a platform for the present study which aims to extend the attachment-exploration hypothesis to employee creativity in organisational settings. In the next chapter, employee creativity literature is reviewed in-depth.

CHAPTER THREE

EMPLOYEE CREATIVITY

3.1 INTRODUCTION

This chapter begins with a definition of employee creativity. This is followed by an overview of three major contemporary models of creativity [i.e. Amabile's (1996) componential model, Woodman and colleagues' (1993) interactionist model, and Ford's (1996) model of creative action]. In addition, a review of previous research that has examined personal and contextual antecedents of employee creativity is presented. Given the focus of this study on personal dispositions and social factors, this review is limited to these areas for the sake of parsimony.

3.2 WHAT IS EMPLOYEE CREATIVITY?

Employee creativity is defined as the generation of domain specific novel and useful ideas, products, and/or procedures (Amabile, 1988; Ford, 1996; Oldham & Cummings, 1996). This is the most commonly adopted definition in organisational research and is composed on two central components. Firstly, a creative idea must be both novel and useful to the organisation. Ideas are novel when '*they are unique relative to other ideas currently available in the organisation*', and useful when *'they have potential for direct or indirect value to the organisation, either in the short-term or long-term'* (Shalley *et al.*, 2004: 934). Secondly, creativity is viewed as an outcome that can be judged as creative (Amabile, 1996; Ford, 1996). Thus, creativity is considered a domain specific subjective judgement of novelty and usefulness (Ford, 1996). In organisational research, creativity is most often judged by the immediate supervisor's evaluation (Amabile & Mueller, 2008). Supervisors are believed to possess the expertise and observation opportunities necessary to provide an accurate assessment of employee creativity (Amabile, 1996).

3.3 CONTEMPORARY THEORIES OF EMPLOYEE CREATIVITY

A number of contemporary theories have been developed to explain the phenomenon of employee creativity. In this section, the theories reviewed include Amabile's (1996) componential theory, Woodman and colleagues (1993) interactionist model, and Ford's (1996) theory of individual creative action. These theories overlap in their definition of creativity as a product or outcome and their emphasis on the important role of personal and social factors for creativity. However, each theory is distinct from the other in a variety of ways which will be highlighted in the following sub-sections.

3.3.1 The Componential Theory of Employee Creativity

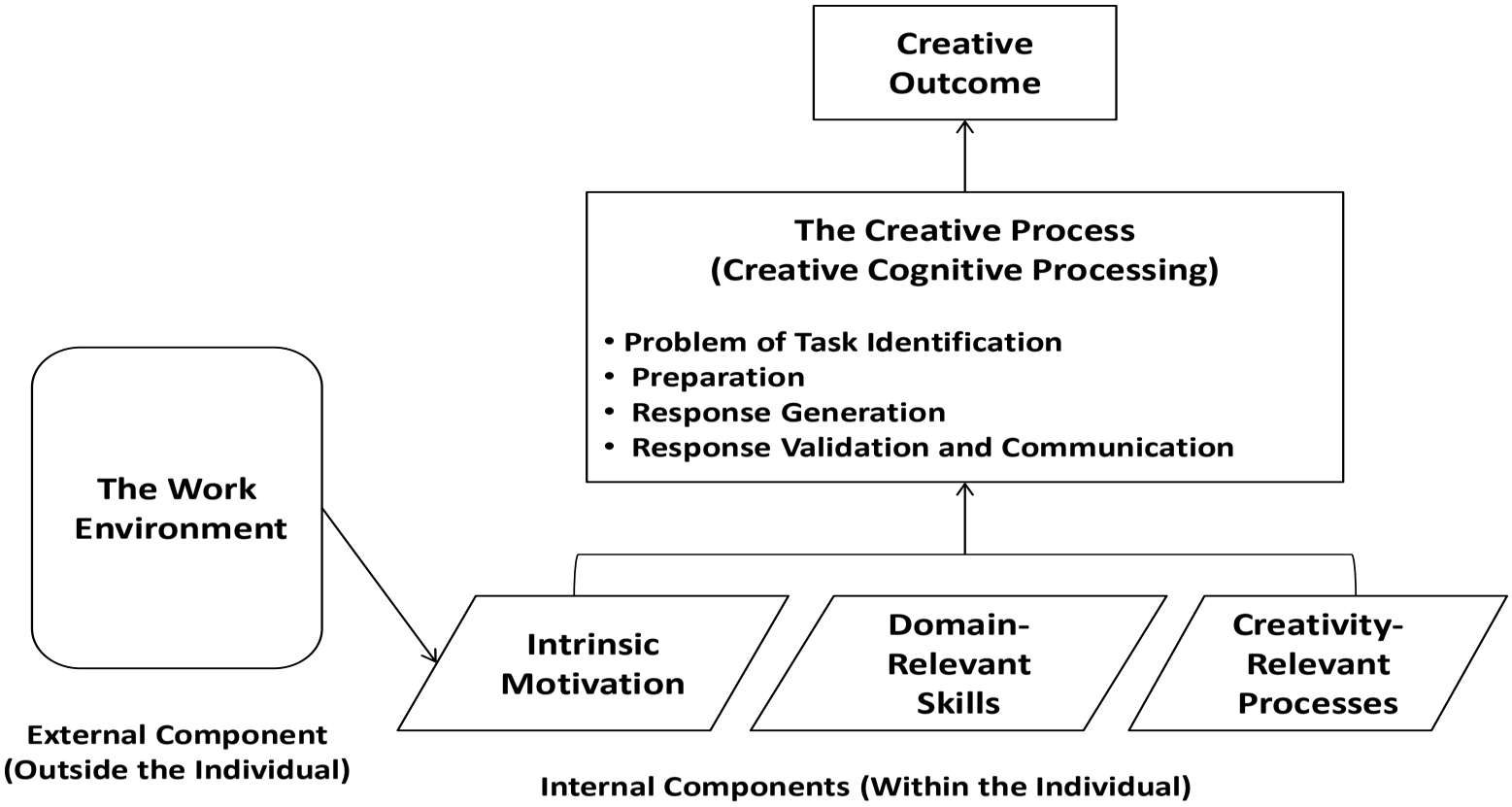
Amabile's (1983; 1988; 1996) componential theory of employee creativity is recognised as one of the major theories of creativity and has served as a foundation for the development of other creativity theories and empirical research (Amabile, 2012). This theory focuses on factors within and outside the individual that influence the creative process and creative behaviour. According to Amabile (1996), creativity is a product of three internal components and a single external component. Creativity is most likely to occur when these four components are high. Internal components include domain-relevant skills, creativity-relevant processes, and intrinsic motivation. Domain-relevant skills refer to the knowledge, expertise, and skills an individual possesses in a specific domain. These skills are both innate and learned through education and training (Amabile, 1996). Creativity-relevant processes include personality characteristics and cognitive styles relating to independence, risk-taking, taking new perspectives on problems, disciplined work style, and skills in idea generation (Amabile & Mueller, 2008). Finally, intrinsic motivation is an individual's interest in undertaking a task or solving a problem because it is interesting, challenging, and satisfying (Amabile & Mueller, 2008). The external component is the social environment and according to Amabile (1996) five aspects are particularly relevant to employee creativity.

These include three stimulants- encouragement of creativity, autonomy or freedom, and resources; and two obstacles- pressures and organisational

impediments (Amabile, 1996). Encouragement refers to the support for new ideas at all organisational levels (i.e. the organisation, supervisor, and work-group). Next, autonomy or freedom in daily work activities is believed to give individuals a sense of empowerment and ownership in their work. Finally, resources refer to the availability of materials and information that facilitate creativity. The first obstacle for creativity is pressures which includes positive and negative workload pressure. Moderate pressure emerges when a problem is urgent and intellectually challenging while negative workload overwhelms employees and thus inhibits their creative behaviour (Amabile, 1988; Amabile *et al., 1996*). The second obstacle is organisational impediments. These refer to internal strife, conservatism, and rigid formal management structures that inhibit creativity (Amabile *et al.*, 1996). While the social environment influences all three internal components (i.e. intrinsic motivation, domain-relevant skills, and creativity-relevant processes), it has the strongest influence on intrinsic motivation (Amabile & Mueller, 2008).

According to Amabile (2012), the componential theory is distinct in its comprehensive scope of individual and organisational factors, its specification of the impact of these factors on the creative process, and its focus on environmental factors that impact the process particularly with respect to intrinsic motivation. Figure 3.1 on the following page provides a graphical depiction of the componential model which is adapted from Amabile and Mueller (2008).

Figure 3.1: The Componential Model of Creativity



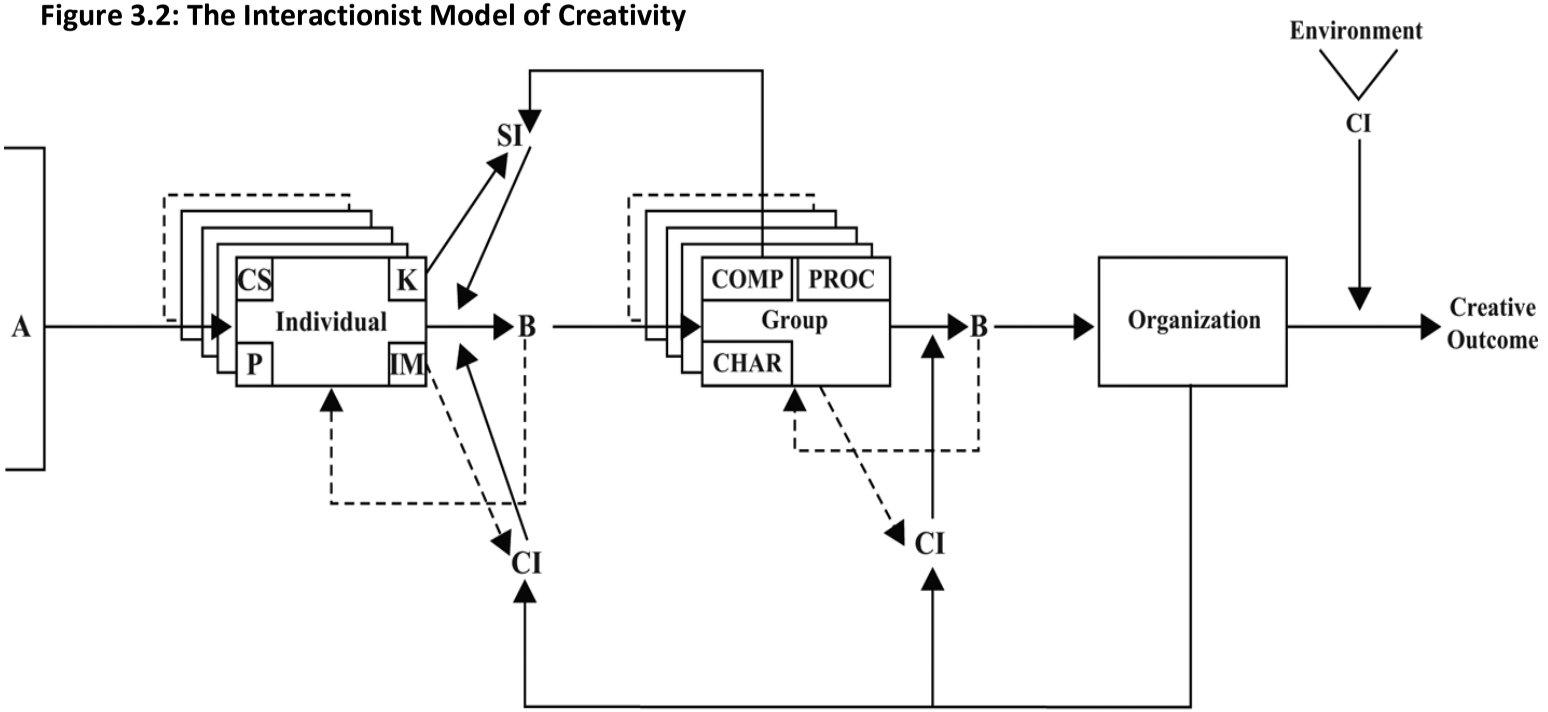
Source: Amabile & Mueller (2008)

3.3.2 The Interactionist Theory of Employee Creativity

The interactionist theory of employee creativity also recognises the importance of both individual and contextual factors (Woodman, 2008). Building upon insights developed in Amabile's (1988) earlier work, the interactionist perspective also suggests that creativity is product of individual characteristics (i.e. personality, cognitive style, intrinsic motivation, and domain knowledge) and contextual factors (i.e. tasks, time constraints, organisational, leadership, and group characteristics) (Woodman *et al.,* 1993). The interactionist perspective however departs from Amabile's theory by drawing upon interactional psychology (i.e. Schneider, 1983; Terborg, 1981). Woodman and colleagues (1993) argue that a complex interaction occurs between the person, process, product, and situation which enhances or inhibits creativity. This model also extends to multiple levels (i.e. individual, group, and organisational level) and takes into account cross-level effects when considering personal and contextual factors (Zhou & Shalley, 2003).

The interactionist theory of employee creativity has served as a conceptual framework for a great deal of empirical studies. Consistent evidence for the interaction between personal and contextual factors supports the validity of this theory (e.g. Gilson, Mathieu, Shalley & Ruddy, 2005; Oldham & Cummings, 1996; Tierney*,* Farmer, & Graen, 1999; Zhou, 2003; Zhou & George, 2001). Figure 3.2 on the following page illustrates Woodman and colleagues (1993) interactionist model.

Figure 3.2: The Interactionist Model of Creativity



INDIVIDUAL CREATIVITY:
$C_I = f(A, CS, P, K, IM, SI, CI)$

GROUP CREATIVITY:
$C_G = f(C_I, G_{COMP}, G_{CHAR}, G_{PROC}, CI)$

ORGANIZATIONAL CREATIVITY:
$C_O = f(C_G, CI)$

Key:

A = Antecedent Conditions
B = Creative Behavior
CS = Cognitive Style/ Abilities
P = Personality
K = Knowledge
IM = Intrinsic Motivation
SI = Social Influences
CI = Contextual influences
G_{COMP} = Group Composition
G_{CHAR} = Group Characteristics
G_{PROC} = Group Processes

Source: Woodman *et al.* (1993: 295)

3.3.3 The Theory of Individual Creative Action in Multiple Domains

Ford (1996) developed a theory of creative action in multiple social domains (i.e. groups, organisations, institutions, and markets). This theory is based on the premise that individual creative action is a consequence of the joint influence of three processes: sensemaking, motivation, and domain-relevant knowledge and ability. Ford (1996: 1117) proposes that *'creative and habitual actions are conceptually independent, competing behavioral options'* and habitual action is often chosen in favour of creativity due to its past success, relative ease, and certainty. For creative action to emerge it must hold a relative advantage over habitual action. Thus, creativity is believed to emerge if the perceived personal consequences are more desirable than those associated with habitual action (Ford & Gioia, 1995). Ford (1996) states that if one of these three processes (i.e. sensemaking, motivation, and domain knowledge and skills) is deficient it can render other processes that support creativity ineffective and result in a preference for habitual action. Ford's model is similar to Amabile's (1996) and Woodman and colleagues (1993) theories as it acknowledges the relevance of personal and contextual factors for creativity. However, Ford's theory is distinct in its view that an individual action is based upon competing behavioural options and the inclusion of sensemaking in the process leading to creativity.

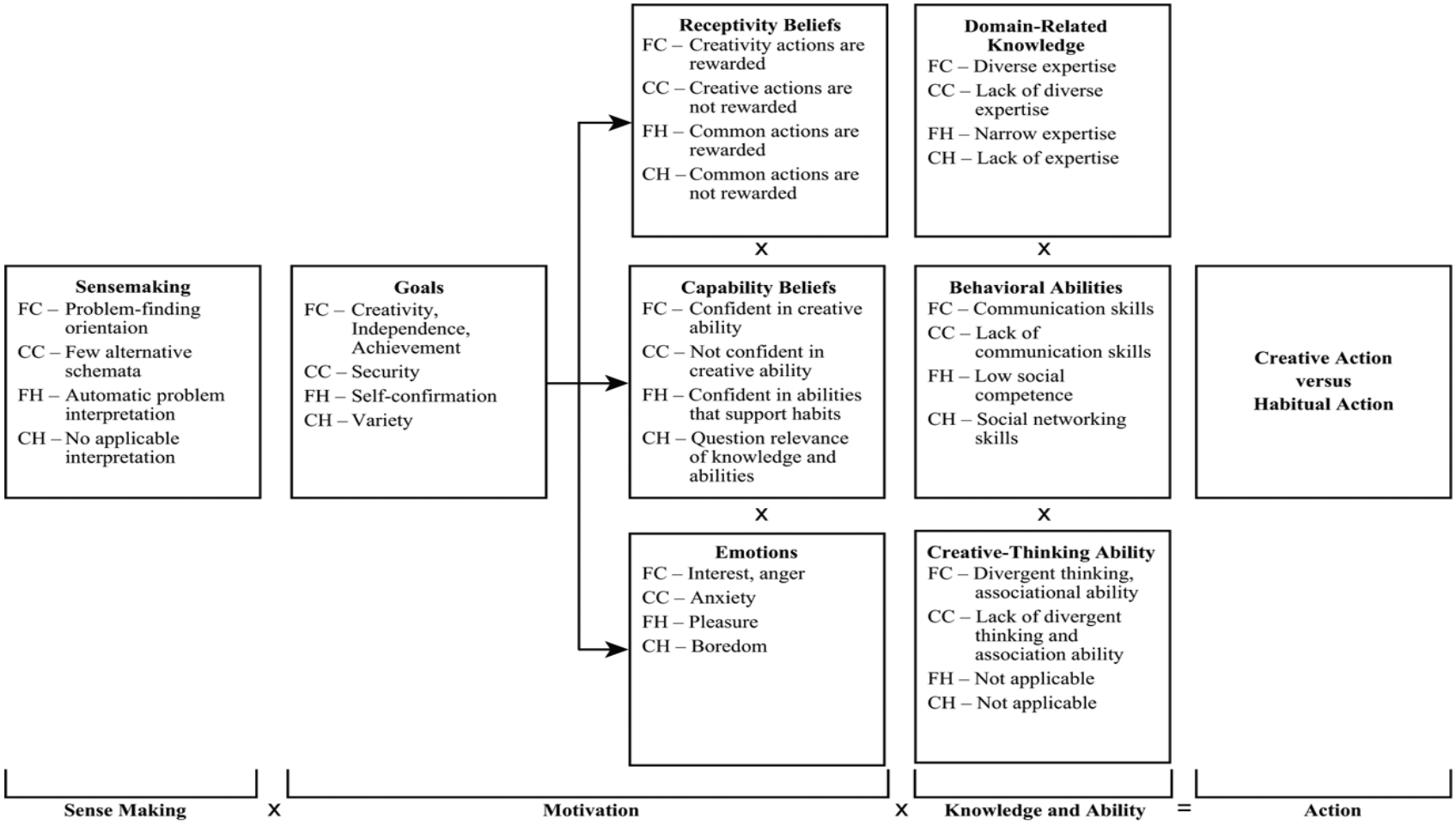
Of particular interest to this study is Ford's consideration of the sensemaking process which has not been considered in previous models (i.e. Amabile, 1996; Woodman *et al.*, 1993). The inclusion of sensemaking in the process that leads to creativity is particularly valuable as it considers an individual's subjective evaluation of the social environment fundamental in determining the level of creativity. During the sensemaking process, individuals extract cues from the social environment to make sense of a situation through their own interpretation and meaning (Weick, 1995). This process contributes to the formation of a cognitive frame, or schema, with respect to creative action (Ford, 1996). Both the person and the domain (i.e. social environment) shape these socially constructed schemas. These schemas guide the formation of goals, expectations, and emotions.

According to Ford (1996), goals organise an individual's intentional behaviour and are fundamental in shaping their motivation to engage in habitual or creative action. Goals also elicit expectations and emotions that contribute to an individual's motivation. Employee expectations include the perceived receptiveness of the environment to creative action (i.e. receptivity beliefs) and self-confidence in their ability to be creative (i.e. capability beliefs) (Ford, 1996). Expectations influence the formation of the perceived personal consequences of their actions and, in turn, their intention to pursue habitual or creative action. Emotions are drawn out by these expectations and give energy to the cognitive evaluation derived in the sensemaking process (Ford, 1996). Expectations and emotions will not have a significant influence on creative action unless a person possesses a goal or intention to engage in creative action (Ford, 1996). Similar to the aforementioned theories, Ford also states that employees that are intrinsically motivated are more likely to engage creative action.

Ford's (1996) theory has received less empirical attention as it is relatively new in comparison to the componential and interactionist perspectives which developed a decade earlier (i.e. Amabile, 1988; Woodman & Schoenfeldt, 1989).[4] However, a respectable and growing body of work has begun to validate the meaningfulness of this theory for explaining employee creativity (Farmer *et al.*, 2003; Madjar *et al.*, 2011; Tierney & Farmer, 2004; Unsworth & Clegg, 2010). Figure 3.3 on the following page illustrates Ford's theory of creative action.

[4] The value of the sensemaking perspective for explaining organisational behaviour has been demonstrated in other organisational research areas such as strategic change (Gioia & Chittipeddi, 1991) and organisational learning (Baker & Sinkula, 1999) literatures.

Figure 3.3: The Theory of Individual Creative Action in Multiple Domains



Key
FC – Facilitates creativity, CC – Constrains creativity, FH – Facilitates habits, CH – Constrains habits

Source: Ford (1996: 1118)

3.4 A REVIEW OF ANTECEDENTS OF EMPLOYEE CREATIVITY

An overarching consensus that exists among contemporary theories of creativity relates to the role of personal characteristics and the social context for stimulating or obstructing creativity (Amabile, 1996; Ford, 1996; Woodman *et al.*, 1993). This section provides a review of empirical research that has examined different personal factors and aspects of the social context at the leader, work group, and organisational level that influence employee creativity.

3.4.1 Personal Characteristics and Employee Creativity

Historically, personal characteristics associated with creativity have received ample empirical attention (Runco, 2004). The prevalence of this is not surprising given that individuals are typically the source of creativity in organisations. Contemporary research that examines personal antecedents generally considers the effect of personal characteristics in conjunction with aspects of the context. Therefore, in this section while personal characteristics are the predominant focus of the review, their interaction with different contextual factors is also considered.

Personality

Feist's (1998: 299) meta-analysis of 26 studies found that creative people are typically *'more autonomous, introverted, open to new experiences, norm-doubting, self-confident, self-accepting, driven, ambitious, dominant, hostile, and impulsive'*. From this analysis, openness to experience, conscientiousness, self-acceptance, hostility, and impulsivity emerged as the strongest predictors of creativity. In a review of organisational creativity research, Shalley and colleagues (2004) report that openness to experience is the most consistent personality trait positively associated with creativity. Individuals high in openness to experience tend to be intellectually curious, imaginative, and possess a preference for variety (Barrick & Mount, 1991) which appears to be a natural precursor to employee creativity. Moreover, other research shows that the degree to which openness to experience enhances creativity is dependent on the facilitative nature of the social environment. George and Zhou (2001) found that a high level of openness to

experience has a positive effect on creativity. However, the effect openness to experience is stronger when feedback valance and unclear ends are high.

Another important personal trait associated with creativity is creative personality. Individuals with creative personalities are believed to be self-confident, reflective, possess broad interests and a preference for complexity, and are typically unconventional thinkers (Gough, 1979). Research shows that individuals with creative personalities exhibit higher levels of creativity in the workplace (Oldham & Cummings, 1996; Zhou, 2003; Zhou & Oldham, 2001). In addition, Oldham and Cummings (1996) found a three-way interaction effect of creative personality, job complexity, and supportive supervision on employee creativity. The authors found that creativity is higher in employees with creative personalities in complex jobs who experienced supportive supervision. Zhou and Oldham (2001) also found that individuals with creative personalities exhibit higher levels of creativity. Moreover, this effect is particularly strong when employees anticipate an opportunity to assess their own work to develop their creativity-relevant skills. In another study, Zhou (2003) examined factors that obstruct creativity and confirmed that employees with low creative personalities exhibit lower levels of creative behaviour. However, in the presence of supervisory developmental feedback and creative co-workers, the creative performance of these individuals improved. In a meta-analysis of 111 studies, Ma (2009) found that the effect of creative personality and openness to experience on employee creativity is stronger than other personality traits such as extraversion, agreeableness, neuroticism, and conscientiousness.

More recently, proactive personality, a tendency to take initiative to influence and implement constructive change in an environment (Fuller & Marler, 2009), has been shown to be a significant determinant of creativity (Gong *et al.,* 2010; Kim *et al.,* 2009; Kim *et al.*, 2010). Moreover, Kim and colleagues (2010) report that employees with proactive personalities exhibit higher levels of creativity when job creativity requirement and supervisor support for creativity is high. In support of this, Gong and colleagues (2010) found that proactive personality influences creativity indirectly through information exchange and trust in work relationships.

Gong and colleagues (2010) suggest that employees with proactive personalities are more active in their efforts to source new informational resources and build relationships to instigate creative change in their environment.

Cognitive Skills and Ability

In addition to personality, cognitive skills and abilities are also believed to be important personal antecedents of creativity. According to theory, divergent thinking, the ability to generate alternative ideas, and delay gratification are components of an individual's cognitive style necessary for creativity (Amabile, 1988, 1996; Ford, 1996; Woodman *et al.*, 1993). Amabile (1996) argues that these internal resources enable an individual to understand complex information and processes and thus see things differently when problem-solving. Individuals with an adaptive cognitive style tend to operate within established procedures without questioning the status quo (Kirton, 1994). In contrast, individuals with an innovative cognitive style tend to exhibit higher levels of risk-taking and question pre-existing procedures and practices (Kirton, 1994). Research has shown that cognitive innovators tend to be more creative than those with adaptive cognitive styles (Tierney *et al.,* 1999). Tierney and colleagues (1999) also found that cognitive innovators maintain high creativity levels irrespective of the quality of their LMX relationship. However, the creative performance of cognitive adaptors fluctuates based on the quality of their LMX relationship. Other research shows that employees' learning orientation (i.e. concern for, and dedication to, developing competency; Dweck, 2000), is positively related to employee creativity (Gong, Huang, & Farh, 2009). The authors also found that this relationship was mediated by creative self-efficacy. The concept of creative self-efficacy is derived from Bandura's (1997) more general concept of self-efficacy. Creative self-efficacy is defined as *'the belief* [that] *one has the ability to produce creative outcomes'* (Tierney & Farmer, 2002: 1138). In two field studies, Tierney and Farmer (2002; 2004) found that creative self-efficacy explains variance in employee creativity above and beyond the influence of job self-efficacy. Jaussi, Randel, and Dionne (2007) also found that creative self-efficacy significantly influences employee creative performance. In other work, Choi (2004) simultaneously examined the role

of two psychological mediators (i.e. creative self-efficacy and creativity intention) and from this found that creative self-efficacy had the strongest mediation effect on the relationship between personality and creativity.

Intrinsic Motivation

Following insights from Amabile's (1996) componential theory of creativity, intrinsic motivation is widely regarded as a key determinant of creativity (Ford, 1996; Shalley *et al.*, 2004; Shin & Zhou, 2003; Woodman *et al.,* 1993; Zhang & Bartol, 2010; Zhou & Shalley, 2003). Intrinsic motivation arises from an individual's interest, engagement, and curiosity in a work task itself (Amabile & Mueller, 2008). Intrinsically motivated employees are believed to focus their concentration on the task itself free from distraction (Amabile, 1996). According to Amabile (2012), research has supported the significance of intrinsic motivation for employee creativity. Though much of this research considers intrinsic motivation as a situation specific state of motivation, inline with Amabile, Hennessey, and Tighe (1994), Prabhu, Sutton, and Sauser (2008) demonstrate that trait intrinsic motivation also has a positive effect on employee creativity.

Overall, personal factors including dispositional traits, cognitive style, motivation, and self-perception can be seen to play an important role in explaining variance in employee creativity. However, most notable is the interplay between these personal factors and the context for determining the level of creativity. In the next section, social factors that influence creativity are reviewed in greater detail.

3.4.2 Social Context and Employee Creativity

As can be seen in the previous section, signals from the social environment play an important role in stimulating or obstructing employee creativity. This section reviews leadership, work group, and organisational factors identified in prior research that influence employee creativity.

Supervisors and Leadership Behaviour

Both organisational leaders and immediate supervisors are key organisational protagonists that encourage employees' generation of novel and applicable ideas (Amabile, 1996; Ford, 1996; Woodman *et al.*, 1993). Overall, researchers have largely focused on supervisor actions and behaviours that elicit employee creative behaviour. Comprehensive reviews of the creativity literature (i.e. Shalley & Gilson, 2004; Shalley *et al.*, 2004) highlight the well established link between supervisory support and employee creativity. Mumford, Scott, Gaddis, and Strange (2002) specify three aspects of supervisory support that motivate employee creativity: idea support, work support, and social support. The significance of these different forms of support is evidenced in prior research. For example, Redmond, Mumford, and Teach (1993) highlight supervisory task direction (i.e. the formulation and construction of problems and goal setting) positively influence employee self-efficacy and creativity. Task direction and goal setting is believed to focus employees' attention, provide clear targets, and motive employees toward goal achievement with respect to creativity (Redmond *et al.,* 1993; Shalley & Gilson, 2004). Tierney and Farmer (2002) also found that supervisor support via role modelling behaviour and verbal persuasion enhances employee creative self-efficacy and creativity. The authors argue that supervisor role modelling creates an encouraging context for creative behaviour and enhances employee self-efficacy regarding complex and challenging tasks. Supervisor mentoring behaviour and recognition have also been shown to increase employees' value in their work, self-perceived competency, and creative performance (Amabile, Schatzel, Moneta, & Kramer, 2004). Moreover, George and Zhou (2007) found that supervisor support via the provision of developmental feedback, interactional justice, and trust significantly enhances employee creativity. Through the provision of developmental

feedback, employees can focus on learning and development which are conducive to creativity (Zhou, 2003). Trustworthiness and interactional justice behaviour (i.e. being forthcoming with information and interpersonally sensitive to employee needs) creates an open and interactive context which encourages employee risk-taking and creativity (George & Zhou, 2007). Similarly, other studies have found consistent evidence that supportive and non-controlling supervisors encourage employees and provide the decision making scope necessary for creative action (Oldham & Cummings, 1996; George & Zhou, 2001; Zhou, 2003).

High quality supervisor-subordinate relationships are also recognised as central motivational contributors to employee creativity (George, 2010; Shalley *et al.*, 2004). Tierney (2008) refers to these as anchoring relationships that facilitate creativity (Tierney, 2008). Creative ideas often challenge pre-established ways of doing things and strong employee-supervisor bonds can provide employees with the courage to engage in risk-taking and explore creative alternatives. Research has shown that supportive supervisory relationships and high quality LMX relationships motivate employees to engage in higher levels of creative action (Khazanchi & Masterson, 2011; Liao *et al.,* 2010; Tierney *et al.,* 1999).[5] Interpersonal support and high quality supervisory relationships stimulate receptiveness to creative behaviour through the provision of trust, support, and security (Tierney *et al.,* 1999). In addition to supervisory relationships and various forms of support, research also identifies specific leadership behaviours that encourage employee creativity.

Transformational leadership, an inherently developmental approach, is believed to stimulate employee creative capacity and encourage employees to question their pre-established values and expectations (i.e. intellectual stimulation) (Bass, Avolio, Jung, & Berson, 2003). Shin and Zhou (2003) show that transformational leaders directly and indirectly enhance employee creativity through intrinsic motivation. However, Jaussi and Dionne (2003) found that while transformational leadership is associated with employee creativity, the provision of autonomy in work tasks has a

[5] The relationship between LMX and employee creativity will be discussed in-depth in Chapter Five 'Theoretical Framework and Hypotheses Development'.

stronger effect. Interestingly, recent research has shown that the effect of transformational leadership on creativity is stronger when supervisors provide higher levels of instrumental and social support (Cheung & Wong, 2011). Other research has considered the effect of benevolent leadership on creativity. Wang and Cheng (2009) found that benevolent leaders focus on the individualised care and needs of their employees and in doing so enhance their creative performance. However, again, this effect is dependent on high levels of job autonomy and employees' creative role identity. Another leadership behaviour considered in research is empowering leadership. This involves providing employees with considerable autonomy and ownership over their work tasks. Zhang and Bartol (2010) found that empowering leadership enhances employee psychological empowerment which intrinsically motivates higher levels of creative process engagement and performance.

The Work Group

An employees experience with their work group is also shown to play an important role in influencing employee creativity. As the work group is the most immediate context in which employees frequently interact, it has the potential to exert a substantial influence on their creative performance (Choi, 2004). Based on a review of the literature, Shalley and colleagues (2004) conclude that supportive and nurturing co-workers increase employee creative behaviour. Open communication and sharing ideas and expertise among group members expose employees to an array of alternative perspectives that can contribute to higher levels of creativity (Amabile, 1996). Amabile and colleagues (1996) found that the constructive challenging of ideas among group members, collaborative work practices, and a shared commitment to work tasks stimulate employee creative behaviour. Boss, Koberg, and Rohan (2001) further support this and also report that open sharing of problems and responsibilities lead to greater creative performance among team members. Moreover, Zhou and George (2001) report that co-worker support and constructive informational feedback enhances employee creative behaviour. The authors suggest that employees are more likely to be creative when they believe that they will have the support necessary to successfully execute creativity tasks.

High quality interpersonal relationships between co-workers in work groups is critical for encouraging risk taking and creative behaviour (Liao *et al.,* 2010). Craig and Kelly (1999) show that high task and interpersonal cohesiveness within work groups enhances creativity. Thus, employees must trust their co-workers and feel safe and unthreatened within these groups to take creative risks (West, 2002).

Psychological safety is a taken for granted belief that team members will respond positively to an individual's opinions and ideas, reporting of mistakes, and seeking advice and feedback (Edmondson, 1999). Work groups with strong psychological safety climates are believed to be conducive to employee learning, lessen concerns about failure, and enable greater creative opportunities (Edmundson, 1999). Anderson and West (1998) found that employee reports of psychological safety and participation in decision making is positively related to the sharing of ideas with co-workers. In a similar vein, West (2002) argues that intra-group safety, a sense of psychological or physiological safety in the presence of the group, creates a safe climate to learn which is necessary for employee creativity and learning. Overall, it appears that work groups can encourage creativity through the provision of supportiveness and high quality interpersonal relationships, group norms of openness, mutual commitment to group tasks, and the sharing of ideas and constructive feedback and development.

The Organisation

Organisations are believed to create a supportive environment for employee creativity most directly through the provision of an organisational climate and culture that encourages creativity and innovation (Amabile, 1996; Ford, 1996; Woodman *et al.*, 1993). Amabile and colleagues (1996) identified five key organisational actions that support creativity. These include the encouragement of risk-taking and idea generation at all management levels, the fair and supportive evaluation of employees' new ideas, reward and recognition of creativity, the flow of collaborative ideas across the organisation, and participative management and decision making. These organisational factors are believed to minimise the threat of critical evaluation and consequences, increase exposure to alternative ideas, and

intrinsically motivate employees to take creative action (Amabile *et al.*, 1996). Supportive social cues from the organisation contribute to the formation of favourable receptivity beliefs regarding the organisations supportiveness of creative behaviour (Ford, 1996). This creates a psychologically safe organisational climate which is critical for stimulating employee creativity and innovativeness (Baer & Frese, 2003). Consistent with this view, Choi, Anderson, and Veillette (2009) found that an unsupportive organisational climate has a negative influence on creativity.

Tesluk, Farr, and Klein (1997) add five specific organisational climate factors that are believed to enhance employee creativity. These include organisational goal emphasis, means emphasis, reward orientation, task support, and socio-emotional support. Goal and means emphasis refer to the extent to which organisational goals, and methods and procedures, for creativity are clearly communicated to organisational members (Tesluk *et al.*, 1997). Reward orientation refers to rewards and evaluations that are allocated for creativity (Tesluk *et al.*, 1997). Task support refers to the support provided in terms of time, funding, equipment, and materials to effectively conduct creative behaviour (Tesluk *et al.*, 1997). Finally, socio-emotional support refers to the extent to which the environment provides interpersonal support necessary for creativity (Tesluk *et al.*, 1997). Combined, these factors are believed to cultivate an organisational climate conducive to creativity. Martins and Terblanche (2003) also suggest that an organisation's strategy, structure, support mechanisms, values, norms, open communication, and beliefs play a crucial role in stimulating or obstructing employee creativity. In contrast, organisations with strict routines and inter-departmental competition for budget and competences may discourage the co-operation necessary to cultivate a creative and innovative culture (Van der Panne, Van der Beers, & Kleinknecht, 2003).

Overall, various aspects of the social context can be seen to have a consistent stimulating effect on employee creativity through supportive supervision, high quality relationships, collaborative and supportive work groups, and an organisational climate that supports and recognises creative efforts. On the other hand, creativity can be stifled by controlling and unsupportive supervision and co-

workers, inter-departmental competitiveness, bureaucratic and risk adverse cultures, critical attitudes to new ideas, political problems, controlling supervision, and strict deadlines (Amabile *et al.,* 1996; Ford, 1996; George, 2010; Shalley *et al.,* 2004; Shalley & Gilson, 2004; Woodman *et al.,* 1993).

3.5 CONCLUSION

This chapter provided a clear definition of employee creativity, an overview of contemporary creativity theories (i.e. Amabile, 1996; Ford, 1996; Woodman *et al.,* 1993), and a review of empirical research that examines personal and social factors as determinants of creativity. Personal characteristics associated with creativity include personality (i.e. openness to experience, creative personality, and proactive personality), cognitive skills and ability (i.e. innovative cognitive style and learning orientation), self-perception (i.e. creative self-efficacy), domain knowledge, and intrinsic motivation. However, while individual differences determine a person's propensity to be creative, social and contextual factors can facilitate or obstruct the expression of this behaviour (Shalley & Gilson, 2004). Research consistently shows that the level of creativity is dependent upon a complex interplay between the social context and a host of individual level factors. It appears that the presence of supportive supervisors, co-workers, and organisation play a unique and influential role in employee creativity. Runco (2004) suggests that, to realistically evaluate employee creativity, researchers need to consider the individual, the context, and their interpretation of the context in which they are embedded from diverse perspectives to broaden our understanding of employee creativity. In the next chapter, literature pertaining to social exchange relationships and information exchange behaviour is reviewed.

CHAPTER FOUR

SOCIAL EXCHANGE RELATIONSHIPS AND INFORMATION EXCHANGE

4.1 INTRODUCTION

As mentioned in chapter one, attachment styles are proposed to indirectly influence employee creativity through a sequential mediation path that includes social exchange relationships and information exchange behaviour. The present chapter provides an overview of the literature relating to these mediating mechanisms. The social exchange relationships reviewed include leader-member exchange, team-member exchange, and perceived organisational support. Each social exchange relationship is defined and their antecedents and consequences are reviewed. As the field has progressed, studies have begun to adopt a multi-foci approach to determine the unique role of each social exchange relationship in explaining a variety of employee outcomes. An overview of this body of literature is also provided. In the next part of the chapter information exchange is defined and the perceived costs and benefits associated with this behaviour are discussed. Finally, a review of personal and social contextual antecedents is provided.

4.2 SOCIAL EXCHANGE THEORY

Social exchange theory suggests that individuals' weigh up the costs and benefits of voluntary action in relationships (Blau, 1964). These relationships evolve in a gradual manner from basic transactional exchanges characterised by low levels of trust to mutually invested exchanges characterised by mutual obligation, gratitude, and trust (Blau, 1964). Social exchanges are distinct from economic exchanges as the terms are not formally explicated and thus, there is no certainty that action will be reciprocated or comparable in value (Blau, 1964). Thus, the subjective

evaluation of social exchanges determines the level of reciprocation between parties involved in the relationship (Blau, 1964; Messick & Sentis, 1983). Central to this theory is the norm of reciprocity which refers to the indebtedness, or felt obligation, one feels upon receiving a favour from another in a relationship (Gouldner, 1960). Reciprocity is underpinned by three elements: equivalence, immediacy, and interest-motives. Equivalence refers to the equivalent value of benefits or resources reciprocated between parties in an exchange relationship (Gouldner, 1960) and are believed to balance over time (Malinowski, 1922). According to Uhl-Bien and Maslyn (2003), immediacy refers to the amount of time between exchanges in a relationship (Gouldner, 1960). During this period, there is an obligation still awaiting reciprocation in the exchange relationship (Gouldner, 1960). Early in a relationship, the time span between exchanges is relatively short however as trust develops the amount of time between exchanges becomes longer and less important (Graen & Uhl-Bien, 1995; Uhl-Bien & Mayslen, 2003). Finally, self-interested motives to fulfil ones own needs are believed to guide individuals' exchange behaviour (Liden, Sparrow, & Wayne, 1997). However, as the relationship quality increases, individual motives are believed to shift away from self-interests to mutual-interested motives in which parties focus on the interests of the relationship (Graen & Uhl-Bien, 1995; Liden *et al.*, 1997).

Social exchange theory (Blau, 1964) and the norm of reciprocity (Gouldner, 1960) have been applied to organisational research to explain relational dynamics in the workplace. Employees are believed to form exchange relationships with multiple entities including their supervisors (Graen & Scandura, 1987; Graen & Uhl-Bien, 1995), work group (Seers, 1989), and organisation (Eisenberger, Huntington, Hutchinson, & Sowa, 1986). In this section, these social exchange relationships are defined and their associated antecedents and consequences are reviewed. Given that this study examines the effect of employee attachment styles on social exchange relationships, the antecedents reviewed in this section relate to employee personal characteristics.

4.3 LEADER-MEMBER EXCHANGE (LMX)

Leader-member exchange (LMX) theory focuses on the quality of the social exchange relationship between an employee and immediate supervisor. Over time, the quality of the LMX is said to develop from basic transactional exchanges to mutually invested relationships (Graen & Uhl-Bien, 1995). This evolves over a three phase socialisation process which includes role-taking, role-making, and role-routinisation (Graen & Scandura, 1987; Katz & Kahn, 1978). During this process, the exchange and reciprocation experienced by dyadic members shape the quality of the relationship that develops and mutual acceptance of the employees influence, decision-making latitude, and autonomy (Graen & Scandura, 1987). A low quality LMX relationship remains at a transactional level and is limited to the fulfilment of contractual obligations and low levels of trust (Graen & Scandura, 1987; Graen & Uhl-Bien, 1995). As a natural corollary, employees in low quality LMX relationships experience limited autonomy, support, and decision making latitude (Graen & Uhl-Bien, 1995). In contrast, high quality LMX relationships are characterised by open communication, trust and loyalty, a mutual sense of fate, support, and discretion in work tasks (Graen & Uhl-Bien, 1995; Liden & Mayslen, 1998).

Despite the benefits of high quality LMX relationships, obstacles such as time restraints, workload pressures, personality differences, and supervisory span often impede a leader's ability to develop high quality relationships with each employee (Green, Anderson, & Shivers, 1996; Uhl-Bien, Graen, & Scandura, 2000). This results in the emergence of 'in-group' and 'out-group' employee collectives (Dienesch & Liden, 1986). Employees in the in-group experience higher quality LMX relationships than their out-group peers. These employees have greater access to resources, developmental opportunities, support, and report higher levels of job satisfaction (Dienesch & Liden, 1986; Gerstner & Day, 1997). Though leaders play a central role in the development of LMX relationships, employees also influence this process (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012). Of interest to this study is the role of employee personal characteristics in the development of LMX relationships.

4.3.1 Personal Characteristics and LMX

A number of employee personal characteristics have been identified that are believed to impact the development of LMX relationships. In particular, the effect of the 'Big Five' personality traits has received the greatest attention. Research consistently shows that individuals high in extraversion are more inclined to seek out interaction with their leaders and thus have more opportunities to develop high quality LMX relationships (Bernerth, Armenakis, Feild, Giles, & Walker, 2007; Dulebohn *et al.*, 2012; Nahrgang, Morgeson & Ilies, 2009; Phillips & Bedeian, 1994). Conscientious individuals have also been found to report higher quality LMX relationships (Bernerth *et al.*, 2007; Dulebohn *et al.*, 2012; Erdogan & Liden, 2002; Lapierre & Hackett, 2007). Conscientious employees are viewed by their leaders as competent and dedicated to their tasks and thus receive greater resources, support, and opportunities leading to higher quality LMX (Bernerth *et al.*, 2007). Individuals high in agreeableness are more co-operative, altruistic, and respectful and have been consistently related to high quality LMX (Bernerth *et al.*, 2007; Dulebohn *et al.*, 2012; Erdogan & Liden, 2002; Nahrgang *et al.*, 2009).

The effect of openness to experience and neuroticism on LMX has received less empirical attention and the results have been inconsistent. Bernerth and colleagues (2007) argue that employees high in openness to experience are intrinsically interested in new and challenging tasks. As a consequence, these individuals may be viewed favourably by their leaders resulting in greater opportunities for relationship development. While Dulebohn and colleagues' (2012) meta-analysis of 247 studies did not find support for this link, Bernerth and colleagues (2007) found support for this relationship however it was not in the predicted direction. In fact, employee openness to experience had a negative relationship with LMX perceptions. Related research presents interesting findings that may explain this result. This research shows that openness to experience is associated with lower compromising in conflict situations (Chanin & Schneer, 1984) and a strong tendency to approach, rather than avoid, intellectual arguments (Blickle, 1995; 1997). Similarly, Bono, Boles, Judge, and Lauver (2002) found that individuals high in openness to experience report higher levels of relationship and task conflict. In LMX

relationships, it is equally plausible that individuals high in openness may experience more conflict in LMX relationships and thus report lower quality LMX. Bernerth and colleagues (2007) also found support for the negative relationship between employee neuroticism on LMX perceptions. According to the authors, neurotic individuals' low self-esteem and negative affectivity may cause them to have less confidence in their ability, focus on negative aspects of themselves and others, and thus report negative perceptions of LMX relationship quality. Though Dulebohn and colleagues (2012) did not find evidence for this relationship, the effect of neuroticism on LMX was close to the significance level. Interestingly, Bono and colleagues (2002) found that neuroticism is significantly associated with higher frequency of conflict however not with relationship and task specific conflict. Clearly, the relationship between openness to experience and neuroticism is complex. Given the conflicting findings from these studies and limited empirical attention, further research needs to be conducted to bring clarity to this underdeveloped area.

Research has also explored the relationship between dispositional affect and perceptions of LMX quality. Dispositional affect reflects an individuals' tendency to experience positive or negative emotions. Overall, this research shows that positive affect, which is characterised by optimism, enthusiasm, and determination, has a consistent positive relationship with perceptions of high LMX quality (Bauer & Green, 1996; Dulebohn *et al.*, 2012; Hui, Law, & Chen, 1999; Kinicki & Vecchio, 1994). According to Dulebohn and colleagues (2012), leaders are likely to ascribe positive affectivity with engagement and motivation in work tasks and delegate favourable tasks resulting in the development of higher quality LMX relationships. In contrast, employees with negative affectivity tend to be more fearful, anxious, and hostile and possess negative perceptions of themselves and others (Dulebohn *et al.,* 2012). Another dispositional trait that has received attention in the LMX literature is locus of control. Individuals with an internal locus of control typically view events as under their control while those with an external locus of control tend to believe events are outside their scope of control (Rotter, 1966). According to Dulebohn and colleagues (2012), employees with an internal locus of control are

more likely to actively engage in initiative based behaviours (i.e. feedback seeking, negotiation, and increased communication) and develop higher quality LMX relationships. In general, research supports the significant relationship between employee internal locus of control and perceptions of LMX quality (Dulebohn *et al.,* 2012; Harris, Harris, & Eplion, 2007; Kinicki & Vecchio, 1994; Martin, Thomas, Charles, & Epitropaki, 2005).

Taken together, this body of research suggests that employee personal dispositions play an important role in shaping the development of LMX quality. Though inconsistencies have emerged (i.e. the influence of openness to experience and neuroticism), the author has considered other bodies of research that may explain these anomalies. What is most evident is the limited attention that has been paid to this research avenue. This presents extensive research opportunities to bring more clarity to this field which one of the aims of this study. In this next section, the relationship between LMX and employee outcomes is reviewed.

4.3.2 Outcomes of LMX

Empirical studies conducted over the last twenty years demonstrate the important role of LMX relationships for motivating favourable behavioural and performance outcomes. The meta-analytic work of Gerstner and Day (1997), Illies, Nahrgang, and Morgeson (2007), and Dulebohn and colleagues (2012) highlight the most prevalent LMX outcomes. Gerstner and Day's (1997) meta-analysis of 85 studies shows that employee perceptions of LMX quality relates to leader evaluations of employee performance, objective performance, job satisfaction, satisfaction with leader, organisational commitment, and low levels of role conflict and turnover intentions. Illies and colleagues (2007) meta-analysis of 50 studies found that LMX has a positive effect on employee citizenship behaviour directed at organisational members (i.e. leaders and team members) and the organisation.

Finally, Dulebohn and colleagues (2012) meta-analysis supported the relationship between high LMX relationships and higher levels of employee performance, organisational citizenship behaviour, job satisfaction, satisfaction with leader,

organisational commitment, lower turnover intentions and actual turnover, and role ambiguity and role conflict. In addition, Dulebohn and colleagues (2012) found a significant relationship between LMX and seven additional outcomes that have not been subject to previous meta-analytic testing. These include affective and normative commitment, pay satisfaction, procedural and distributive justice, empowerment, and perceptions of politics. Other employee outcomes that have not been included in these meta-analyses include the effect of LMX quality on career progress (Scandura & Schriesheim, 1994), goal commitment (Klein & Kim, 1998), job stress (Bernas & Major, 2000), positive self-efficacy (Murphy & Ensher, 1999), perceived leader delegation and consultation (Yukl & Fu, 1999), and transformational leadership (Howell & Hall-Merenda, 1999; Pillai, Schriesheim, & Williams, 1999). Taken together, this research demonstrates the importance of LMX relationships for a multitude of employee attitudes, behaviours, and performance outcomes. Another major organisational relationship that is considered is the social exchange relationship that develops between an employee and their work group as a whole which is reviewed in the next section.

4.4 TEAM-MEMBER EXCHANGE (TMX)

Team-member exchange (TMX) theory focuses on the relationship that develops between an employee and their work group. TMX is defined as *'an individual's perception of his or her exchange relationship with the peer group as a whole'* (Seers, 1989: 119). According to Seers (1989: 119), TMX represents an individuals willingness to *'assist other members, to share ideas and feedback, and in turn, how readily information, help, and recognition are received from other members'.* As is evident from this definition, TMX has theoretical roots in social exchange (Blau, 1964) and the norm of reciprocity (Gouldner, 1960). However, unlike LMX, which focuses on the dyadic exchange between employees and leaders, TMX represents the reciprocity between a group member and their work group as a whole.

TMX can be understood in terms of a group member's contribution to, and receipt of, social exchanges and reflects an employee's perception of the quality of their TMX relationship (Ford & Seers, 2006). Contributions refer to individual efforts to support other members in the work group. These efforts include information and expertise, assistance, communication, and socio-emotional support while receipts refer to the actions reciprocated from the group to the group member (Seers, Petty, & Cashman, 1995; Seers, 1989). Low quality TMX relationships are characterised by low trust and limited transactional exchanges that are necessary to fulfil work demands (Liden, Wayne, & Sparrowe, 2000; Seers, 1989). In contrast, high quality TMX relationships extend beyond transactional exchanges and are characterised by mutual sharing of expertise and power, trust, co-operation, and socio-emotional support (Liden *et al.*, 2000; Seers, 1989). Employees in high quality TMX relationships experience greater reciprocity from team members and a safe psychosocial relational environment (Scott & Bruce, 1994). Benefits associated with high quality TMX relationships include higher levels of instrumental support in the way of expertise, feedback, and socio-emotional support (Liden *et al.*, 2000; Seers, 1989). Given these benefits, a great deal can be learned from examining personal characteristics that influence the development of TMX relationships.

4.4.1 Personal Characteristics and TMX

Empirical research focusing on personal characteristics as determinants of TMX quality is extremely limited. From an extensive review of the literature, the author could not locate a single study that directly considers employee personal characteristics as an antecedent of TMX relationships. However, in a recent study, Liao, Yang, Wang, Drown, and Shi (2012) found that the effect of TMX on employee engagement is stronger for employees high in extraversion and low in neuroticism and conscientiousness. Given that TMX shares similar conceptual roots with LMX (Seers, 1989) it is plausible that personal dispositions associated with LMX may also extend to TMX relationships. For example, similar to the relationship between dispositional affectivity and LMX, Tse and Dashborough (2008) found that positive emotional responses are associated with high quality TMX relationships. Positive emotional responses are believed to influence individuals' commitment to the

development of these relationships (Tse & Dashborough, 2008). Though these emotional responses are state-like and not stable traits, on the basis of these findings it is possible that dispositional affectivity may extend to TMX perceptions. However, more research needs to be conducted to determine the relevance of employee personal dispositions for the development of TMX relationships.

4.4.2 Outcomes of TMX

A growing body of research has considered the effect of TMX on employee attitudinal, behavioural, and performance outcomes. Reciprocal behaviour in high TMX relationships has been shown to facilitate greater co-ordination of group tasks, enhance members' willingness to assist one another, and share ideas and feedback which in turn improves employee performance (Liden *et al.*, 2000; Seers, 1989). High TMX relationships have also been associated with higher levels of employee work engagement (Dollard & Bakker, 2010; Liao *et al.,* 2012), greater job satisfaction (Major, Kozlowski, Chao, & Gardner, 1995; Seers, 1989; Seers *et al.,* 1995), lower turnover intention (Major *et al.*, 1995) and actual turnover (Hellman, Witt, & Hilton, 1993; Maertz & Griffeth, 2004). The impact of TMX has also been extended to discretionary behaviours such as greater exchange of resources and feedback (Kamdar & Van Dyne, 2007; Liu, Keller, & Shih, 2011), helping behaviour (Anderson & Williams, 1996), organisational commitment (Hellman, Mitt, & Hilton, 1993; Liden *et al.*, 2000; Major *et al.*, 1995; Sherony & Green, 2000), and citizenship behaviour (Anand, Vidyarthi, Liden, & Rousseau, 2010; Love & Forret, 2008). The research conducted thus far shows that TMX relationships appear to be an important source of motivation for a variety of employee outcomes. However, despite the benefits of TMX quality, no research has directly examined the effect of employee personal dispositions on the development and maintenance of these relationships. The absence of empirical research highlights a void in this research area that the present study aims to fill by considering the influence of attachment styles on employees' perception of TMX relationship quality. In the next section, employees' perception of their organisations supportiveness is reviewed.

4.5 PERCEIVED ORGANISATIONAL SUPPORT (POS)

Perceived organisational support (POS) is defined as an employee's general perception of the degree to which their organisation values their contribution and cares about their wellbeing (Eisenberger *et al.*, 1986). In developing their theory, Eisenberger and colleagues drew upon Levinson's (1965) view that employees attribute anthropomorphic dispositional traits to the organisation. Favourable actions on the organisations part include legal, moral, and financial accountability, fair organisational policies and norms, and a supportive culture (Eisenberger, Cummings, Armeli, & Lynch, 1997). POS can also be interpreted through organisational agents via the actions of management and the provision of job security (Eisenberger *et al.*, 1997). Organisational support theory argues that this personification enables the formation of a metaphoric exchange relationship between employees and their organisation (Eisenberger *et al.*, 1986). Similar to the exchange relationship that develops with the leader and work group, POS is theoretically underpinned by social exchange theory (Blau, 1964) and the norm of reciprocity (Gouldner, 1960). However, unlike the exchange relationship at the leader and work group level, POS is one-sided as it focuses entirely on the organisations side of the exchange (Coyle-Shapiro & Conway, 2005). Consistent with the norm of reciprocity, POS is believed to influence employees' obligation to reciprocate favourable actions directed at the organisation such as organisational commitment and efforts to meet organisational goals (Eisenberger *et al.*, 1986).

4.5.1 Personal Characteristics and POS

Much like the TMX literature, personal characteristics as antecedents of POS have received minimal empirical attention. The majority of antecedent research focuses on the actions of the organisation and its leaders as precursors to POS (Rhoades & Eisenberger, 2002). Rhoades and Eisenberger's (2002) meta-analytic study of more than 70 studies found that employee dispositional affectivity and conscientiousness significantly influence perceptions of POS. Individuals high in positive affectivity are believed to develop high quality relationships and as a result report higher levels of organisational support. However, given that employees with negative affectivity are

less likely to develop high quality relationships this results in lower levels of POS. Also, conscientious employees' tendency to exert greater effort in work tasks leads to increased resources and support from others and thus favourable evaluations of organisational support (Rhoades & Eisenberger, 2002). Rhoades and Eisenberger (2002) found that employee affectivity is strongly associated with POS while conscientiousness had a moderate impact. These findings provide initial evidence for the role of personal dispositions in explaining individual differences in POS.

4.5.2 Outcomes of POS

Organisational support theory argues that POS creates a sense of reciprocal indebtedness to the organisation in lieu of the support and resources received (Eisenberger *et al.*, 1986). Rhoades and Eisenberger (2002) meta-analysis report that POS has a positive impact on a number of employee outcomes. Specifically, POS has a strong effect on job satisfaction, positive mood at work, affective organisational commitment, and turnover intentions. In addition, POS has a moderate influence on job involvement, extra-role performance, strains, and withdrawal behaviours (i.e. absenteeism and tardiness). Finally, POS has a small but consistent effect on continuance commitment to the organisation, actual turnover, and in-role-job performance. The strongest outcome associated with POS is affective commitment demonstrating the direct reciprocation of support targeted at the organisation. In another meta-analysis of 167 studies, Riggle, Edmondson, and Hansen (2009) found that POS has a strong effect on employee job satisfaction, organisational commitment, reduced turnover intention, and a moderate effect on employee performance. The authors suggest that this moderate effect should be further investigated to determine the significance of POS for performance. Combined, these studies signal that organisational supportiveness enables employees to enjoy more fulfilling work experiences. Moreover, POS motivates employees' reciprocation of favourable behavioural outcomes that contribute to the fulfilment of organisational goals. In the following section, multi-foci studies that consider the role of social exchange relationships simultaneously are reviewed.

4.6 MULTI-FOCI SOCIAL EXCHANGE RESEARCH

As evidenced in the previous section there is considerable theoretical and empirical commonality between organisational social exchange relationships. Despite this, studies have generally focused on a single social exchange relationship without considering the effects of the others. Masterson, Lewis, Goldham, and Taylor (2000) suggest that an examination of social exchange relationships simultaneously affords a more complete account of employees' social exchange experience. Multi-foci studies enable the identification of similarities and differences in social exchange relationships and determine which relationship is most influential to a targeted outcome variable (Khazanchi & Masterson, 2011). A collection of studies, albeit limited, have taken initial steps in this direction and are reviewed below.

4.6.1 Research Integrating LMX and TMX

Multi-foci research integrating both LMX and TMX generally explores the extent to which TMX explains additional variance in employee and organisational outcomes beyond the effects of LMX. Seers (1989) explored the effect of both LMX and TMX on employee job satisfaction and found that TMX explained additional variance beyond the effect of LMX. This finding supports not only the discriminant validity of the TMX construct but the predictive power of TMX over LMX for employees' job satisfaction. In a longitudinal study, Major and colleagues (1995) found that both LMX and TMX significantly predict employee job satisfaction, organisational commitment, and turnover intentions. In the presence of LMX, the impact of TMX reduced however maintained its significance implying the importance of both relationships for these employee outcomes. Similarly, Liden and colleagues (2000) found that LMX and TMX explain unique variance in organisational commitment, however only TMX had a significant effect on employee performance. This demonstrates the salience of TMX relationships for employee performance. In another study, Murphy, Wayne, Liden, and Erdogan (2003) found LMX quality exerted a significant negative effect on social loafing while TMX did not have a significant influence. This demonstrates the value of LMX over TMX for reducing employee social loafing behaviour.

Other studies have examined the effect of LMX and TMX on employee creativity and innovative work behaviour- a concept closely related to employee creativity. Scott and Bruce (1994) found that LMX had a significant influence on innovative work behaviour however the effect of TMX did not reach significance. The authors conclude that this non-significance may be attributed to low task interdependence among participants in the study. This highlights a potential boundary condition for TMX such that employees in interdependent jobs may be more reliant on their co-workers for innovative behaviour. In another study, Liao, Liu, and Loi (2010) found that LMX and TMX exerted unique direct effects on employee creativity. In addition, LMX and TMX had unique indirect effects on creativity indirectly through self-efficacy. The unique explanatory power of LMX and TMX suggest that these relationships provide distinctive and complimentary forms of support and resources that enhance employee self-efficacy and creativity (Liao *et al.*, 2010). Liao and colleagues also identified relationship differentiation (i.e. the unequal dispersion of support) as a boundary condition for the effect of LMX and TMX on self-efficacy. Under conditions of low LMX differentiation, LMX predicted self-efficacy, however high LMX differentiation significantly reduced this effect. In contrast, TMX differentiation enhanced the effect of TMX on self-efficacy such that when TMX differentiation was low, the effect of TMX became non-significant. The authors conclude that LMX differentiation may violate fairness perceptions which in turn obstruct the efficacy enhancing effect of LMX. In contrast, TMX differentiation is believed to yield valuable social comparisons which strengthen the effect of TMX on self-efficacy. While these studies examine the simultaneous effect of LMX and TMX on employee outcomes including creativity, other research has focused exclusively on POS and LMX and is reviewed next.

4.6.2 Research Integrating LMX and POS

A growing body of research reviewed in this section has considered the effects of both LMX and POS on employee outcomes. Settoon, Bennett, and Liden (1996) tested the simultaneous effect of LMX and POS on in-role job performance and organisational citizenship behaviour and commitment. The authors found that LMX had a significant effect on organisational citizenship behaviour while POS was

significantly related to in-role job performance and organisational commitment. The authors conclude that the differential effect of LMX and POS on employee outcomes is attributed to the unique support and resources provided by each exchange relationship. As a result, employees target their reciprocal behaviour at the focal entity from which the support is received. In a similar study, Wayne, Shore, and Liden (1997) found that LMX influences outcomes that directly benefit the supervisor including performance, supervisor directed citizenship behaviour, and favour-doing while POS significantly influenced behaviour directed at the organisation. These include organisational affective commitment, citizenship behaviour, and lower levels of intention to quit. Wayne and colleagues also found antecedents unique to LMX and POS. POS was predicted by organisational developmental experiences (i.e. formal training and development) while LMX was predicted by supervisors liking of their employees and leader expectations.

In other work, Masterson and colleagues (2000) found that both LMX and POS related to job satisfaction however POS exerted a stronger effect. In a longitudinal study, Tekleab, Takeuchi and Taylor (2005) show that both LMX and POS had a significant effect on job satisfaction however POS was only marginally related to job satisfaction. Finally, Khazanchi and Masterson (2011) examined the simultaneous effect of LMX and POS on supervisory reports of employee creativity. Findings show that LMX exerted a significant direct effect on employee creativity and an indirect effect through information sharing. Though POS related to idea promotion it did not have a significant effect on creativity suggesting that the supervisor relationship is more salient for employee creativity. In terms of organisational antecedents, collectively the research shows that POS is uniquely predicted by inclusion, recognition, organisational procedural, distributive, and informational justice while LMX determinants include contingent reward, supervisory procedural, interactional, and informational justice (Cropanzano, Prehar, & Chen, 2002; El Akremi, Vandenberghe & Camerman, 2010; Khazanchi & Masterson, 2011; Masterson *et al.*, 2000; Rupp & Cropanzano, 2002; Tekleab *et al.*, 2005; Wayne *et al.*, 1997). Moreover, the mediating function of both POS and LMX with respect to their unique antecedents and consequences is also demonstrated.

4.6.3 Research Integrating LMX, TMX, and POS

Despite an extensive search of the literature, only two studies could be identified that integrate LMX, TMX, and POS simultaneously. Magni and Pennarola (2008) examined the effects of LMX, TMX, and POS on new technology acceptance. The authors found that both TMX and POS have a positive effect on ease of use and perceived usefulness of technology while LMX influenced perceived usefulness but not ease of use. The effect of TMX on technology acceptance suggests that the work group is vital for the integration of new technologies in terms of support and information exchange. Additionally POS, to a lesser extent, plays a role in the facilitating a smooth transition to new technology systems however TMX is more salient for ease of use (Magni & Pennarola, 2008). Finally, the significant effect of LMX on perceived usefulness highlights the role of the leader for encouraging employees' acceptance of new technology. In the next study, Anand and colleagues (2010) examined the differential moderating influence of LMX, TMX and POS on the relationship between idiosyncratic deals and organisational citizenship behaviour. Findings show that LMX moderated the relationship between i-deals and citizenship behaviours directed at the organisation and organisational members while TMX only moderated the relationship between idiosyncratic deals and citizenship behaviour targeted at the organisation. Also, POS did not serve as a moderator in the model nor was it related to idiosyncratic deals despite prior evidence (i.e. Rousseau & Kim, 2006). This is consistent with Settoon and colleagues (1996) result of the salience of LMX over POS on organisational citizenship behaviour.

Overall, the pattern of results emerging from multi-foci research raises a number of major considerations. These findings are supportive of the distinctive nature of each social exchange relationship in terms of their antecedents and employee outcomes. Thus, despite their conceptual overlap, multi-foci research highlights their distinct and complimentary effects on favourable employee outcomes. By integrating these social exchange relationships in a single study, it appears that researchers can capture a holistic understanding of employees social exchange experience in the workplace. In the present study, social exchange relationships (i.e. LMX, TMX, and POS) are considered important motivational processes through

which attachment styles influence both employee information exchange and creativity. In the next section, information exchange literature is discussed. In this study, information exchange is included as an explanatory process variable to demonstrate the cognitive process through which attachment styles and social exchange relationships influence employee creativity.

4.7 INFORMATION EXCHANGE

Researchers have not yet come to a consensus regarding a clear definition of information and knowledge exchange (Wang & Noe, 2010). Some argue that information is simply the flow of messages (Nonaka, 1994) while others believe knowledge consists of information and expertise (Kogut & Zander, 1992; Wang & Noe, 2010; Zander & Kogut, 1995). According to Wang and Noe's (2010) review, many researchers use these terms interchangeably and believe there is not much practical use in distinguishing knowledge from information (Bartol & Srivastava, 2002; Huber, 1991; Makhija & Ganesh, 1997). In addition to this, the terms 'sharing', 'exchange', and 'transfer' have been used interchangeably across knowledge management literature. Some authors include 'knowledge sharing' in their definition of information exchange (e.g. Cummings, 2004; Hansen, 1999) while others define knowledge transfer as 'knowledge sharing' and 'knowledge exchange' in their discussion (e.g. Levin & Cross, 2004). In contrast, others treat knowledge sharing as a process leading to an outcome of 'knowledge transfer' (e.g. Reagans & McEvily, 2003; Tsai, 2002). In light of this, the present study defines information exchange as an individual level behaviour that involves the *'conscious and deliberate effort to exchange work-related information, expertise, knowledge, and ideas'* (Gong *et al.*, 2010: 2). This includes the sharing and receipt of information and knowledge within and across work units.

4.7.1 Costs and Benefits of Information Exchange

Individuals are believed to regulate their behaviour based upon a rational self-interested cost-benefit analysis (Blau, 1964) and take action based upon the expectation of future reciprocity (Gouldner, 1960). As previously mentioned, there is no guarantee that the co-operative intentions of the other party in an exchange will be reciprocated (Blau, 1964). As a consequence, expectation is determined by the level of interpersonal trust developed between parties (Gouldner, 1960). This expectation of reciprocation is believed to encourage positive attitudes and motivation toward knowledge sharing (Cabrera & Cabrera, 2005). Kankanhalli, Tan, and Wei (2005) report that perceived reciprocation motivates employee knowledge sharing even under conditions of weak pro-sharing norms. The significance of reciprocation for motivating knowledge sharing is further supported in other empirical studies (e.g. Bock & Kim, 2002; Bock, Zmud, Kim, & Lee, 2005).

Knowledge can be seen as a valuable commodity or currency that is exchanged in return for some benefit or value to the employee (Davenport & Prusak, 1998). The intangible nature of knowledge often makes it difficult to observe and quantify (Kogut & Zander, 1992). As a result, organisations struggle to enforce employees to share knowledge with their co-workers (Chow & Chan, 2008). Given the value of knowledge, people are often unwilling to engage in knowledge sharing except when the perceived benefit exceed, or at least equal, the cost of this exchange (Cabrera & Cabrera, 2005; Constant, Kiesler, & Sproull, 1994; Davensport & Prusak, 2000). Employees often choose not to share knowledge and information for a number of reasons. As knowledge is an invaluable asset that provides a source of personal leverage it can be used by employees to maintain their value and significance to the organisation (Fulk, Heino, Flanagin, Monge, & Bar, 2004). By sharing knowledge employees may compromise their unique value, career progression, and even job security (Davenport & Prusak, 2000). Thus, knowledge sharing is unlikely to occur if an individual perceives little benefit from this behaviour (Davenport & Prusak, 2000). Moreover, employees are less willing to share information with others whom they perceive to be unhelpful in previous interactions (Constant *et al.*, 1994).

Costs incurred by knowledge sharing include time, energy, and a loss of competitive advantage while benefits include extrinsic rewards (i.e. a good reputation, job security, promotional prospects, and bonus and pay) and intrinsic rewards (i.e. increased knowledge efficacy, altruism, and the creation of obligations for future reciprocation) (Bock & Kim, 2002; Davenport & Prusak, 2000; Kankanhalli *et al*., 2005; Weiss, 1999). Constant and colleagues (1994) found that personal benefits are significant motivators of information sharing. However, of the extrinsic benefits mentioned, economic rewards do not always have a positive effect on knowledge sharing (Bock *et al.*, 2005; Bordia, Irmer, & Abusah, 2006; Hung, Durcikova, Lai, & Lin, 2011). Kankanhalli and colleagues (2005) found that the effect of extrinsic benefits on knowledge sharing is moderated by contextual factors such as interpersonal trust, pro-sharing norms, and identification however not for intrinsic motivation. Liang, Liu, and Wu's (2008) meta-analysis of 29 studies found that organisational commitment, strong relationships, trust, reward systems, perceived benefits, and social interaction are positively associated with knowledge sharing.

4.8 A REVIEW OF ANTECEDENTS OF INFORMATION EXCHANGE

This section provides a review of antecedents of knowledge sharing behaviour that have been identified in the literature thus far. Of particular interest are personal characteristics and aspects of the social environment that influence employees' motivation to share information and knowledge.

4.8.1 Personal Characteristics and Information Exchange

Despite evidence that personal characteristics play an important influential role in work attitudes and behaviour (Judge, Heller, & Mount, 2002) little empirical attention has been paid to this in the knowledge sharing literature. The majority of antecedent research focuses on managerial factors as determinants of knowledge sharing (Matzler *et al*., 2008). Of the personal characteristics considered, the Big Five personality traits have received the greatest deal of attention. Openness to experience (i.e. the level of intellectual curiosity, imagination, and preference for

variety; Barrick & Mount, 1991) is shown to be the strongest predictor of knowledge sharing across studies (Cabrera, Collins, & Salgado, 2006; De Vries, Van den Hooff, & De Ridder, 2006; Matzler & Mueller, 2011; Matzler *et al.*, 2008; Wang & Yang, 2007). However, Wang, Noe, and Wang (2011) note the effect of openness to experience is conditional on the social environment. The authors found that employees high in openness to experience engage in lower levels of knowledge sharing in organisations that reward this behaviour. However, employees' openness to experience relates to higher levels of knowledge sharing in organisations that encourage this behaviour but do not reward it. Wang and colleagues conclude that employees high in openness to experience are possibly motivated by their own self-interests to seek out knowledge rather than share it with others.

Research has also consistently shown that agreeableness (i.e. a tendency to be good-natured, helpful, generous, and co-operative; Barrick & Mount, 1991), has a positive effect on employee knowledge sharing (Cabrera *et al.*, 2006; De Vries *et al.*, 2006; Ferguson, Paulin, & Bergerson, 2010; Matzler *et al.*, 2008; Wang & Yang, 2007). Employees' extraversion (i.e. self-confidence, assertiveness, and sociability; Barrick & Mount, 1991) has also been found to exert a positive influence on employee knowledge sharing (De Vries *et al.*, 2006; Ferguson *et al.*, 2010; Wang *et al.*, 2011). Extraverts have been shown to share knowledge irrespective of rewards and accountability for this action (Wang *et al.*, 2011). In addition, conscientious employees' reliance, hard work, and dependability (Barrick & Mount, 1991) has been associated with higher levels of knowledge sharing behaviour (Matzler *et al.*, 2008; Mooradian *et al.*, 2006; Wang & Yang, 2007) however other work failed to support this relationship (Cabrera *et al.*, 2006; Teh, Yong, & Chong, 2007). Wang and colleagues (2011) findings of the differential effect of openness to experience in organisations that reward knowledge sharing versus those that encourage it but do not reward it highlight the role of the organisational context for explaining the effect of personality on this behaviour. It is possible that these inconsistencies can be explained by future research that considers the interaction between conscientiousness and aspects of the context. Finally, one study has shown that employee neuroticism (i.e. a high level of anxiety, depression, and fear; Barrick &

Mount, 1991) does not relate to knowledge sharing (Wang & Yang, 2007). Research has also considered other personal characteristics that influence knowledge sharing. Matzler and Muller (2011) examined the link between goal orientation (i.e. learning versus performance) and knowledge sharing behaviour. The authors found that learning-orientated employees' interest in the development of skills and knowledge leads greater levels of knowledge sharing. However, performance orientated employees' desire for success and out-performing others discourages knowledge sharing as it can be seen to compromise their competitive advantage. The critical difference between these orientations is their view of ability (Dweck, 1986). Learning orientated individuals view ability as constantly developing and thus seek out new information to facilitate learning and development (Dweck, 1986). In contrast, performance orientated individuals view ability as fixed. As a result, these individuals avoid knowledge sharing as it may compromise their perceived value in the organisation (Dweck, 1986).

Another body of research has considered the role of proactive personality for explaining individual differences in knowledge sharing behaviour. Employees with proactive personalities are similar to learning orientated individuals as they are motivated by learning and actively initiate constructive change in their environment (Frese & Fay, 2001; Major, Turner, & Fletcher, 2006). Gong and colleagues (2010) identified proactive personality as an important personality determinant of information exchange. Through information exchange, proactive employees were found to accumulate the necessary information and knowledge resources to develop ideas and opportunities for change (Gong *et al.*, 2010). In other work, Bordia and colleagues (2006) examined the relationship between evaluation apprehension and knowledge sharing. Evaluation apprehension (i.e. the fear of negative appraisal) was found to have a negative effect on self-evaluation and knowledge sharing behaviour. It appears that the fear of negative appraisal and negative self-evaluation outweighs the perceived benefits of knowledge sharing behaviour. In a review of the literature, Wang and Noe (2010) propose that core self-evaluations (i.e. global self-esteem, self-efficacy, locus of control, and emotional stability) may also influence knowledge sharing by stimulating positive

attitudes of the usefulness of this behaviour and reduce evaluation apprehensions. In previous research, self-efficacy (i.e. the belief in one's ability to perform a specific task; Bandura, 1997) has been positively associated with knowledge sharing intentions (Cabrera *et al.*, 2006), knowledge sharing behaviour (Bock & Kim, 2002; Kankanhalii *et al.*, 2005), and the collection of knowledge from others (Lin, 2007). Given the consistent findings, it seems that employee self-efficacy is highly relevant to their knowledge sharing intentions and behaviours.

Overall, research demonstrates that employee personal characteristics play an influential role in explaining individual differences in knowledge sharing behaviour. Of the characteristics reviewed, it is clear that this behaviour is contingent on employees' self-confidence, interpersonal skills, learning orientation, prosocial tendencies, and self-perception. However, some inconsistencies have emerged with respect to the effect of employees' openness to experience and conscientiousness on knowledge sharing. The work of Wang and colleagues (2011) suggests that the effect of personal characteristics on knowledge sharing may be more complex than previously assumed. It is plausible that aspects of the person interact with the environment to influence knowledge sharing behaviour. The interaction between the person and context is certainly evident in the creativity research reviewed earlier and may also explain anomalies in the knowledge sharing literature. In light of this, the role of the social context for influencing employee knowledge sharing behaviour is considered in the next section.

4.8.2 Social Context and Information Exchange

Nahapiet and Ghoshal (1998) identify three dimensions of organisational social capital that contribute to employee knowledge sharing: structural, cognitive, and relational capital. Structural capital is the network configuration of ties that exist between members in an organisation. Cognitive capital refers to shared language and narratives that exist within organisational networks and provide a shared comprehension of knowledge. The final dimension, relational capital, refers to relationships that exist between network members and highlights the importance of interpersonal trust, shared norms, and identification among members. Both

structural and cognitive capital act as facilitators of knowledge sharing while relational capital is believed to be a key motivational resource (Cabrera & Cabrera, 2005; Nahapiet & Ghoshal, 1998). Bock and colleagues (2005) suggest that strong relationships are characterised by frequent communication that enable the receipt and dissemination of informal information resources. These are believed to be more effective and cost efficient than formal mechanisms (Bock *et al.*, 2005).

Supervisor and Co-workers

Despite the apparent importance of supervisory and co-worker relationships for knowledge sharing, research on this area appears to be somewhat limited. Nonetheless the literature does show that supervisors and co-workers play an influential role in employee knowledge sharing behaviour. Cabrera and colleagues (2006) found that supervisory and peer support for knowledge sharing enhances this behaviour. The authors argue that support for knowledge sharing informs an employee's normative belief that this behaviour is expected and approved and thus motivates higher levels of engagement. Similarly, Kulkarni, Ravindran, and Freeze (2006) found that supervisor and co-worker support for knowledge sharing and a collective positive attitude toward this behaviour enhances employee perceptions of the usefulness of knowledge sharing and use.

In another study, Liao (2008) found that supervisors' expertise power (i.e. knowledge and expertise) and power over reward directly influence employee knowledge sharing behaviour. However, other research argues that supervisors should act as facilitators rather than adopting a control and command role to encourage knowledge sharing in their work groups (MacNeil, 2007). Taken together, these studies show that supervisory and co-worker relationships have an important motivational influence on employees' knowledge sharing. According to Kulkarni and colleagues (2006) these interactions contribute to the formation of an organisational culture that values knowledge creation, sharing, and use which reinforces the environment's receptivity to this behaviour.

Organisation

An organisational culture characterised by trust has received the greatest deal of attention in knowledge sharing literature (Wang & Noe, 2010). Ruppel and Harrington (2001) identify three organisational cultures that facilitate knowledge sharing: ethical cultures characterised by trust and concern for its members, a developmental culture that encourages flexibility and innovation, and a hierarchical culture that has policies, procedures, and information management systems in place. Research shows that a trusting culture mitigates apprehension anxieties and perceptions of costs associated with knowledge sharing (Kankanhalli *et al.*, 2005; Kulkarni *et al.,* 2006). Other research has shown that employees high in organisational commitment engage in higher levels of knowledge sharing behaviour (Cabrera *et al.*, 2006; De Vries, *et al*, 2002; Wasko & Faraj, 2005). The logic underlying these findings is that organisational commitment motivates employee knowledge sharing as a means of contributing to the collective goals of the organisation. This motivational effect is driven largely by the norm of reciprocity and a sense of responsibility to the collective group. In other work, DeLong and Fahey (2000) found that organisational values and practices that are supportive of knowledge sharing enhance this behaviour across organisational units. Moreover, organisations with innovative cultures that possess norms of open collaboration also encourage knowledge sharing behaviour (DeLong & Fahey, 2000). Overall, this research suggests that organisations that cultivate developmental and trustworthy cultures through its policies and practices promote knowledge sharing among its employees by incorporating this behaviour into its normative activities.

4.9 CONCLUSION

In this chapter a review of the literature relating to the mediating variables included in the present study was provided. Social exchange relationships can be seen as important motivational factors that impact a host of different employee outcomes. With respect to the personal characteristics, the majority of research appears to be located in the LMX literature while both TMX and POS literature appear to be underdeveloped. In addition, multi-foci studies have integrated these literatures and returned some fruitful findings particularly in terms of the differential antecedents and consequences of these relationships and their complementary effect on employee outcomes. This chapter has also provided an overview of the knowledge sharing literature. From the literature reviewed, it appears that knowledge is a valuable commodity in organisations. Moreover, the exchange of this resource is often determined by a self-interested evaluation of the costs and benefits of the exchange, personal characteristics, supervisory and co-worker relationships, and organisational climate and culture. In the next chapter, the theoretical framework and hypotheses developed in this study are presented.

CHAPTER FIVE

THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

5.1 INTRODUCTION

This chapter integrates the bodies of literature reviewed in the preceding chapters to develop the study's research model and hypotheses. The theoretical framework underlying the study is also presented. Through this interpretative lens, the proposed indirect relationship between attachment styles and employee creativity via intervening variables social exchange relationships and information exchange is explained. In the forthcoming chapter, the research methodology used to test these hypotheses is discussed.

5.2 THEORETICAL FRAMEWORK

The present study adopts Ford's (1996) theory of creative action to explain the process through which attachment styles indirectly influence employee creativity.[1] This is a promising theoretical framework for the present study as it places the employee's subjective interpretation of the social environment as an important role in the process that leads to creative behaviour. The sensemaking process involves the extraction of cues from the social environment to make sense of a situation (Weick, 1995). The interpretation and meaning derived from this process is believed to shape an employee's schema of creative action by influencing the formation of goals and expectations (i.e. receptivity and capability beliefs) regarding the personal consequences of their creative action (Ford, 1996). According to Gioia, Thomas,

[1] The present study is located at the individual level and aligns itself with Amabile (1988) and Ford's (1996) definition of creativity as a domain specific, subjective judgement of the novelty and usefulness of employees' ideas, products, or procedures.

Clark, and Chittipeddi (1994), it is the interpretation of behaviour rather than behaviour per se that influences interaction relationships. Moreover, employees' personality or trait dispositions are believed to influence this interpretive process (Ford, 1996). Specifically, individuals are believed extract social cues in a manner consistent with their personal disposition (Madjar *et al.,* 2011).

The present study proposes that employee attachment styles may be an important antecedent to this interpretative process by influencing the extraction and interpretation of social cues from the environment. Given that attachment styles are interpersonal schemas they may be particularly relevant to this process. The social environment considered in this study includes social exchange relationships employees develop with their immediate supervisor, work group, and organisation. Employee attachment styles are believed to directly influence the evaluation of the quality of these relationships and willingness to engage in information exchange behaviour. Through this sequential path, attachment styles are proposed to indirectly impact employees' creative performance.

5.3 ATTACHMENT STYLES AND SOCIAL EXCHANGE RELATIONSHIPS

This study proposes that attachment styles influence employee perceptions of the quality of their social exchange relationship with their immediate supervisor (LMX), work group (TMX), and organisation (POS). Unlike economic exchanges, the value of action in social exchange relationships is not explicitly stated (Brown, 1986). This evaluation is based upon the recipients' subjective interpretation which in turn determines the level of effort a recipient feels obliged to reciprocate (Blau, 1964; Messick & Sentis, 1983). As attachment styles shape social perception, particularly with respect to interpersonal exchanges (Desivilya *et al.*, 2007), this study proposes that these dispositional traits may guide employees' sensemaking of their social exchange relationships. Specifically, an employee's attachment style may orient their evaluation of favours received in these relationships, expectations of others, and future obligations to reciprocate.

According to Ainsworth and Bowlby (1991), an individual learns about the nature of social exchange through their relational experience with primary caregivers. From this, an individual develops expectations regarding subjective norms of reciprocity and equity in interpersonal relationships (Fraley & Shaver, 2000; Hazan & Shaver, 1987). In adulthood, attachment styles develop into relatively stable dispositions and influence an individual's relationship functioning (Richards & Hackett, 2012). Secure adults (i.e. those low in attachment anxiety and avoidance) are predisposed to connect well in relationships, are helpful and considerate of others' needs, more trusting of others, and hold optimistic expectations of relationships (Brennan *et al.*, 1998; Hazan & Shaver, 1987; Shaver & Hazan, 1993). Their satisfaction with the supportiveness of others and willingness to help others enables the development of balanced reciprocal relationships. Moreover, their trust and optimistic expectations is likely to have a positive impact on their anticipation of future reciprocation from others in exchange relationships. Given that high quality exchange relationships are characterised by trust, respect, and mutual obligation (Graen & Uhl-Bien, 1995), secure adults may be predisposed to form such relationships (Richards & Hackett, 2012). In contrast, anxious and avoidant adults are expected to form unfavourable perceptions of organisational social exchange relationships. Anxious and avoidant adults report lower levels of satisfaction in relationships (Hazan & Shaver, 1990; Kirkpatrick & Davis, 1994; Li & Chan, 2012; Simpson, 1990), lower levels of emotional and instrumental support (Collins & Read, 1990; Florian, Mikulincer, & Bucholtz, 1995; Mikulincer & Florian, 1995; Vogel & Wei 2005), and less satisfaction with support received (Collins & Feeney, 2004).

Anxious adults need to establish interpersonal closeness is believed to be driven by their unmet attachment needs (Mikulincer *et al.*, 2003). Despite their strong desire for closeness, anxious adults generally report feelings of being misunderstood, jealously, and disappointment in relationships (Bartholomew, 1990; Hazan & Shaver, 1987). This is a consequence of their general expectation of others as inconsistent in their availability and supportiveness and their preoccupation with abandonment fears (Bartholomew & Horowitz, 1991). Thus, anxious adults are hypervigilant to social cues from the environment which creates an overwhelming

sense of interpersonal anxiety. This manifests behaviourally as clingy, demanding, and needy behaviour (Bartholomew & Horowitz, 1991; Brennan *et al.*, 1998). In the workplace, Hazan and Shaver (1990) found that anxious adults work hard to maintain relationships however this over investment coupled with feelings of being underappreciated trigger perceptions of imbalanced reciprocation. Avoidant adults' negative view of others predisposes a general sense of distrust and avoidance of interpersonal closeness (Bartholomew & Horowitz, 1991). While anxious adults engage in hyperactivating strategies to establish closeness, avoidant adults adopt a deactivating strategy which involves the suppression of their attachment needs in preference for self-reliance (Mikulincer *et al.*, 2003). A behavioural outcome of this is their defensive devaluation of relationships and disinterest in the needs of others (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987). In the work place, avoidant employees prefer solitary work practices, use work to avoid interaction (Hazan & Shaver, 1990), report less satisfaction with interpersonal aspects of their work (Hardy & Barkham, 1994), and exhibit low levels of helpfulness towards their co-workers (Desivilya *et al.*, 2007). They are also more critical of others and project negative self-traits onto others in the workplace (Little, Nelson, Wallace, & Johnson, 2010). Given this pattern of results, this study argues that insecure adults may negatively evaluate their social exchange relationships at work.

5.3.1 Attachment Styles and LMX

Employees with insecure attachment styles are hypothesised to possess negative evaluations of their LMX relationship quality. Researchers argue that anxious adults expect their leaders to be inconsistent in their responsiveness, supportiveness, and attentiveness, and undervalue their performance (Keller, 2003; Keller & Cacioppe, 2001). Avoidant adults, on the other hand, are believed to possess general views of their leaders as insensitive, indifferent, and inattentive, and expect leaders to negatively evaluate their performance (Keller, 2003; Keller & Cacioppe, 2001). Keller (2003) argues that avoidant employees may depend on their pre-existing negative view of others to evaluate their leaders as they typically resist new information when forming judgements of others (Green-Hennessy & Reis, 1998). Thus, avoidant adults' general distrust of others and avoidance of interpersonal

relationships may result in little if any effort to compete with their leaders other distractions (i.e. workload pressures) to develop a relationship. In contrast, anxious adults' dependency in others and inability to work autonomously (Hazan & Shaver, 1990) may overwhelm their supervisor and cause them to distance themselves from the burdensome follower (Keller-Hansbrough, 2012). As a consequence, both avoidant and anxious employees may occupy their leader's "out-group" zone. Consistent with the norm of reciprocation, these "out-group" members are less likely to have access informational resources and support (Dansereau *et al.*, 1975).

Research shows that avoidant adults view their leaders as personalised and report critical evaluations of their leader's performance despite their actual socialised leadership behaviour (Davidovitz *et al.*, 2007). Similarly, in an experimental study, Keller-Hansbrough (2012) found that anxious adults perceive their leaders as transformational despite the absence of these elements in their leader's behaviour. Keller-Hansbrough suggests that anxious adults may perceive transformational leadership qualities even when they do not exist due to their overwhelming desire to satisfy their attachment needs. Other research shows both insecure employees report negative evaluations of interactional justice (Desivilya *et al.*, 2007). Given that interactional justice is shown to predict LMX perceptions (Cropanzano *et al.*, 2002; Erdogan, Liden, & Kraimer, 2006; Khazanchi & Masterson, 2011; Masterson *et al.*, 2000; Rupp & Cropanzano, 2002; Tekleab *et al.*, 2005), the impact of attachment styles may also extend to evaluations of LMX quality. Recent work by Richards and Hackett (2012) provide initial evidence for the negative effect of attachment insecurity on LMX perceptions. It is possible that the unmet attachment needs of insecure adults distort their perceptions of leaders which in turn have implications for their LMX relationship. What we learn from these studies is that attachment insecurities may influence employees' ability and willingness to develop quality LMX relationships. Thus, it is hypothesised that:

Hypothesis 1(a): Both attachment anxiety and avoidance will have a negative relationship with LMX.

5.3.2 Attachment Styles and TMX

Employees are also believed to evaluate their TMX relationships in a manner consistent with their attachment style. Smith and colleagues (1999) report that both anxious and avoidant group attachment is associated with lower perceived support from their groups. While group anxiety was associated with stronger negative emotional reactions directed at group members, group avoidance was associated with lower positive affect and identification. Rom and Mikulincer (2003) also found that anxious adults held negative views of themselves as group members and negative expectations of group interaction. Avoidant adults reported distrust in the motives of their group members, devalued benefits of interacting with their group, and expressed little interest in group interaction (Rom & Mikulincer, 2003).

The present study extends this line of research to the workplace and argues that anxious and avoidant adults are predisposed to possess unfavourable evaluations of their TMX relationships. Anxious adults' negative self perception is likely to lead to a lack of confidence in their ability as a team member to contribute to group activities and provide instrumental support to others in the group. Moreover, their uncertainty in the availability of others (Bartholomew & Horowitz, 1991) and perceived unequal reciprocation in work relationships (Hazan & Shaver, 1990) may cause them to develop negative expectations about the availability of their work group. Given that avoidant adults are critical and distrustful of others (Hazan & Shaver, 1987) and dissatisfied with work relationships is general (Hardy & Barkham, 1994), it is likely that the perceived costs of interacting with their work group excessively outweighs the expected benefits. Thus it is hypothesised that:

Hypothesis 1(b): Both attachment anxiety and avoidance will have a negative relationship with TMX.

5.3.3 Attachment Styles and POS

Employees are also hypothesised to evaluate their organisation's supportiveness in a manner consistent with their attachment style. The employee-organisational relationship is more distal than that of the supervisory and work group relationship. Thus, employees may become more dependent on their attachment styles to make sense of this relationship. Certainly, previous research alludes to this possibility in their findings. Both anxious and avoidant employees have been shown to exhibit lower levels of organisational citizenship behaviour (Desivilya *et al.*, 2007) and organisational commitment (Mikulincer & Shaver, 2007). Taken together, these studies demonstrate the significance of attachment styles for predisposing employee evaluation of social exchanges and subsequent behaviour. Given the consistent evidence that relates POS to these constructs (Rhoades & Eisenberger, 2002; Riggle *et al.*, 2009) it is plausible that attachment styles may also impact employees' evaluation of their organisations supportiveness.

Anxious and avoidant adults' general distrust in the reliability and supportiveness of others (Hazan & Shaver, 1990) may cause these individuals to distrust their organisations actions. Their general dissatisfaction with support received in work relationships (Hazan & Shaver, 1990) may also extend to dissatisfaction with their organisation's supportiveness. Thus, it is hypothesised that both anxious and avoidant employees will report negative perceptions of the degree to which their organisation supports them and cares about their wellbeing.

Hypothesis 1(c): Both attachment anxiety and avoidance will have a negative relationship with POS.

5.4 ATTACHMENT STYLES AND INFORMATION EXCHANGE

The present study argues that attachment styles influence employees' evaluation of the costs and benefits associated with information exchange. It is proposed that both anxious and avoidant employees may perceive the costs of exchanging information with their co-workers excessive in light of the expected benefits. Thus, employees high in attachment anxiety and avoidance may engage in lower levels of information exchange however the motives underlying their actions differ.

As secure adults are not distracted by defensive attachment strategies (Mikulincer *et al.*, 2003), they have the cognitive freedom to explore their environment and exchange ideas and information with others. Secure adults are shown to possess stronger mastery orientation (Elliot & Reis, 2003), cognitive openness (Mikulincer & Shaver, 2001), and actively seek out new information (Mikulincer, 1997). Secure adults have also been shown to view themselves as competent (Collins & Read, 1994), effective team members (Berson *et al.*, 2006), and anticipate positive evaluations from others regarding their performance (Keller & Cacioppe, 2003). As a consequence, these individuals may anticipate others as open and welcoming of their informational support. At work, secure adults report higher levels of support seeking (Joplin *et al.*, 1999) and greater satisfaction with the support received in relationships (Collins & Feeney, 2004). From this, it can be assumed that secure adults are more inclined to seek out information and knowledge resources from others and reciprocate in kind.

Prior research shows that anxious adults report general negative self-evaluations while avoidant adults hold negative self-evaluations in the social realm and little self-criticism in achievement and instrumental domains (Collins & Read, 1990; Pietromonaco & Carnelley, 1994). Anxious employees are believed to hold expectations that their performance will be criticised by others (Keller & Cacioppe, 2003) and worry that they will be rejected if their work is of poor quality (Hazan & Shaver, 1990). In line with this, Davoidovitz and colleagues (2007) found that anxious adults report low self-efficacy in task-orientated activities. While research

shows that anxious adults are active in information seeking this is used to locate threats in their social environment and avoid this behaviour if it is perceived to compromise their relationships (Mikulincer, 1997). As anxious employees perceive a lack of reciprocation in relationships (Hazan & Shaver, 1990) they are unlikely to feel obligated to reciprocate by sharing information with co-workers. Research from knowledge literature also shows that low levels of knowledge sharing is associated with low self-efficacy (Bock & Kim, 2002; Cabrera *et al.*, 2006; Kankanhalli *et al.*, 2005; Lin, 2007), evaluation apprehension, and anxiety due to the fears of negative appraisal (Bordia *et al.,* 2006). Given the parallels in these literatures it is possible that anxious adults will report lower levels of information exchange behaviour.

In contrast, avoidant adults report positive self-efficacy in task domains (Davidovitz *et al.*, 2007), a preference for solitary intellectual exploration (Green & Campbell, 2000), a disinterest in social interaction, and a preference for autonomous work (Hazan & Shaver, 1990). Moreover, avoidant adults have been shown to hold negative views of information seeking as it requires interaction with others (Mikulincer, 1997). Given the interpersonal nature of information exchange, it is unlikely that avoidant adults will voluntarily share their knowledge and information with others. In fact, previous research shows that avoidant attachment relates to lower levels of support seeking (Richards & Schat, 2007; Vogel & Wei, 2005) and lower provision of instrumental support to co-workers (Collins & Feeney, 2000; Geller & Bamberger, 2009). According to Collins and Feeney (2000) when individuals do seek assistance from avoidant adults they are met with reluctance. As knowledge sharing is conditional on an individuals' perception of others as honest, capable, and honourable (Bakker *et al.*, 2006), avoidant adults distrustful nature and critical view of others competency (Davidovitz *et al.*, 2007) is likely to create little desire to seek out, or provide, informational support to others. Thus it is hypothesised that:

Hypothesis 2: Both attachment anxiety and avoidance will have a negative relationship with information exchange.

5.5 SOCIAL EXCHANGE RELATIONSHIPS & INFORMATION EXCHANGE

The present study predicts that high quality social exchange relationships motivate employees to engage in higher levels of information exchange behaviour. From a sensemaking perspective, extracted social cues from high quality exchange relationships can contribute to the formation of favourable expectations regarding the personal consequences of their actions. High quality relationships encourage collective goals that promote collaboration and information sharing (Seers, 1989; Graen & Uhl-Bien, 1995). This creates normative beliefs of information sharing that stimulate positive receptivity beliefs regarding the openness and responsiveness of others to information exchange behaviour. In addition, the provision of resources in these relationships enhances employee cognitive resources (Amabile, 1996) and may strengthen capability beliefs regarding their effective information exchange.

5.5.1 LMX and Information Exchange

The quality of LMX relationships are believed to determine the level of information, resources, effort, and support exchanged between supervisors and employees (Dansereau *et al.*, 1975; Graen & Scandura, 1987). Employees are more inclined to spend time communicating ideas and opinions and share valuable information to the extent that this behaviour is inline with the role expectation established in LMX relationships (Graen & Graen, 2006; Liden *et al.,* 1997; Wayne *et al.,* 1997). Thus, information can be seen as a form of 'currency' that a leader is receptive to and employees exchange to fulfil their reciprocity obligation (Davenport & Prusack, 1998). Moreover, in high quality LMX relationships, leaders are believed to inspire employees to transcend their own self-interests and internalise broader collective goals (Gersnter & Day, 1997; Graen & Uhl-Bien, 1995). These high LMX members exert greater effort, work harder, and often engage in tasks that go above and beyond basic requirements of their work role (Liden & Maslyn, 1998). The provision of resources and support in LMX relationships are also believed to encourage an open environment and enhance self-efficacy beliefs (Gerstner & Day, 1997; Liao *et al.*, 2010; Murphy & Ensher, 1999). Within the knowledge sharing literature, such environmental features are shown to contribute to increased levels of knowledge

sharing (Bock & Kim, 2002; Kankanhalli *et al.*, 2005; Lin, 2007). In recent work, Carmeli and colleagues (2011) found that high quality LMX relationships strengthen employees' relational and organisational identification (i.e. belongingness) which in turn stimulates knowledge sharing. Similarly, Khanzanchi and Masterson (2011) found that LMX is positively associated with employees information sharing. Based on this theory and empirical evidence, the present study proposes that high quality LMX relationships provide an impetus that motivates employees to engage in higher levels of information exchange behaviour.

Hypothesis 3(a): High quality LMX will have a positive relationship with information exchange.

5.5.2 TMX and Information Exchange

The TMX relationship can be considered to be particularly relevant to information exchange behaviour given that this behaviour is largely directed at co-workers. The quality of TMX is believed to influence the level of reciprocation of helping behaviour, support, and recognition from team members (Liden *et al.*, 2000; Seers, 1989). This can be seen to ultimately contribute to the formation of a flow of information and resources between co-workers. According to Seers (1989), low quality TMX relationships involve transactional exchanges characterised by low levels of trust and support. In contrast, collective goals and shared ownership in high TMX relationships result in helping behaviours and collective efforts to meet their shared objectives (Seers, 1989). These include mutual sharing of expertise and power, feedback and socio-emotional support, co-operation and assistance, and recognition (Liden *et al.*, 2000; Seers *et al.*, 1995).

According to Ford and Seers (2006), employees use their team members as social models to learn from which contributes to their formation of capability beliefs. Research has shown that the provision of adequate feedback, social support, and employee empowerment in high quality TMX relationships enhances employee self-efficacy (Liao *et al.*, 2010; Liden *et al.*, 2000). Within the knowledge sharing literature, high self-efficacy has been associated with greater knowledge sharing

intentions and behaviour among co-workers (Bock & Kim, 2002; Cabrera *et al.*, 2006; Kankanhalli *et al.*, 2005; Lin, 2007). Other research shows that concepts closely related to TMX (i.e. strength of ties, co-worker support, and interpersonal trust) are positively related to both the giving and receiving of helping behaviour (Renzl, 2008; Settoon & Mossholder, 2002; Zarrage & Bonache, 2003). TMX has also been directly associated with helping behaviour targeted at co-workers (Kamdar & Van Dyne, 2007) and employees' intention to share knowledge (Liu *et al.*, 2011). Given that high quality TMX relationships create norms of information sharing and enhanced capability beliefs, the present study hypothesises that:

Hypothesis 3(b): High quality TMX will have a positive relationship with information exchange.

5.5.3 POS and Information Exchange

The present study also hypothesises that employees' perception of the extent to which their organisation supports and cares about their wellbeing will enhance their information exchange behaviour. POS is believed to strengthen employee beliefs that the organisation recognises their efforts and rewards performance (Eisenberger *et al.*, 1987). Related research shows that POS is associated with citizenship behaviours directed at co-workers including interpersonal helping, assistance with work related problems, and extra role performance (Moorman, Blakey & Niehoff, 1998; Shore & Wayne, 1993; Wayne *et al.*, 1997). Within the knowledge sharing literature, a supportive organisational climate is believed to motivate employees to work beyond their own self-interests and view knowledge sharing as a means of contributing to organisational long-term goals (Kankanhalli *et al.*, 2005; Kulkarni *et al.*, 2006; Ruppel & Harrington, 2001). Thus, knowledge sharing can also be seen to be a discretionary behaviour that may be influenced by POS (Bartol, Liu, Zeng, & Wu, 2009). King and Marks (2008) examined this relationship and found that POS enhances employee efforts to contribute efficacious knowledge in the organisation. However, after controlling for the effects of technology usefulness and ease of use, the influence of POS became non-significant. This demonstrates the salience of technology usefulness and ease of use

over a supportive organisational climate in IT settings. However in another study, Bartol and colleagues (2009) found that POS had a positive relationship with knowledge sharing for employees that perceive high levels of job security. POS has also been shown to encourage employees to share their ideas and knowledge to facilitate constructive change (Eisenberger, Armeli, Rexwinkel, Lynch & Rhoades, 2001). Inline with these findings and theoretical logic, the present study proposes that an organisation's supportiveness provides social cues to employees of its favourable receptivity to their information exchange efforts. As a result, employees may reciprocate with higher levels of information exchange behaviour.

Hypothesis 3(c): High quality POS will have a positive relationship with information exchange.

5.6 SOCIAL EXCHANGE RELATIONSHIPS AND EMPLOYEE CREATIVITY

The present study proposes that high quality social exchange relationships with immediate supervisors (LMX), work groups (TMX), and the organisation (POS) will motivate higher levels of employee creativity. Research shows that high quality social exchange relationships create an environment conducive to creativity through the provision of instrumental and socio-emotional support (Khazanchi & Masterson, 2011; Liao *et al.*, 2010; Scott & Bruce, 1994). Employees in high quality exchanges experience greater provision of resources and a mutual sharing of ideas and expertise (Graen & Uhl-Bien, 1995; Seers, 1989). Furthermore, the provision of socio-emotional support creates a psychologically safe environment that facilitates the exchange of ideas and risk-taking behaviour (Edmundson, 1999; West, 2002).

From a sensemaking perspective, social cues extracted from high quality social exchange relationships can have a positive influence on employees' receptivity and capability beliefs regarding the successfulness of their creative action. Madjar and colleagues (2011) found that signals from the social environment regarding the availability of resources suggest to employees that creativity is desirable and encouraged in the environment. Additionally, the provision of support in exchange

relationships enhances employee capability beliefs (e.g. creative self-efficacy) which in turn stimulate a preference for creativity over habitual action (Tierney & Farmer, 2004). In contrast, the limited availability of resources and support in low quality social exchange relationships may be interpreted as an environment unreceptive to new ideas. This may contribute to employees' formation of unfavourable capability beliefs regarding creative action and thus reject creativity in preference for habitual action (Madjar *et al.*, 2011; Unsworth & Clegg, 2010).

5.6.1 LMX and Employee Creativity

There are a number of reasons to believe that LMX will exert a positive influence on employee creativity. High quality LMX relationships are characterised by trust, open communication, the provision of resources, support, and autonomy in work tasks (Graen & Uhl-Bien, 1995). High LMX employees are also known to engage in more challenging tasks and risk-taking behaviours than their low LMX peers (Graen & Cashman, 1975; Liden & Graen, 1980). Taken together, these factors may parallel with the behavioural inputs necessary for creative performance. However, the few studies that have examined the link between LMX, creativity, and innovative work behaviour have produced inconclusive results. Scott and Bruce (1994) found that interpersonal support, trust, and security provided by high LMX relationships enhance employees' willingness to engage in idea generation and promotion behaviours. Similarly, Basu and Graen (1997) found that LMX quality was directly related to innovative behaviour. However, contrary to these findings, Lee (2008) found that LMX did not exert a significant effect on employee innovativeness. In fact, Lee reported that only the loyalty dimension of LMX had a significant effect. Lee concluded that LMX relationships characterised by trust and loyalty result in greater delegation of challenging tasks and responsibilities which may be more salient to creative opportunities. In other work, Atwater and Carmeli (2009) found that LMX influences employee creative work involvement indirectly through its effect on employees' sense of energy in their work.[2] Similarly, Volmer, Spurk, and

[2] Creative work involvement is a similar construct to creativity and refers to employees' subjective assessment of their engagement in creative processes that precede creativity (Carmeli & Schaubroeck, 2007: 36).

Niessen (2011) found that LMX has a direct effect on employee creative work involvement. However, under conditions of low job autonomy, the effect of LMX reduced to an insignificant level demonstrating the salience of decision-making latitude over LMX for creative work involvement.

Four empirical studies were identified in the literature that directly examined the effect of LMX on employee creativity. Tierney and colleagues (1999) report that employees in high LMX relationships were associated with greater supervisor reports of employee creativity, higher quality invention disclosures, and the submission of more research reports than their low LMX peers. In addition, this relationship was moderated by employees' cognitive style. Specifically, LMX was more relevant to employees with an adaptive or moderately innovative cognitive style than to those with an innovative cognitive style who exhibited creativity regardless of the quality of their relationship. It is possible that the social cues extracted from high quality LMX relationships encourage adaptive employees to make efforts to take creative action. While Tierney and colleagues found support for the effect of LMX on employee creativity, LMX explained a small percentage of the variance however this may be attributed to the objective and supervisory reports of creativity. In a longitudinal study using multi-source data, Liao and colleagues (2010) found that LMX significantly predicted employee creativity, assessed via technical reports, both directly and indirectly through self-efficacy. In addition, they found that the influence of LMX on self-efficacy is moderated by LMX differentiation (i.e. the unequal dispersion of support across employees in the work group). Khazanchi and Masterson (2011) also found that LMX exerted a significant direct effect on employee creativity and indirect effect via information sharing.

Olsson, Hemlan, and Pousette (2012) also examined the relationship between LMX and employee creativity, assessed via the number of publications, in academic and commercial research and development centres. Olsson and colleagues used Liden and Masyln's (1998) LMX multidimensional measurement scale to assess the

meaningfulness of each LMX dimension for creative performance.[3] Similar to Lee's (2008) finding, LMX measured as a unidimensional construct did not exert a significant influence on employee creativity. However, evaluation of the four dimensions of LMX produced mixed results in academic and commercial settings. In the commercial research setting, affect and loyalty had a negative effect on creativity. However, in academic setting, contribution, affect, and professional respect had a positive influence on employee creativity. Olsson and colleagues findings contrast with Lee's (2008) results of the significance of LMX loyalty in public and private contexts. Taken together, these initial studies demonstrate the complexity of the LMX-employee creativity relationship and necessity for future research to determine the relevance of LMX for creativity. Tierney (2008) suggests that studies should examine LMX in terms of its ability to serve as a motivating, enabling, and interpretive force for employee's creativity. Given the theoretical logic and empirical evidence to date, this study proposes that high LMX relationships will enhance employee creativity.

Hypothesis 4(a): High quality LMX will have a positive relationship with employee creativity.

5.6.2 TMX and Employee Creativity

Research exploring the relationship between TMX and employee creativity has been remarkably sparse. However, initial work suggests that TMX may play a fundamental role in creating a relational environment conducive to creativity. High quality TMX relationships involve greater levels of communication, mutual sharing of ideas, and help and feedback among team members (Seers, 1989; Seers *et al.*, 1995). These collaborative work efforts result in a greater sense of socio-emotional support and an accumulation of informational resources crucial for the generation of creative ideas. In contrast, low quality TMX relationships are characteristic of low levels of trust, support, and co-operation (Seers, 1989). From a sensemaking

[3] LMX dimensions included in the LMX-MDM measurement instrument are loyalty, affect, contribution, and professional respect.

perspective, low TMX relationships can be seen to obstruct creativity by triggering employees' negative receptivity and capability beliefs. Research shows that TMX is associated with various employee outcomes including the provision of resources and feedback, helping behaviour, empowerment, work engagement, organisational commitment and citizenship behaviours (Anand *et al.*, 2010; Anderson & Williams, 1996; Dollard & Bakker, 2010; Kamdar & Van Dyne, 2007; Hellman *et al.*, 1993; Liao *et al.*, 2012; Liden *et al.*, 2000; Liu *et al.*, 2011; Love & Forret, 2008; Major *et al.*, 1995; Sherony & Green, 2000). These TMX outcomes may contribute to the formation of positive climate perceptions that facilitate employee immersion in creative tasks. In related work, Scott and Bruce (1994) proposed that innovative work behaviour is motivated by the provision of resources in the form of sharing and feedback in high TMX relationships. However, they failed to find support for this relationship and suggest that this may be due to the low task interdependence among employee participants in their study. From this, it can be assumed that the relative meaningfulness of TMX quality may be more relevant to work groups that are highly interdependent.

In other work, Liao and colleagues (2010) found that TMX exerted a direct effect, and indirect effect through self-efficacy, on employee creativity. The authors suggest that the provision of instrumental and emotional support in high TMX relationships elevates employee self-efficacy which leads to higher levels of creative performance. Beyond Liao and colleagues work, no research has examined the relationship between TMX and employee creativity. Of the research conducted, it appears that TMX may be an important motivational driver for employee creativity. Taken together, TMX can be seen to create a psychologically safe and supportive environment that enhances capability beliefs and stimulates the mutual sharing of ideas and expertise. Thus, it is plausible that these relational features act as a motivational stimulus for creativity.

Hypothesis 4(b): High quality TMX will have a positive relationship with employee creativity.

5.6.3 POS and Employee Creativity

Employees' perception of the degree to which their organisation is supportive and cares about their wellbeing can cultivate psychological safety perceptions which may lead to creative action. High POS conditions may enable employees to feel more at liberty to communicate their creative ideas without fearing negative consequences or appraisal if their ideas fail. High POS also suggests that the organisation values and recognises employee contributions (Eisenberger *et al.*, 1986) thus employees are likely to reciprocate with action that is of value to the organisation (Rhoades & Eisenberger, 2002). Given that employee creativity is believed to contribute to an organisation's competitiveness (Oldham & Cummings, 1996), employees may engage in higher levels of this behaviour to contribute to collective organisational goals. Research shows that POS has a significant influence on employee job satisfaction, in-role and extra-role job performance, positive mood, reduced strain, affective organisational commitment and citizenship behaviour, and reduced absenteeism and turnover (Rhoades & Eisenberger, 2002; Riggle *et al.*, 2009). These can be seen as important behavioural inputs for creativity and thus places POS as a potential source of motivation for creative performance.

Despite the apparent relevance of POS for creativity, little empirical attention has been paid to this research area. Of the research that has been conducted, the findings have been inconsistent. For instance, Eisenberger, Fasolo, and Davis-Lamastro (1990) found that POS is positively relates to employee creative suggestions to improve organisational operations. Similarly, Eisenberger and colleagues (2001) found that POS exerts a significant effect on employee organisational spontaneity, a construct that includes employees' offer of constructive suggestions. Beyond these, only one study could be identified that directly examines the relationship between POS and employee creativity. Khazanchi and Masterson (2011) found that POS related to employees' upward appeal (i.e. idea-promotion behaviour) however this did not have a significant effect on their creativity. The authors suggest that the provision of organisational support reduces employee anxiety regarding the promotion of creative ideas to senior colleagues however organisational support did not significantly enhance creative behaviour.

Given the theoretical logic, scarcity of research, and meaningfulness of creativity to organisations, the present study intends to empirically examine this relationship.

Hypothesis 4(c): High quality POS will have a positive relationship with employee creativity.

5.7 INFORMATION EXCHANGE AND EMPLOYEE CREATIVITY

Information exchange is believed to provide employees with the cognitive resources necessary to make connections that lead to creativity (Amabile, 1996). Constructive feedback from others and access to a variety of ideas and alternative perspectives contribute to the development of broader knowledge bases, the refinement of ideas, and more divergent solutions to problems (Grant & Ashford, 2008; Zhou, 2003). In the present study, information exchange involves the giving and receiving of information and ideas both within and outside ones work group (Gong *et al.*, 2010). This provides exposure to diverse individuals with different knowledge resources and perspectives (Stasser & Stuart, 1992). As such, employees are less vulnerable to convergent thinking and confirmatory evaluations associated with exchanges confined within groups (Nijstad & De Dreu, 2002).

Gong and colleagues (2010) propose that information exchange is positively related to creativity however found no direct effect in a sample of retail floor staff. The authors suggest that job complexity may represent a boundary condition for the relevance of information exchange in the process leading to creativity. In other work, Khazanchi and Masterson (2011) found that information sharing is positively associated with creativity. This study was located in a chemical engineering context thereby demonstrating the significance of this cognitive process for knowledge workers' creativity. Although information exchange is believed to be a fundamental driver for creativity (Amabile, 1996), little research has empirically tested this relationship. The relevance of information sharing is substantiated by Khazanchi and Masterson's (2011) findings however further empirical evidence is required. Ford (1996) argues that the provision of resources provides social cues to the

employee of the environment's receptivity to creative ideas and thus legitimises creative behaviour. Moreover, the accumulation of cognitive resources through information exchange may enhance employees' capability beliefs regarding the potential success of their creative actions. Thus it is hypothesised that:

Hypothesis 5: Information exchange will have a positive relationship with employee creativity.

5.8 MEDIATION HYPOTHESES

In addition to the five direct effect hypotheses proposed above, the present study proposes three mediation hypotheses which are justified below.

5.8.1 The Mediating Role of Social Exchange Relationships

This study hypothesises that social exchange relationships (i.e. LMX, TMX, and POS) will mediate the relationship between employee attachment styles and information exchange behaviour. This study aligns with previous research that views personal dispositions as distal antecedents that influence behaviour through their effect on more proximal motivational antecedents (i.e. Barrick, Mount, & Strauss, 1993; Judge & Larsen, 2001; Judge & Ilies, 2002; Mount, Illies, & Johnston, 2006). Specifically, the study proposes that social exchange relationships act as motivational mechanisms through which employee attachment styles influence their information exchange. During the sensemaking process, the provision of resources and support in these relationships relays social cues to the employee regarding the receptivity of the environment to information exchange. Moreover, the accrual of information from these relationships may enhance employee capability beliefs regarding the value of the information they can exchange with others. As a result, these favourable expectations may enhance employee information exchange. However, the positive motivational effect of these relationships is based upon the perceived quality of the social exchange (Graen & Uhl-Bien, 1995; Liden & Maslyn, 1998), which in this study is believed to be determined by employees' attachment style. In this study, attachment styles are

proposed to play an integral part in employees' sensemaking process by guiding the selection and interpretation of social cues from the environment which influences their evaluation of their exchange relationship quality and in turn their information exchange behaviour. Thus, it is hypothesised that:

Hypothesis 6: The effect of attachment anxiety and avoidance on information exchange will be mediated by a) LMX, b) TMX, and c) POS.

5.8.2 The Mediating Role of Information Exchange

As mentioned above, the provision of socio-emotional and instrumental support in high quality exchange relationships is believed to motivate employees to actively exchange information with their co-workers. This can be seen to stimulate employees' positive receptivity and capability beliefs regarding their creative action. Employees that experience high quality relationships are believed to form favourable expectations regarding the personal consequences of their creative action. As information exchange contributes to the development of cognitive resources such as skills, expertise, and alternative ideas (Amabile, 1996) this can be seen as an important process through which these relationships enhance creativity (Amabile, 1996). Therefore, information exchange is proposed to act as a cognitive process through which social exchange relationships influence employee creativity.

Hypothesis 7: Information exchange will mediate the relationship between:

a) TMX and employee creativity,
b) LMX and employee creativity,
c) POS and employee creativity.

5.8.3 Indirect Effect of Attachment Styles on Employee Creativity

Research from attachment field has found evidence for the significant relationship between attachment styles and creativity-related constructs. These include trait curiosity (Mikulincer, 1997; Johnston, 1999), cognitive openness (Mikulincer & Shaver, 2001), exploratory attitudes and behaviour (Elliot & Reis, 2003; Green & Campbell, 2000), achievement orientation (Elliot & Reis, 2003), and creative

problem-solving (Mikulincer & Sheffi, 2000). The present study extends this research to the organisational creativity domain and proposes that attachment styles will indirectly influence employee creativity through perceptions of social exchange relationship quality and information exchange behaviour.

It is proposed that attachment styles influence employees' sensemaking process through the extraction and interpretation of social cues from their social exchange relationships. This, in turn, is believed to inform their evaluation of the quality of their social exchange relationships and the formation of expectations regarding the personal consequences of their creative action (Ford, 1996). Both anxious and avoidant employees are proposed to possess negative perceptions of relationship quality and thus derail the potential motivational benefits gained from high quality exchange relationships. As a result of these negative relational perceptions, anxious and avoidant employees may engage in lower levels of information exchange and accumulate lower levels of cognitive resources necessary to develop creative ideas and suggestions. These intervening variables help explain the motivational and cognitive processes through which attachment insecurities may have a negative indirect influence on employee creativity.

Hypothesis 8: Both attachment anxiety and avoidance will have an indirect effect on employee creativity through:

a) LMX and information exchange,
b) TMX and information exchange,
c) POS and information exchange.

5.9 CONCLUSION

The purpose of this chapter was to provide an overview of the theoretical logic underlying the proposed research hypotheses. Overall, the study proposes that attachment styles indirectly influence employee creativity through their effect on perceptions of social exchange relationships and information exchange behaviour. In the forthcoming chapter the study's research methodology is discussed.

CHAPTER SIX

RESEARCH METHODOLOGY

6.1 INTRODUCTION

This chapter briefly reviews the philosophical foundations of the present study. Following this, the research process is described which includes the research and survey design, data collection procedures, and details about the research context. In the next section, a missing data analysis is conducted followed by a power analysis to determine whether the sample size provides sufficient statistical power to test the research model. Next, a one-way ANOVA analysis is carried out to identify significant differences among the 12 participant organisations. Also, as immediate supervisors provide creativity reports on more than one employee there is a possibility that the dyads may not be unique (i.e. non-independent). Thus, one-way ANOVA and intra-correlation coefficient (ICC) tests are used to ensure data is located at the individual level of analysis. The psychometric properties of the multi-item measurement instruments are presented along with an overview of the control variables used in the study. Finally, the chapter concludes with an outline of the data analysis procedures used to test the hypotheses developed in the study.

6.2 PHILOSOPHICAL FOUNDATIONS

The organisational creativity field falls under the umbrella domain of organisational behaviour and social psychology which are both heavily influenced by positivism (Mumford, Hunter, & Bedell-Avers, 2008). As a consequence of this, mainstream organisational creativity research traditionally adopts a positivist approach to research (e.g. Amabile *et al.*, 1996; Bartol & Zhang, 2010; George & Zhou, 2001; Oldham & Cummings, 1996; Tierney *et al.*, 1999; Tierney & Farmer, 2002; Zhou, 2003). Much like the organisational creativity field, social psychological research on

adult attachment is characterised by a positivist tradition. The social psychological perspective of adult attachment is premised upon the assumption that attachment styles are trait dispositions that can be reliably assessed using self-report measurement instruments. Self-report measures are believed to access feelings and behaviours related to relationships and serve as convenient surface indicators of the underlying attachment disposition (Bartholomew & Moretti, 2002; Shaver & Mikulincer, 2007).

The term positivism was coined by Auguste Comte (1896), a French mathematician and philosopher, who believed that for social interaction an objective truth exists independent of the researcher and thus can be observed objectively (Babbie, 2007). Epistemologically speaking, positivism assumes that theory is universal and a set of principles can be generalised to explain human behaviour. The positivist approach involves a highly structured methodology to generate theoretical generalisations (Saunders, Lewis, & Thornhill, 2009). This involves proposing hypotheses to make predictions about human behaviour which are tested through the quantification of observations and analysed by statistical techniques (Wardlow, 1989). Empirical findings are regarded as 'true' observations if confirmed through valid statistical analysis. If these hypotheses are rejected, new hypotheses are developed guided by theoretical principles, and repeat until a true account of human behaviour is found.

Given the positivist tradition in the organisational creativity and adult attachment fields, it is upon the foundations of positivism that this thesis is constructed. In accordance with the positivist approach, survey data is collected and quantitative analysis is performed to test the hypotheses developed. By aligning with the mainstream approach, the study's findings can be compared to previous work in the area and thus add to the current literature at a theoretical level.

6.3 RESEARCH DESIGN

Following the positivist tradition, the present study adopts a cross-sectional survey based design. Surveys provide a relatively convenient means of gathering data from a small percentage of a targeted population which is relatively inexpensive, quick, and facilitates participant flexibility (Bryman, 2001; Saunders *et al.*, 2009). The standardised nature of surveys also enables a more precise measurement of the targeted variables (Bryman, 2001; Cargan, 2007). Furthermore, survey designs make possible the inclusion of a large number of variables. Thus, confounding variables that may influence the relationship between variables under inquiry can be controlled for which is not possible in qualitative designs (Cargan, 2007). Despite these benefits, survey designs are limited as they can only determine the correlation between variables and not the causal direction of these relationships. Surveys are also vulnerable to social desirability and common method variance issues (Podsakoff, MacKensie, Lee, & Posakoff, 2003) however this can be mitigated, in part, through a careful research design.

In the present study, supervisory creativity reports were adopted to alleviate this potential threat. Immediate supervisors provided a creativity report on each employee participant while employee participants provided data for all the independent variables in the study. Immediate supervisors are believed to have the expertise and the observational opportunities necessary to provide an accurate assessment of employee creativity (Amabile, 1996). Moreover, previous research has shown that supervisory creativity reports are significantly correlated with objective indicators of creativity (i.e. invention disclosure forms and research reports; Scott & Bruce, 1994; Tierney *et al.*, 1999). Amabile (1996) points out that when an objective measure is not available, a judgement is often the best a researcher can do to gauge employee creativity. By including supervisory creativity reports, the present study is consistent with previous studies in the organisational creativity field that have used supervisory ratings to assess employee creativity (e.g. Bartol & Zhang, 2010; George & Zhou, 2001, 2002; Oldham & Cummings, 1996; Tierney *et al.*, 1999; Tierney & Farmer, 2002; Zhou & Oldham, 2001).

6.4 SURVEY DESIGN

As mentioned in the previous section, employee and supervisor surveys were used for data collection. Both web-based and paper-based surveys were developed, however all participants opted for the web-based survey option. In the preliminary stages of the survey development, the face validity of surveys was tested by distributing them to 40 test respondents from the academic and engineering profession. Once completed, respondents were asked to report their completion time and any identifiable issues related to readability, coherence, clarity, and length. Following feedback from this test sample, minor amendments were made to surveys to facilitate greater clarity and flow.

For the employee web-based survey, a unique identification code was attached to the end of each URL link. Once surveys were completed on-line, the researcher linked survey codes to each respondent name using a participant master sheet. For creativity reports, supervisors were e-mailed a master sheet linking employee names to a different ID code. Supervisors were asked to enter these codes in place of employee names in their creativity reports. Only the lead researcher had access to the master sheet connecting employee names to these two codes. The purpose of this coding system was to give participants confidence that their identities were protected and enable the researcher to match surveys for data analysis.

The introduction section of surveys provided a description of the study, emphasised the study's voluntary nature, a projected completion time, instructions for survey completion, and an assurance that *'there are no right or wrong answers'*. This, according to Podsakoff and colleagues (2003), reduces participants' tendency to respond in a socially desirable or defensive manner and increases motivation to provide honest and accurate answers. The creativity report also included a clear definition of employee creativity to ensure immediate supervisors had a uniform understanding of creativity. Podsakoff and colleagues (2003) suggest that defining ambiguous or unfamiliar terms decreases difficulty in responding to the items.

The employee survey comprised of four sections. The first section entitled *'personal characteristics'* assessed employees' attachment style and the second section *'workplace relationships'* included measures relating to leader-member exchange, team-member exchange, and perceived organisational support. The third section, *'work behaviour'*, targeted respondents' information exchange behaviour, and the final section *'demographic information'* consisted of items relating to their age, gender, education, employment status, job level, and tenure. A space was also provided at the end of the survey to enable respondents to provide additional information or comments. Finally, respondents were asked if they were willing to participate in follow-up interviews if pursued at a later stage in the research. A sample of both surveys is provided in Appendix A.

An introduction letter was also provided to inform participants of the study's major objectives and consisted of two parts: a description of the study and a question and answers section. Respondents were reassured of the voluntary nature of the study and that the information would be used for research purposes only. In addition, steps that were taken by the researcher to ensure confidentiality were highlighted. The purpose of the letter was to ensure that respondents had a clear understanding of what is involved should they choose to participate. The researcher's contact details were also provided in the introduction letter, e-mail, and survey if a participant wished to make contact. All participants were assured that their identities would be kept anonymous and only the lead researcher had access to the raw survey data (see Appendix B for introduction letter to participants).

6.5 DATA COLLECTION PROCEDURE

The present study used web-based surveys as the primary source of data collection. Prior to data collection a number of ethical considerations were addressed. A proposal including the study's purpose and methodology was submitted to the Dublin City University research ethics committee for review. Once approved by the committee, the researcher began field research immediately (see Appendix C for

letter of ethical approval). Twelve organisations participated in the study. The study was advertised on the Website of an Irish engineering professional body with the permission of the Director. From this, two organisations contacted the researcher indicating their interest and willingness to participate in the study. Seven organisations were recruited through personal and professional industry contacts. The remaining three organisations were contacted directly by the researcher via email and accepted the invitation to participate.

In advance of the data collection, it was agreed with management that the study would be introduced initially by a senior manager. An introduction email was sent from either the human resources department or senior engineering management to their engineering cohort introducing the researcher and study. Following this, the researcher sent a personal invite to each member of their engineering cohort using a list of e-mail addresses provided by senior management. In this e-mail, the researcher provided an overview of the study, an introduction letter, a guarantee of participant anonymity, and a link to their web-based survey. Once employee surveys were gathered, the researcher contacted immediate supervisors via e-mail. In this e-mail the researcher introduced the purpose of the study, the employee names and corresponding codes, and a link to the web-based creativity report. The time taken to complete the supervisory creativity report was approximately three minutes and 20 minutes for the employee survey.

6.6 RESEARCH SETTING

Data were collected from engineering professionals from 12 organisations in Ireland. These included three semi-state and nine private organisations operating in diverse industries (see Appendix D for a company overview). As part of the selection process, discussions were held with senior management to determine whether creativity is a desirable and supported behaviour in their engineering departments. Each organisation was explicit in their commitment to creativity and innovation and considered suitable contexts to explore employee creativity. By

including engineers from different organisations and industries this study mitigates, to some degree, range restrictions on the observed relationships among variables. This is a problem synonymous with research limited to one organisational setting and/or industry (Rousseau & Fried, 2001).

6.6.1 Why Engineers?

The engineering environment is recognised as knowledge intensive and inherent to their work is the improvement of pre-existing processes and systems and the development of new products, services, and processes (Griffin, 1997; Van Engelen *et al.*, 2001). Charyton and Merrill (2009) argue that creativity is critical for solving technical problems that engineers are often confronted with and stress the importance of developing and nurturing engineers' critical thinking and creative-problem solving skills. In a recent public address to Irish Engineers, P.J. Rudden, President of Engineers Ireland, emphasised that engineers need to demonstrate their strength as 'innovators and creators' highlighting the necessity of creative solutions within this context (*Engineers Ireland Conference,* April, 2012, Belfast). Consistent with this point of view, internationally, engineering researchers argue that creativity is a necessity in the engineer's job role (Berry, 2004; Glass, 1995; King, 2002; Kratzer *et al*., 2008; Robertson & Maiden, 2002).

In addition to the need for creativity, the social environment in which engineers are embedded is shown to heavily influence their creative performance (Amabile *et al.*, 2004; Kratzler *et al.*, 2008; Leenders, Engelen, & Kratzer, 2003). Kratzler and colleagues (2008) also point out that the exchange of information and data is a precondition for effective execution of tasks in engineering work groups. The significance of the social environment and flow of information and knowledge between engineers can be conceived to be a consequence of the interdependent and multi-disciplinary settings that engineers often work in to deal with complex technical problems. Thus, the relational architecture of the engineering work context can be seen to be an ideal setting to test the theoretical model developed in the present study.

6.7 MISSING DATA ANALYSIS

Missing data is a common problem in survey based research as it can present issues such as parameter bias and low statistical power (Newman, 2009). Missing data can occur on three levels: item level (few items omitted), scale level (entire scale omitted), and survey level (failure to return complete survey). Within these levels, three types of missing data can found: (i) missing completely at random (MCAR), (ii) missing at random (MAR), and (iii) missing not at random (MNAR). MCAR occurs when missing data does not depend on the values for any of the variables. MAR occurs when the probability of missing data is not a function of its own value after controlling for other variables (Howell, 2008). Data that are MCAR and MAR are preferable as they do not have significant meaning and typically yield unbiased estimates. However, MNAR occurs when missingness is indicative of its relationship to the dependent variable (Tabachnick & Fidell, 2007). MNAR is problematic as it yields biased parameter estimates, cannot be ignored, and necessitates complex procedures to deal with the missingness (Graham, 2009; Newman, 2009).

Methods used to deal with missing data include listwise deletion, pairwise deletion, mean substitution, multiple imputation, and maximum likelihood. Listwise deletion involves the deletion of cases with missing data and the retention of only complete surveys for analysis. This method can result in a substantial reduction in sample size and statistical power. It can also yield biased parameter estimates as cases without missing data may differ from those excluded from the analysis (Graham, 2009; Newman, 2009). Pairwise deletion uses all available data to assess the relationship between variables and thus retains the most cases possible. However, this method is limited as the relationship between variables is estimated based on different sample sizes while a single sample size is used to estimate standard errors. This results in underestimation of power for some parameters and overestimation of power for others (Newman, 2009). Mean substitution involves inserting the mean value of a variable in place of the missing value. Though this method retains a maximum sample, the overall mean does not change and thus is not advised as it causes underestimation and reduces the standard error (Graham, 2009; Howell,

2008; Roth, Switzer, & Switzer, 1999). The final two techniques, multiple imputation and maximum likelihood, are considered superior to the previous methods as they produce unbiased estimations for both MCAR and MAR data, retain statistical power, and avoid over/under estimation (Graham, 2009; Little & Rubin, 2002; Newman, 2009; Schafer & Graham, 2002).

The multiple imputation (MI) method is a three step procedure that uses the Bayesian approach to estimate missing values (Graham, 2009; Schaffer & Graham, 2002). The first step involves filling in missing data *m* times to generate *m* complete datasets. In the second step, the *m* complete datasets are analysed using standard procedures. The final step combines the results from the *m* complete datasets to produce estimates and confidence intervals (Graham, 2009; Schaffer & Graham, 2002). Maximum likelihood (ML) uses is an Estimation-Maximisation (EM) algorithm (Little & Rubin, 2002) to estimate missing values. This two-step procedure calculates estimates based on information from existing variables in the dataset. The first step (expectation) involves reading in missing and observed values on a case by case basis. Upon identification of a missing value, an estimated value is imputed based on existing information. The second step (maximisation) uses these estimated values to update parameter estimates (i.e. variances, co-variances, & means) and determines whether the inputted value is likely. If not, the process repeats until the best estimate is calculated (Graham, Cumsille, Shevock, In Press).

6.7.1 Dealing with Missing Data in the Present Study

A total of 208 engineering professionals responded to the employee survey. From this sample, four respondents were excluded due to significant missing data in their surveys (50-80%). Although listwise deletion is criticised for reducing power, in this circumstance, it is the most appropriate option given the large volume of missing data in these surveys. In addition, immediate supervisors did not provide reports for 12 engineer participants. As a consequence, these employee participants were also removed from the study. Of the remaining 192 employee-supervisor dyads, missing data existed at the item level only. SPSS Missing Value Analysis (MVA) was used to determine the nature of the missing data. The analysis produced a

significant result (Chi-Sq= 3955.06, *df*= 3752, *p*= .01) indicating that data was not MCAR and thus may be MAR or NMAR. Missing data appeared relatively random and ranged from a low of 0.5% to a high of 2.1% for any given item (see Appendix E, Table E1). Listwise deletion was not considered a responsible option for the remaining sample as the overall dataset would be reduced to 144 complete cases.

Though the MI method is a superior method when missing data is a serious problem in a dataset, ML is considered the second best method for dealing with missing data (Graham, 2009; Newman, 2009). Given the negligible percentage of missing data (i.e. less than 3%) the effect on parameter bias and power is likely to be inconsequential using any imputation method (Graham, 2009). Thus, the study adopts the ML (EM Algorithm) method for dealing with missing data. Results show no significant difference in the mean and standard deviations between the original and new dataset when the missing values are replaced (see Appendix E, Table E2).[4]

6.8 POWER ANALYSIS

Statistical power is the probability of identifying an effect, or relationship, between variables that exist in a population (Tabacknick & Fidell, 2007). In a study, low statistical power increases the probability of detecting relationships when none exists (type 1) or failing to detect a relationship when they do exist (type II) (Mertler & Vannattta, 2005). Statistical power is dependent on four major factors: i) sample size, ii) effect size, iii) alpha level, and iv) the number of predictors in a model (Cohen, 1988; Murphy & Myors, 2004). As sample size increases, so too does the precision of statistical tests and statistical power (Land & Zheng, 2010). Effect size refers to the estimate of the impact an explanatory variable has on an outcome variable (Murphy & Myors, 2004). Based on Cohen's (1992) convention, small, medium, and large effect sizes are η^2= 0.02, η^2= 0.15, and η^2= 0.35 respectively. Power is said to increase as an effect size increases. For example, when an effect

[4] Before proceeding, data was screened for outliers. Based on the analysis, univariate and multivariate outliers do not have an influence on the data.

size is large it is relatively easy to detect even in a small sample while a small effect size is difficult to detect (Murphy & Myors, 2004). The alpha level is the probability of committing a type I error and is generally set at 0.05 (Cohen, 1992; Lang & Zheng, 2010). The final factor considered is the number of predictors. The greater number of predictors in a model requires a larger sample size to provide sufficient power for accurate statistical testing.

6.8.1 Power Analysis in the Present Study

In the present study, a post-hoc power analysis was conducted to determine the statistical power achieved by the sample size (N= 192). This test was conducted using G*Power 3.1.3 software (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007). The total number of predictors in the study is 14 (i.e. six main model predictors and eight control variables). The alpha level is set at α= 0.05 and the small, medium, and large effect sizes are reported based on Cohen's (1992) convention. The results from the power analysis demonstrate that the study's sample size achieves sufficient power to detect medium and large effect sizes. As expected, the study does not have sufficient power to detect a small effect size (see Table 6.1 below). From this, we can be assured that low statistical power does not threaten the validity of the findings and have confidence that the results can be interpreted in a meaningful way using multiple regression analysis.

Table 6.1: Post-hoc Power Analysis given α, Sample Size, and Effect Size

F tests for Linear Multiple Regression: Fixed model, R^2 increase Analysis:			
Input			
	Small effect	Medium effect	Large effect
Alpha	0.05	0.05	0.05
Effect size f^2	0.02	0.15	0.35
Sample size	192	192	192
No. of tested predictors	6	6	6
Total no. of predictors (inc control variables)	14	14	14
Result			
Power (1-β)	0.25	0.99	0.99
Critical F	F(6,177)= 2.15	F(6,177)= 2.15	F(6,177)= 2.15
Noncentrality parameter λ	3.84	28.80	67.20

6.9 DIFFERENCES ACROSS ORGANISATIONS

A one-way ANOVA test was conducted to determine whether a significant difference exists between the 12 organisations in the sample. Results show a significant difference between organisations for employee creativity [$F(11, 180)= 2.48$, $p=. 01$], perceived organisational support (POS) [Welch's $F(11, 19.00)= 7.20$, $p< .001$] and attachment avoidance [$F(11, 180)= 2.70$, $p= .01$).[5] The effect size of these differences are $\eta^2= .13$ for employee creativity, $\eta^2= .21$ for POS and $\eta^2= 14$ for attachment avoidance. According to Cohen's (1992) convention, these are large effect sizes (see Appendix F, Table F1). Post-hoc comparisons using the Games Howell test were used to compare the mean organisational score on these variables.[6] Results show that of the 12 organisations, three have a significant mean difference (MD) compared to other organisations (see Table 6.2 below). Based on this, these three organisations are included as control variables to ensure that the observed individual level effects are not biased by organisational sampling.

Table 6.2: Games Howell Post-hoc Comparison Results

Variable	Organisation	MD	*P*
POS	Company 1-		
	Company 4	-1.31	.03
	Company 5	-.2.23	.02
	Company 6	-1.43	.001
	Company 7	-1.28	.03
	Company 8	-1.20	.04
	Company 9	.94	.001
	Company 10	1.02	.04
	Company 2	.56	.01
	Company 2-		
	Company 6	.-.87	.02
Creativity	Company 2-		
	Company 9	-.84	.03
Avoidance	Company 3-		
	Company 6	.64	.03
	Company 9	1.02	.001
	Company 2	.97	.001

[5] The Welch statistic was used in place of the F-statistic as the homogeneity of variance assumption was not met for POS (Pallant, 2010).

[6] The Games-Howell post-hoc test is recommended for use when 1) dealing with unequal sample sizes and 2) the assumption of homogeneity of variance is violated (Howell, 2009).

6.10 INDEPENDENCE OF SUPERVISOR CREATIVITY REPORTS

A total of 101 immediate supervisors participated in the study to provide observer ratings of employee creativity. Within this group a number of supervisors (n= 39) provided reports on more that one employee participant. As this study adopts an individual-level design, a primary assumption is that the data obtained from the supervisor is independent (i.e. creativity scores are not influenced by the presence of group level effects) (Bliese, 2000). Results from a one-way ANOVA test show no significant difference in the mean creativity scores exist across supervisory reports indicating that supervisors did not have a significant effect on creativity [$F(38, 99)= 1.026$, $p= .15$]. In addition, the intra-class correlation coefficients [ICC(1)s & ICC(2)s] using McGraw and Wong's (1996) formula was used. The ICC(1) score indicates the amount of variance explained by supervisor level while the ICC(2) indicates the extent to which there is reliable differences between employees (Bliese, 2000; LeBreton & Senter, 2008). The ICC(1) value was 0.07 which is lower than the threshold median value of 0.12 recommended by James (1982). The ICC(2) value was 0.23 which falls far below the 0.60 threshold recommended by Glick (1985). Taken together, these results support independence of supervisor reports of employee creativity and justify analysis at the individual level.

6.11 PSYCHOMETRIC PROPERTIES OF MEASUREMENT INSTRUMENTS

Exploratory factor analysis was carried out on all multi-item measurement instruments using principal component analysis (PCA) with varimax rotation to report the underlying structure of each measure. Before proceeding with PCA, the suitability of the data for analysis was verified by the Kaiser-Myer-Olkin measure of sampling adequacy (KMO), and Bartlett's test of sphericity. A KMO value above 0.6 and significant value of $p<.05$ for Bartlett's test of sphericity are recommended (Tabachnick & Fidel, 2007). All measurement instruments produced KMO values that exceeded the minimum recommended value and Bartlett's test of sphericity reached statistical significance. As the factor structure of these instruments has been validated in previous studies, a predetermined factor solution is extracted for

each scale. Next, as a rule of thumb, Hair, Black, Babin, Anderson (2005) recommend that items loading on a factor greater than +/- .30 meet the minimal level for inclusion. The reliability of each measure is also reported. Reliability assesses the extent to which items in an instrument are consistent in measuring the target construct and is assessed using Cronbachs' alpha co-efficient.

6.11.1 Attachment Style Questionnaire

Attachment anxiety and avoidance were assessed using Alexander and colleagues (2001) attachment style questionnaire short form (ASQ-SF). This measure is adapted from Feeney and colleagues (1994) 40-item attachment style questionnaire (ASQ). The ASQ-SF consists of 29 items drawn from the original 40-item ASQ to measure attachment anxiety and avoidance. The ASQ was developed to provide a measure of adult attachment for a wide age range and addresses relationships in general as opposed to specific attachment figures. The ASQ carries less intimate tones in comparison to other attachment style measures and as a result is considered more appropriate for the work context in the present study. The original ASQ-SF scale is measured on a six-point Likert scale ranging from 1 (not like me at all) to 6 (very much like me). For this study, the scale is adapted to a seven-point scale to stay consistent with other measurement instruments. Sample items from the scale include: *'I worry a lot about my relationships'* (anxiety) and *'I prefer to depend on myself than other people'* (avoidance). The factor structure validity of the ASQ has been confirmed across clinical and non-clinical samples by Feeney and colleagues (1994) using PCA; Fossati and colleagues (2003) using exploratory factor analysis; and Karantzas, Wilkison, and Feeney (2010) using confirmatory factor analysis. Alexander and colleagues (2001) report reliabilities of α= .86 for both attachment anxiety and avoidance. Karantzas and colleagues (2010) report similar reliabilities for attachment anxiety (α= .85) and avoidance (α= .83). The underlying structure of the ASQ-SF was assessed using PCA extraction method with varimax rotation specifying a two factor solution. The first factor explained 27.15% and the second factor explained 8.81% of the total variance. The scree-plot showed a clear break in the slope after the second factor however, according to the parallel analysis three factors should emerge from the data. A three factor solution

was also run however this produced theoretically ambiguous factor loadings. Thus, the two factor solution is considered more appropriate and consistent with prior work (i.e. Alexander *et al.*, 2001; Fossati *et al.,* 2003; Karantzas *et al.,* 2010). Moreover, this two dimensional approach is believed to more accurately represent the underlying structure of attachment (Fraley & Waller, 1998). For the two factor solution, the majority of items loaded on the appropriate factor, four items cross-loaded on both factors and were removed from the scale. The 13 items loading under factor one were averaged to produce a mean score for attachment anxiety. The 11 items loading under factor two were averaged to represent attachment avoidance. In the present study, the cronbach alpha for attachment anxiety was α= .84 and avoidance was α= .78.

Table 6.3: Factor Loading for Attachment Style Questionnaire

Items	**Factor Loadings**	
	1	**2**
I often worry that I do not really fit with other people. (AS33)	.75	.24
I often feel left out or alone. (AS32)	.70	.31
I worry that I won't measure up to other people. (AS24)	.65	.16
Sometimes I think I am no good at all. (AS15)	.65	.11
I am confident that other people will respect and like me.* (AS38)	.61	.30
I worry a lot about my relationships. (AS29)	.60	.06
I worry that others won't care about me as much as I care about them. (AS22)	.60	.11
I feel confident about relating to others.* (AS31)	.59	.37
I find it hard to make a decision unless I know what other people think. (AS13)	.57	-.16
I wonder why people would want to be involved with me. (AS27)	.57	.26
It's important to me that others like me. (AS11)	.44	-.38
I have mixed feelings about being close to others. (AS25)	.43	.41
I wonder how I would cope without someone to love me. (AS30)	.43	-.13
I find that others are reluctant to get as close as I would like. (AS18)	.34	.16
I find it difficult to depend on others. (AS17)	.21	.72
I find it easy to trust others.* (AS20)	.19	.68
I find it hard to trust other people. (AS16)	.35	.65
I feel comfortable depending on other people. (AS21)	.12	.64
I prefer to keep to myself. (AS5)	.31	.54
My relationships with others are generally superficial. (AS14)	.38	.47

I worry about people getting too close. (AS23)	.45	.46
Achieving things is more important than building relationships. (AS8)	-.09	.46
I prefer to depend on myself rather than other people. (AS4)	.10	.44
I find it relatively easy to get close to other people.* (AS19)	.38	.42
If something is bothering me, others are generally aware and concerned.* (AS37)	-.00	.42
If you have got a job to do, you should do it no matter who gets hurt. (AS10)	-.13	.41
Doing your best is more important than getting on with others. (AS9)	.10	.40
I feel confident that other people will be there for me when I need them.* (AS3)	.20	.39
Other people have their own problems, so I don't bother them with mine. (AS34)	.32	.36
Eigen value	7.87	2.55
% of variance	27.15	8.81

Extraction method: Principal component analysis with varimax rotation; * Item was reverse keyed.

6.11.2 Leader-member Exchange Measure

Leader-member exchange was measured using Liden and Maslyn's (1998) 12-item multi-dimensional measure of LMX (LMX-MDM). These items are measured on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). This scale produces a mean score for relationship quality on four dimensions: i) affect, ii) loyalty, iii) contribution, and iv) professional respect and provides a reliable and valid one-dimensional composite score (Liden & Maslyn, 1998; Pellegrini & Scandura, 2006; Greguras & Ford, 2006; Maslyn & Uhl-Bien, 2001). As no hypotheses are made about the distinct dimensions in the present study the one-dimensional measure is adopted. A sample item is: *'my supervisor defends my work actions to a superior, even without complete knowledge for the issue in question'.* Liden and Maslyn (1998) found the composite measure of LMX-MDM correlated highly with the LMX-7 (Scandura & Graen, 1984) demonstrating the convergent validity of the unidimensional composite score. The reliability of the composite LMX score is consistent across previous research (El Akremi *et al.*, 2010: α= .92; Greguras & Ford, 2006: α= .92; Harris *et al.*, 2011: α= .90; Liden & Maslyn, 1998: α= .89; Murphy *et al.*, 2003: α= .86).

Given that this study adopts a unidimensional conceptualisation of LMX, a PCA extraction using varimax rotation specified a one factor solution. The percentage of variance explained by this factor was 54.87%. The scree-plot showed a clear break in the slope after the first factor which was further supported by the results of the parallel analysis. All 12 items were averaged to produce a composite LMX score. The cronbach alpha in this study was α= .92.

Table 6.4: Factor Loading for Leader-member Exchange Measure

Items	Factor Loading
My manager would come to my defence if I were "attacked" by others. (LMX5)	.82
I like my manager very much as a person. (LMX6)	.80
I admire my manager's professional skills. (LMX8)	.80
My manager is the kind of person one would like to have as a friend. (LMX3)	.78
My manager would defend me to others in the organisation if I made an honest mistake. (LMX2)	.78
I do not mind working my hardest for my manager. (LMX4)	.77
My manager is a lot of fun to work with. (LMX10)	.78
I am impressed with my manager's knowledge of his/her job. (LMX12)	.75
I am willing to apply extra efforts, beyond those normally required, to meet my manager's work goals. (LMX11)	.72
I respect my manager's knowledge of and competence on the job. (LMX1)	.69
My manager defends (would defend) my work actions to a superior, even without complete knowledge of the issue in question. (LMX9)	.64
I do work for my manager that goes beyond what is specified in my job description. (LMX7)	.53
Eigen value	6.57
% of variance	54.87

Extraction method: Principal component analysis with varimax rotation.

6.11.3 Team-member Exchange Measure

Team-member exchange was measured using Liden and colleagues (2000) nine-item measure adapted from the work of Seers (1989). Items are rated on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item is: *'my co-workers have asked me for advice in solving a job-related problem of theirs'*. Liden and colleagues (2000) reported high internal consistency for this scale

(α= .88). In the present study, a PCA extraction using varimax rotation specified a one factor solution for the TMX construct. The percentage of variance explained by this single factor solution was 40.82% of the total variance. The scree-plot indicated a clear break after the first factor however parallel analysis suggests the presence of two factor loadings. Given this, a two factor solution was run and the two factors that emerged represent Ford and Seer's (2006) conceptualisation which includes TMX receipts and contributions. As this study does not make hypotheses about the two separate factors, the mean value of the TMX items was computed to represent a composite score for TMX. The cronbach reliability in this study was α= .80.

Table 6.5: Factor Loading for Team-member Exchange Measure

Items	**Factor Loading**
Even when they disagree with me, my co-workers respect the value of my judgments and decisions. (TMX7)	.79
My co-workers value the skills and expertise that I contribute to our work group. (TMX9)	.75
My co-workers create an atmosphere conducive to accomplishing my work. (TMX5)	.74
I feel that I am loyal to my co-workers. (TMX8)	.67
My co-workers are the kind of people one would like to have as friends. (TMX6)	.67
When I am in a bind, my co-workers will take on extra work to help ensure the completion of my important tasks. (TMX1)	.62
I respect my co-workers as professionals in our line of work. (TMX4)	.60
My co-workers have asked me for advice in solving a job-related problem of theirs. (TMX2)	.46
I would come to my co-workers defence if s/he were being criticized. (TMX3)	.32
Eigen value	3.67
% of variance	40.82

Extraction method: Principal component analysis with varimax rotation.

6.11.4 Perceived Organisational Support Measure

Perceived organisational support was measured using Eisenberger and colleagues (2002) short version of the unidimensional POS scale developed by Eisenberger and colleagues (1986). Items are rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly disagree). A sample item is: *'my organisation values my contribution to its well-being'.* Overall, studies support the discriminant, divergent, and construct validity of the shortened POS measure (Eisenberger *et al.*, 1997; Wayne *et al.,* 1997; Hutchison, 1997). Eisenberger and colleagues (1997) report a cronbach alpha of 0.90 for the short POS scale. Also, Riggle and colleagues (2009) meta-analysis found that reliabilities range from 0.71 to 0.98 across studies. In this study, a PCA using varimax rotation specified a one factor solution which explained 61.61% of the total variance. Examination of the scree-plot and parallel analysis supported this single factor solution. The mean value was computed to produce a composite POS score. The cronbach reliability in this study was α= .91.

Table 6.6: Factor Loading for Perceived Organisational Support Measure

Items	Factor Loadings
My organisation shows very little concern for me.* (POS7)	.85
My organisation cares about my general satisfaction at work. (POS6)	.84
My organisation values my contribution to its wellbeing. (POS1)	.83
Even if I did my best job possible, my organisation would fail to notice.* (POS5)	.79
My organisation would ignore any complaint from me.* (POS3)	.78
My organisation really cares about my wellbeing. (POS4)	.75
My organisation takes pride in my accomplishments at work. (POS8)	.72
My organisation fails to appreciate any extra effort from me.* (POS2)	.71
Eigen value	4.93
% of variance explained	61.61

Extraction method: Principal component analysis with varimax rotation; * Item was reverse keyed.

6.11.5 Information Exchange Measure

Information exchange was assessed using Gong and colleagues (2010) four-item measure adapted from Subramaniam and Youndt's (2005) unidimensional information exchange scale. These four items tap into information exchange with people inside and outside one's unit within the organisation. Items are rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item is: *'I interact and exchange ideas with people from different unit of the company'*. In their study, Gong and colleagues (2010) report a cronbach reliability of α= .82. In the present study, a PCA using varimax rotation specified a single factor solution which explained 64.81% of the total variance. The scree-plot and parallel test supported this one factor solution. The mean value of these items was computed to form a composite information exchange score. The reliability of the scale in this study was α= .81.

Table 6.7: Factor Loading for Information Exchange Measure

Items	Factor Loading
I exchange information & knowledge with colleagues to analyze & solve problems. (INFOX3)	.82
I interact & exchange ideas with people from different units of the company. (INFOX2)	.82
I interact & exchange information with colleagues in my unit. (INFOX1)	.80
I apply knowledge & experience from other units to the problems & opportunities in my unit. (INFOX4)	.78
Eigen value	2.59
% of variance	64.81

Extraction method: Principal component analysis with varimax rotation.

6.11.6 Employee Creativity Measure

Employee creativity was measured using Zhou and George's (2001) 13-item unidimensional creativity scale. The original instrument is anchored on a five-point scale however was adapted to a seven-point scale ranging from 1 (not characteristic at all) to 7 (very characteristic) for the present study. A sample item is: *'Comes up with new and practical ideas to improve performance'*. Alpha reliabilities for this scale are consistently high across previous studies (e.g. George & Zhou, 2002:

α=.98; Liu, Chen, & Yao, 2010: α=.90; Wang & Cheng, 2009: α=.97; Zhou, 2003: α=.97; Zhou & George, 2001: α=.96; Zhou, Shin, Brass, Choi, & Zhang, 2009: α=.95). In the present study, a PCA with varimax rotation specified a single factor which explained 66.20% of the total variance. Examination of the scree-plot and parallel analysis further supported this one factor solution. The mean value was computed to produce a composite score for creativity. The reliability of the scale was α= .96.

Table 6.8: Factor Loading for Creativity Measure

Items	Factor Loading
Comes up with creative solutions to problems. (C11)	.88
Often has a fresh approach to problems. (C12)	.87
Suggests new ways to achieve goals or objectives. (C1)	.87
Often has new and creative solutions to problems. (C10)	.87
Is a good source of creative ideas. (C5)	.87
Comes up with new & practical ideas to improve performance. (C2)	.85
Suggests new ways of performing work tasks. (C13)	.84
Exhibits creativity on the job when given the opportunity to. (C8)	.81
Promotes and champions ideas to others. (C7)	.80
Searches out new technologies, processes, techniques, and/or product ideas. (C3)	.79
Is not afraid to take risks. (C6)	.71
Suggests new ways it increase quality. (C4)	.71
Develops adequate plans and schedules for the implementations of new ideas. (C9)	.69
Eigen value	8.61
% of variance	66.20

Extraction method: Principal component analysis with varimax rotation.

6.12 COMMON METHOD VARIANCE AND DISCRIMINANT ANALYSIS

Common method variance (CMV) is one of the main sources of measurement error that threatens the validity of a study (Podsakoff *et al.,* 2003). As this study focuses on employee attachment style, perceptions of their social exchange relationships, and information exchange within and outside the work group, the target individual was considered the most appropriate source for data on these variables. This however may raise complications with respect to common method bias. To mitigate these issues, data for the dependent variable (i.e. employee creativity) was retrieved from the focal employee's immediate supervisor. This, according to

Podsakoff and colleagues (2003), reduces or eliminates the effects of mood states, social desirability, and idiosyncratic implicit theories that may bias data. By doing so, CMV is substantially mitigated in the research design. Nonetheless, the study is still vulnerable to CMV issues as independent variables were gathered from the focal employee. To test the extent to which CMV may influence the findings Harman's single factor test was used (Podsakoff *et al.*, 2003). If a substantial amount of common method variance exists, one factor will account for most of the variance. A PCA using varimax rotation was performed on the independent variables. By constraining the solution to one factor, it is possible to determine the extent to which a single factor accounts for the majority of variance. The analysis found that the first factor accounted for only 21.61% of the total variance thus we can conclude that CMV is not a major issue. As the social exchange constructs (i.e. POS, TMX, & LMX) are theoretically related, overlap may occur between these constructs. To determine whether these constructs are empirically distinct a PCA using varimax rotation specifying a three factor solution was performed. The factor loadings revealed that all items loaded on the expected factors with no significant cross-loading (see Appendix G for discriminant analysis results).

6.13 MULTICOLLINEARITY

Multicollinearity is a problem that occurs in a study if variables are too highly correlated with each other which can corrupt the validity of the conclusions made from data analysis (Field, 2009). Generally, a value exceeding $r = .75$ is believed to be reflective of a multicollinearity problem (Ashford & Tsui, 1991). In the present study, observation of the bivariate correlation matrix provides initial evidence that multicollinearity is not a major problem (see Chapter 7, Table 7.1 for bivariate correlation matrix). This is further verified by colinearity diagnostic indices- the tolerance and variance inflation factor (VIF) values. The tolerance level for all independent variables exceed 0.10 and the VIF values are well below the threshold of 10 indicating that the study has not violated the assumption for multicollinearity.

6.14 CONTROL VARIABLES

Control variables are auxiliary variables associated with both the dependent and/or explanatory variables in a model (Bryman & Hardy, 2009). These variables need to be controlled for if they are known to effect variables however are of no theoretical interest to the study. In doing so, the researcher can determine the genuine effect of explanatory variables on a dependent variable. The present study controlled for eight variables which include employee age, gender, educational level, job level, supervisor-employee relationship tenure, and three dummy-coded organisations.

The demographic variables included in this study (i.e. age, gender, and education) are frequently controlled for in creativity research (Baer, Oldham, & Cummings, 2003; George & Zhou, 2001; Gong *et al.*, 2010; Madjar, Oldham, & Pratt, 2002; Tierney *et al.*, 1999). Age was measured as a continuous variable in years. Gender was controlled for as research has shown that males and females differ in their perception of, and approach to, creative and innovative tasks (Conti, Collins, & Picariello, 2001; Milward & Freeman, 2002; Kwasniewska & Necka, 2004). Gender was measured as a dichotomous variable and coded as 1 male and 0 female. Educational level was included as it is believed to reflect task domain knowledge or expertise and potentially influence creative performance (Amabile, 1988; Farmer, Tierney, & Kung-McIntyre, 2003; Shalley & Gilson, 2004; Tierney *et al.*, 1999; Zhou, 2003) and information sharing (Anderson & Jolson, 1980; Yuan, Fulk, Monge, & Contractor, 2010). Education was measured on a scale from 1 (no formal education) to 7 (doctorate degree). Similar to previous creativity research (Gong *et al.*, 2010; Tierney *et el.,* 1999; Baer *et al.,* 2003), job level was controlled for as it is believed to be related to greater opportunities to engage in creative activities (Kwasniewski & Necka, 2004; Ibarra, 1993; Oldham & Cummings, 1996). Moreover, the level of information exchange required in a job role is believed to be influenced by hierarchical position (Levin & Cross, 2004; Yli-Hietanen & Lugmayr, 2009). Job level was measured on a scale ranging from 1 (technical) to 5 (senior management). Supervisory relationship tenure was included as it may influence supervisor's creativity rating (Gong *et al.*, 2010; Rego, Sousa, Marques, & Cunha, 2011). This was

measured as a continuous variable in years and months and coded in months for analysis. Finally, characteristics unique to each organisation may have a downward affect on the individual level relationships explored. Rousseau and Fried (2001) suggest that by statistically controlling for contextual effects a study can rule out context as an explanatory factor. As identified in the one-way ANOVA in section 6.9, three organisations are significantly different from other organisations for three main variables. To rule out organisational context as an explanatory factor these three organisations were dummy-coded and controlled for in the study. A summary of the instruments and control variables is provided in Table 6.9 below.

Table 6.9: Summary of Scales used in the Study

Variables	Authors
Attachment Style	ASQ-SF (Alexander *et al.,* 2001)
LMX	LMX-MDM (Liden & Mayslen, 1998)
TMX	Liden and colleagues (2000)
POS	Eisenberger and colleagues (2002)
Information exchange	Gong and colleagues (2010)
Creativity	George and Zhou (2001)
Age	Measured in years
Gender	Dichotomous scale (0=female 1=male)
Education	Continuous scale
Supervisor tenure	Measured in years & months
Job level	Continuous scale
Organisation	Dummy-coded

6.15 DATA ANALYSIS STRATEGY

Descriptive statistics are provided to describe characteristics of the sample and relationship between the variables. The mean is used to represent the central tendency of distribution. The measure of dispersion is reported using the standard deviation statistic which is the average distance of scores from either side of the mean (Burns & Burns, 2008). While the measure of central tendency represents how similar the characteristics of the data are (i.e. the average score), the measure of dispersion describes the extent to which these scores differ. The final descriptive

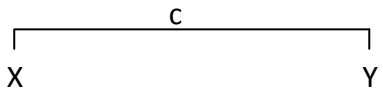
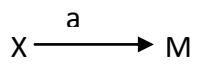
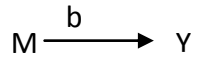
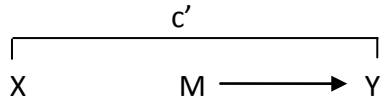
statistic is the measure of association which quantifies the strength and direction of the relationship between variables (Healey, 2011). Pearson's correlation (*r*) is used to describe the linear relationship between variables and ranges from -1 to 1. The significance level reported with Pearson's correlation is the probability that the observed correlation is true and is conveyed in probability levels (*p*). A significance level of *p*= .05 indicates that there is 95% probability, or a 5% probability of error, that the observed relationship truly exists in the sample. As a rule of thumb a *p* value < .05 is considered a significant relationship in social science research.[7]

Hierarchical multiple regression is the data analysis strategy employed to test the hypotheses using IBM® statistical package for the social sciences (Version 17). This method tests the relationship between several independent variables and a single dependent variable. Variables are entered into each block in a specified order which is guided by theoretical logic. The dependent variable of interest is then regressed on these independent variables (Tabachnick & Fidell, 2007). To test the mediation hypotheses, Baron and colleagues (Baron & Kenny, 1986; Judd & Kenny, 1981; Kenny, Kasy, & Bolger, 1998) four-step approach for mediation analysis is adopted. This is the most common method for testing mediation in psychological research (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) and involves several regression equations which evaluate the significance of each path coefficient (see Table 6.10). In the *first step* the dependent variable (Y) is regressed on the independent variable (X). The purpose of the first step is to determine whether a significant relationship exists between the predictor and outcome variable. Earlier work maintains that for mediation to occur this step has to be met however recent advances suggest that the first step is not required if an indirect effect is hypothesised (Kenny *et al.*, 1998; MacKinnon *et al.,* 2002; Shrout & Bolger, 2002). The *second step* evaluates whether the independent variable (X) is significantly related to the proposed mediator variable (M). In this step, the

[7] As hypotheses in the study are directional, one-tailed tests are used for both the bivariate and regression analysis (Burns & Burns, 2008). One-tailed tests assume an alpha level of 0.05 is *'fixed entirely in the predicted tail of the distribution' a*nd the cut-off critical value (t_{crit}) is + 1.65 (Burns & Burns, 2008: 222).

mediator variable (M) is treated as the outcome variable in the regression equation. The *third step* tests that the proposed mediator (M) is significantly related to the outcome variable (Y). If step two and three are not met, mediation analysis cannot proceed any further and the hypothesis will fail to retrieve support. Finally, *step four* tests the full mediation model which involves regressing the outcome variable (Y) on both the independent (X) and hypothesised mediator variable (M). Mediation is said to occur when the effect of the independent variable on the dependent variable decreases when the mediation variable is included in the regression (Baron & Kenny, 1986). Full mediation is found when the relationship between the independent (X) and the dependent variable (Y) is non-significant in the presence of the mediating variable. Partial mediation occurs when the relationship between the independent (X) and dependent variable (Y) weakens though maintains significance (Baron & Kenny, 1986). The four steps are summarised in Table 6.10 below:

Table 6.10: Summary of the Mediation Steps used in the Study

Step 1.	X will be significantly related to the Y	
Step 2.	X will be significantly related to the M	
Step 3.	M will be significantly related to the Y	
Step 4.	The relationship between X & Y will be mediated by the M	

Note: X= Independent variable; Y= Dependent variable; M= Mediation Variable

Meeting the conditions of mediation however is not sufficient to conclude that mediation has occurred. The significance of the mediation or indirect path (c') is commonly tested using the Sobel z-test (1982). Despite its popularity, recent work has shown that this test is sensitive to sample size, relies on normal distribution theory, and is low in statistical power (Zhao, Lynch, & Chen, 2010). The Sobel z-test is calculated using a normal distribution, however the indirect effect is the product of two parameters and thus the distribution of is not necessarily normal (Preacher

& Hayes, 2004). Thus a test will yield an underpowered test of significance (Bollen & Stine, 1990; Preacher & Hayes, 2004). As an alternative, the bootstrap test popularised by Preacher and Hayes (2004) is believed to provide a more powerful alternative to the Sobel z-test (MacKinnon *et al.*, 2002; Preacher & Hayes, 2004, 2008; Zhao *et al.*, 2010).

The bootstrap test involves replication of the original dataset *n* times. After *n* datasets are created, the indices are computed in each bootstrap sample. The bootstrap test provides a point estimate of the indirect effect, a standard error, and 95% confidence intervals. The bootstrap point estimate is the mean indirect effect calculated over *n* bootstrap samples and the estimated standard error is the standard deviation of the *n* indirect effect estimates (Preacher & Hayes, 2004). The 95% confidence intervals, which indicate the significance of the indirect effect, is retrieved by sorting the *n* point estimates of the indirect effect from high to low (Preacher & Hayes, 2004). A significant indirect effect is believed to exist if zero is not included in the 95% confidence interval (Preacher & Hayes, 2004). As the bootstrap test uses the sample dataset to estimate the sampling distribution of the indirect path, it makes no assumption about the shape of the distribution and thus produces a more powerful estimate of the significance of the indirect path (Lockwood & MacKinnon, 1998; MacKinnon *et al.*, 2002; Preacher & Hayes, 2004; Shrout & Bolger, 2002; Zhao *et al.*, 2010).

In the present study, once the conditions for mediation are met, the significance of the indirect effect is tested using a bias-corrected bootstrap analysis based on 2,000 bootstrap samples using Hayes' (2012) PROCESS programme.

6.16 CONCLUSION

This chapter began with an introduction to the positivist framework underlying the study. Next, the research and survey design and data collection procedures were discussed. This was followed by a discussion on the relevance of the engineering context for the present study. Differences among organisations were evaluated using a one-way ANOVA test and resulted in the inclusion of three organisations as control variables in the analysis. The ICC indices also confirmed the independence of supervisory creativity reports and supported the location of the study at the individual level of analysis. Issues pertaining to missing data were discussed and treated using the maximum likelihood imputation method. A power analysis was also conducted to ensure the sample size reached sufficient power to reliability test the study's hypotheses. Next, the psychometric properties of the measurement instruments were reviewed and common method variance and discriminant validity issues were assessed. Data was also screened for multicollinearity and it was found that this is not a major concern for the study. Also, the control variables included the study were presented. Finally, the data analysis strategy employed to test the study's hypotheses was hierarchical multiple regression. For mediation analyses, Baron and Kenny's (1986) mediation method is adopted and the significance of these mediations is evaluated using Preacher and Hayes' (2004) bootstrapping procedure. In the next chapter, the results drawn from this analysis are presented.

CHAPTER SEVEN

RESEARCH FINDINGS

7.1 INTRODUCTION

The purpose of this chapter is to present a detailed overview of the quantitative research findings from the study using the data analytic methods discussed in the previous chapter. The first part of the chapter presents the descriptive statistics about the sample which includes measures of central tendency, dispersion, and association. Following this, both direct effect and mediation hypotheses are tested using hierarchical multiple regression analysis.

7.2 DESCRIPTIVE CHARACTERISTICS OF THE SAMPLE

Of the 192 employee participants, the average age in years is 40.7 (SD= 9.46) and the range of age is between 21 and 63 years. Employee participants average tenure with their work group is 55.33 months (SD= 57.17) and ranges from one month to 26 years. The average relationship tenure with their immediate supervisor is 35.54 months (SD= 34.23) and ranges from one month to 26 years. Employee average organisational tenure is 165.14 months (SD= 127.75) and ranges from three months to 35 years. The average job tenure is 45.60 months (SD= 40.68) and ranges from one month to 20.25 years. The majority of participants have an education level above bachelor degree level: 3% of participants in the sample have a third-level certificate, 10% have a third level diploma, 54% have a bachelor degree, 30% have a master degree, and 3% have a doctoral degree. In terms of job level, 22% of participants identify themselves as senior management, 24% middle managers, 8% junior managers, 33% professionals, and 13% technical level. All participants have full-time permanent contracts. Although the sample was demographically diverse in age, education, and organisational level it lacked balance in gender. Males made up

86% of the sample while females represented the remaining 14%. However, this gender imbalance is reflective of the demographic composition of the engineering profession in Ireland as opposed to a limitation of the study.[1]

The means, standard deviations, and bivariate correlations are presented in Table 7.1 on the next page. All of the main variables in the model correlate significantly and in the hypothesised direction. Though it was not hypothesised, a significant moderate negative correlation is found between supervisor reports of employee creativity and attachment anxiety ($r = -.19, p < .05$) and avoidance ($r = -.14, p < .05$). Preliminary observations of these bivariate correlations provide indicative support for the hypotheses which are discussed in the next section.

[1] In 2007, the proportion of female engineering professionals in Ireland was 14.3% which is comparable to the present study (Kiwana, Kumar, & Randerson, 2011).

Table 7.1: Correlation Matrix of the Study's Variables

Variables	M(SD)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Creativity	5.25(0.99)	(.96)													
2. Info. Exchange	5.89(0.67)	.19**	(.81)												
3. TMX	5.78(0.55)	.23***	.28***	(.80)											
4. POS	4.90(1.08)	.27***	.14*	.40***	(.91)										
5. LMX	5.49(0.86)	.24***	.24***	.40***	.49***	(.92)									
6. Anxiety	3.01(0.82)	-.19**	-.23***	-.35***	-.33***	-.21**	(.85)								
7. Avoidance	3.31(0.76)	-.14*	-.22***	-.43***	-.35***	-.28***	.40***	(.83)							
8. Age	40.67(9.46)	.09	.01	.03	.15*	-.05	-.04	-.01							
9. Gender	-	.05	-.02	-.02	.08	.03	-.10	-.03	.22***						
10. Education	3.21(0.77)	.03	.14*	.02	.10	.03	-.04	-.05	.14*	-.07					
11. Job Level	3.11(1.40)	.26***	.01	.18**	.23***	.20**	-.17**	-.20**	.49***	.17**	.24***				
12. Supervisor Tenure	35.54(1.40)	-.14*	-.08	.002	-.03	.03	-.02	.02	.14*	-.01	-.03	.02			
13. Company 1	-	.004	.01	.06	.22***	.03	.09	.04	.05	.03	-.04	-.23**	-.05		
14. Company 2	-	.25***	.07	.18**	.26***	.11	-.14*	-.22***	.55***	.14*	.23***	.63***	-.08	-.17**	
15. Company 3	-	-.01	.02	-.01	-.10	-.02	.02	.10	.04	.04	-.10	-.16*	-.05	-.03	-.07

Note: All tests were one-tailed; ***p< .001, **p<.01, *p<.05, †p<.10; Internal consistency reliabilities appear in parenthesis along the diagonal; N=192.

7.3 HYPOTHESES TESTING SUMMARY

Hierarchical multiple regression analyses were performed to test the hypothesised relationships in the present study (see Table 7.2 below). For mediation analysis, Baron and colleagues (Baron & Kenny, 1986; Judd & Kenny, 1981; Kenny *et al.,* 1998) four-step approach was adopted. The significance of the indirect effect was evaluated using bias-corrected bootstrap analysis (Preacher & Hayes, 2004).

Table 7.2: Summary of Research Hypotheses

H1	Both attachment anxiety and avoidance will have a negative relationship with a) LMX, b) TMX, and c) POS.
H2:	Both attachment anxiety and avoidance will have a negative relationship with information exchange.
H3:	a) High quality LMX will have a positive relationship with information exchange. b) High quality TMX will have a positive relationship with information exchange. c) High quality POS will have a positive relationship with information exchange.
H4:	a) High quality LMX will have a positive relationship with employee creativity. b) High quality TMX will have a positive relationship with employee creativity. c) High quality POS will have a positive relationship with employee creativity.
H5:	Information exchange will have a positive relationship with employee creativity.
H6:	The effect of attachment anxiety and avoidance on information exchange will be mediated by a) LMX, b) TMX, and c) POS.
H7:	Information exchange will mediate the relationship between: a) LMX and employee creativity, b) TMX and employee creativity, c) POS and employee creativity.
H8:	Both attachment anxiety and avoidance will have an indirect effect on employee creativity through: a) LMX and information exchange, b) TMX and information exchange, c) POS and information exchange.

7.4 DIRECT EFFECTS

In this section the results for hypothesis one to five are presented. These hypotheses represent the direct effects of variables in the research model.

7.4.1 Hypothesis 1: Attachment Styles → Social Exchange Relationships

Hypothesis 1(a-c) proposes that attachment anxiety and avoidance will have a negative relationship with perceptions of social exchange relationship quality with the immediate supervisor (LMX), work group (TMX), and organisation (POS). To test this hypothesis, age, gender, education, and three dummy-coded organisations were included as control variables in the regression equation. Each social exchange relationship was then regressed on the attachment dimensions. The results of the hierarchical regression analyses are provided in Table 7.3 below. The results for hypothesis 1(a) show that attachment avoidance has a significant negative relationship with LMX [β(t)= -.21(2.72), p<.001]. However, the hypothesised relationship between attachment anxiety and LMX did not receive support at the p< .05 level [β(t)= -.12(1.57), p<.10].[1] Together, attachment anxiety and avoidance explain 8% of the total variance in LMX [ΔR^2= .08, $\Delta F_{2,\ 183}$= 7.70, p< .01]. Thus, hypothesis 1(a) is supported for attachment avoidance however not for attachment anxiety. Results for hypothesis 1(b) show that both attachment anxiety and avoidance have a significant negative relationship with TMX [Anxiety: β(t)= -.22(3.14), p<.001; Avoidance: β(t)= -.32, p<.001]. Together, attachment dimensions explain 20% of the total variance in TMX [ΔR^2= .20, $\Delta F_{2,\ 183}$= 23.47, p< .001]. Therefore, hypothesis 1(b) is supported. Finally, results for hypothesis 1(c) show that both attachment anxiety and avoidance have a significant negative relationship with POS [Anxiety: β(t)= -.24(3.51), p<.001; Avoidance: β(t)= -.21(3.03), p<.001]. Together, attachment anxiety and avoidance explain 14% of the total variance in POS [ΔR^2= .14, $\Delta F_{2,\ 183}$= 17.38, p< .001]. Thus, hypothesis 1(c) is supported. Overall, these findings show that attachment insecurities play a significant role in employees' construal of their organisational social exchange relationship quality.

[1] The effect of attachment anxiety was significant at the 90% confidence interval indicating that there is a 10% probability that this relationship is happening by chance. In the present study, a cut off criteria was set at the 95%, thus this hypothesis was rejected.

Table 7.3: Hierarchical Regression of Social Exchange Relationships on Attachment

	LMX		TMX		POS	
	Step 1	**Step 2**	**Step 1**	**Step 2**	**Step 1**	**Step 2**
	β(t)	β(t)	β(t)	β(t)	β(t)	β(t)
Control						
Age	-.19(2.08)*	-.15(1.71)*	-.12(1.30)†	-.06(0.73)	-.05(0.59)	-.01(0.09)
Gender	.04(0.56)	.03(0.37)	-.03(0.46)	-.06(0.92)	.05(0.68)	.02(0.33)
Education	.01(0.13)	.01(0.13)	-.02(0.28)	-.02(0.33)	.04(0.61)	.04(0.63)
Company 1	.08(1.05)	.08(1.16)	.12(1.56)†	.13(1.91)*	.27(3.91)***	.29(4.46)***
Company 2	.22(2.39)*	.14(1.54)†	.27(3.03)	.15(1.81)*	.31(3.60)***	.21(2.64)***
Company 3	.01(0.07)	.02(0.32)	.02(0.21)	.04(0.65)	-.07(1.04)	-.05(0.82)
Employee Attachment						
Anxiety		-.12 (1.57)†		-.22 (3.14)***		-.24(3.51)***
Avoidance		-.21(2.72)***		-.32 (4.43)***		-.21(3.03)***
R^2	.04	.11	.05	.25	.15	.29
Adjusted R^2	.01	.07	-.03	.21	.12	.25
ΔR^2	.04	.08	.05	.20	.15	.14
F	1.21	2.89**	1.71	7.46***	5.35***	9.06***
ΔF	1.21	7.70***	1.71	23.47***	5.35***	17.38***

Note: Standardised coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05, † p<.10; N=192.

7.4.2 Hypothesis 2: Attachment Styles → Information Exchange

Hypothesis 2 proposes that both attachment anxiety and avoidance will have a negative relationship with information exchange behaviour. To test this hypothesis, age, gender, education, job level, and three dummy-coded organisations were included as control variables in the regression equation. Information exchange was then regressed onto the attachment dimensions. Results of the hierarchical regression are presented on Table 7.4 below.

Results show that both attachment anxiety and avoidance have a significant negative relationship with information exchange [Anxiety: β(t)= -.18(2.31), p<.01; Avoidance: β(t)= -.16(1.98), p<.05]. Together, the attachment dimensions explain 7% of the total variance in information exchange behaviour [ΔR^2= .07, $\Delta F_{2, 182}$= 7.37, p< .001]. Thus, hypothesis 2 is supported. These findings suggest that insecure adults may perceive the costs associated with information exchange significantly outweigh the benefits and thus engage in lower levels of this behaviour.

Table 7.4: Hierarchical Regression of Information Exchange on Attachment

	Step 1	**Step 2**
	β(t)	β(t)
Control		
Age	-.04(0.40)	.01(0.06)
Gender	-.01(0.17)	-.03(0.39)
Education	.13(1.75)*	.14(1.85)*
Job level	-.05(0.53)	-.10(1.03)
Company 1	.02(0.25)	.02(0.29)
Company 2	.10(0.95)	.05(0.48)
Company 3	.03(0.41)	.04(0.53)
Employee Attachment		
Anxiety		-.18(2.31)**
Avoidance		-.16(1.98)*
R^2	.03	.10
Adjusted R^2	-.01	.05
ΔR^2	.03	.07
F	0.66	2.19*
ΔF	0.66	7.37***

Note: Standardised coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05; N= 192.

7.4.3 Hypothesis 3: Social Exchange Relationships → Information Exchange

Hypothesis 3(a-c) predicts that high quality social exchange relationships (i.e. LMX, TMX, and POS) will have a positive relationship with information exchange. To test this, a series of two-step hierarchical regression equations were conducted for each social exchange relationship. The control variables entered into step one include age, gender, education, job level, and three dummy-coded organisations. Each social exchange relationship was entered into step two upon which information exchange was regressed. In addition, all three exchange relationships were entered in an equation together to test their combined effect on information exchange. The results of the hierarchical regression analysis are provided in Table 7.5 below.

Hypothesis 3(a) states that high quality LMX will have a positive relationship with information exchange. Results indicate that high LMX has a significant relationship with information exchange [β(t)= .26(3.48), p<.001] and explains 6% of the total variance [ΔR^2= .06, $\Delta F_{1,\ 183}$= 12.10, p< .001]. Thus, hypothesis 3(a) is supported. Hypothesis 3(b) states that high quality TMX will have a positive relationship with information exchange. Results show that high TMX has a significant positive relationship with information exchange [β(t)= .29(3.94), p<.001]. TMX explains 8% of the total variance in information exchange [ΔR^2= .08, $\Delta F_{1,\ 183}$= 15.55, p< .001]. Therefore, hypothesis 3(b) is supported. Hypothesis 3(c) states that high quality POS will have a positive relationship with information exchange. Results show a significant positive relationship between high POS and information exchange [β(t)= .14(1.77), p<.05] however the F-statistic is non-significant which indicates that the overall model is insignificant [ΔR^2= .02, $\Delta F_{1,\ 183}$= 3.14, p< .10]. Thus, hypothesis 3(c) was not supported. These findings suggest that LMX and TMX relationship quality are important sources of motivation for information exchange behaviour. Finally, additional analysis was conducted to test the combined effect of social exchange relationships on information exchange. Results show that both TMX and LMX had a significant relationship with information exchange, however POS did not exert a significant effect [TMX: β(t)= .23(2.92), p< .001; LMX: β(t)= .19(2.25), p< .01; POS: β(t)= -.04(.46), p= ns]. Together, social exchange relationships explain 10% of the total variance in information exchange behaviour [ΔR^2= .10, $\Delta F_{3,\ 181}$= 7.04, p< .001].

Table 7.5: Hierarchical Regression of Information Exchange on Social Exchange Relationships

	Step 1	Step 2-1	Step 2-2	Step 2-3	Step 2-4
	β(t)	β(t)	β(t)	β(t)	β(t)
Control					
Age	-.04(0.40)	.03(0.32)	.01(0.10)	-.02(0.26)	.05(.51)
Gender	-.01(0.17)	-.02(0.24)	.00(0.02)	-.03(0.24)	-.01(.05)
Education	.13(1.75)*	.14(1.87)*	.14(1.97)*	.13(1.72)*	.15(2.02)*
Job level	-.05(0.53)	-.13(1.32)	-.11(1.12)	-.08(0.78)	-.15(1.52)†
Company 1	.02(0.25)	-.02(0.20)	-.02(0.32)	-.02(0.30)	-.03(.37)
Company 2	.10(0.95)	.08(0.76)	.04(0.43)	.06(0.63)	.05(.47)
Company 3	.03(0.41)	.02(0.25)	.02(0.26)	.04(0.50)	.01(.14)
Social Exchange Relationships					
LMX		.26(3.48)***			.19(2.25)**
TMX			.29(3.94)***		.23(2.92)***
POS				.14(1.77)*	-.04(.46)
R^2	.03	.09	.10	.04	.13
Adjusted R^2	-.01	.05	.06	.00	.08
ΔR^2	.03	.06	.08	.02	.10
F	0.66	2.13*	2.57**	3.14†	2.62**
ΔF	0.66	12.10***	15.55***	0.98	7.04***

Note: Standardised coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05, † p<.10; N= 192.

7.4.4 Hypothesis 4: Social Exchange Relationships → Employee Creativity

Hypothesis 4(a-c) proposes that high quality social exchange relationships (i.e. LMX, TMX, and, POS) will have a positive relationship with employee creativity. To test this hypothesis, a series of hierarchical regression equations were conducted. Control variables entered into step one included age, gender, education, job level, supervisor relationship tenure, and three dummy-coded organisations. Each social exchange relationship was then entered into step two upon which employee creativity was regressed. In addition, all three exchange relationships were entered into an equation simultaneously to test their combined effect on employee creativity. The results of the analysis are presented in Table 7.6 below.

The results show that all social exchange relationship variables are significantly associated with employee creativity. Specifically, high quality LMX has a significant positive relationship with employee creativity [β(t)= .19(2.57), p<.01] and explains 3% of the total variance [ΔR^2= .03, $\Delta F_{1, 182}$= 6.61, p< .05]. Therefore, hypothesis 4(a) is supported. High quality TMX has a significant positive relationship with creativity [β(t)= .17(2.31), p<.05] and explains 3% of the total variance [ΔR^2= .03, $\Delta F_{1, 182}$= 5.33, p< .05]. Thus, hypothesis 4(b) is supported. High quality POS also has a significant relationship with creativity [β(t)= .20(2.62), p<.01] and explains 3% of the total variance [ΔR^2= .03, $\Delta F_{1, 182}$= 6.87, p< .01]. Therefore, hypothesis 4(c) is supported. The results from the simple regression analysis suggest that each social exchange relationship is a meaningful source of motivation for employee creativity.

Finally, additional analysis was conducted to test the combined effect of the social exchange relationships on employee creativity. The results show that the exchange relationships did not have a significant effect on employee creativity when included simultaneously in a regression equation [LMX: β(t)= .10(1.21), p= ns; TMX: β(t)= .09(1.17), p= ns; POS: β(t)= .11(1.30), p< .10; ΔR^2= .05, $\Delta F_{3, 180}$= 3.54, p< .05]. In the next chapter, the author discusses potential reasons for this non-significant effect.

Table 7.6: Hierarchical Regression of Creativity on Social Exchange Relationships

	Step 1	Step 2-1	Step 2-2	Step 2-3	Step 2-4
	β(t)	β(t)	β(t)	β(t)	β(t)
Control					
Age	-.12(1.26)	-.06(0.68)	-.09(0.94)	-.10(1.06)	-.06(0.65)
Gender	.002(0.03)	-.002(0.03)	.01(0.14)	-.01(0.07)	.00(0.01)
Education	-.05(0.64)	-.04(0.60)	-.04(0.59)	-.05(0.72)	-.04(0.62)
Job level	.24(2.48)**	.18(1.86)*	.21(2.15)*	.20(2.11)*	.17(1.74)
Supervisor relationship tenure	-.10(1.42)†	-.12(1.64)*	-.11(1.54)†	-.11(1.48)†	-.12(1.64)
Company 1	.09(1.21)	.06(0.87)	.07(0.87)	.03(0.38)	.03(0.35)
Company 2	.19(1.90)**	.17(1.72)*	.15(1.56)†	.14(1.43)†	.13(1.33)
Company 3	.04(0.53)	.03(0.40)	.03(0.43)	.05(0.66)	.03(0.48)
Social Exchange Relationships					
LMX		.19(2.57)**			.10(1.21)
TMX			.17(2.31)*		.09(1.17)
POS				.20(2.62)**	.11(1.30)†
R^2	.11	.14	.14	.14	.16
Adjusted R^2	.07	.10	.10	.10	.11
ΔR^2	.11	.03	.03	.03	.05
F	2.89**	3.38***	3.22***	3.41***	3.15***
ΔF	2.89**	6.61*	5.33*	6.87**	3.54*

Note: Standardized coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05, † p<.10; N= 192.

7.4.5 Hypothesis 5: Information exchange → Employee Creativity

Hypothesis 5 proposes that information exchange behaviour will have a positive relationship with employee creativity. To test this hypothesis, age, gender, education, job level, supervisor relationship tenure, and three dummy-coded organisations were entered into step one as control variables in the regression equation. Information exchange was then entered into the step two upon which employee creativity is regressed. Results are provided in Table 7.7 below.

Results show that information exchange behaviour has a significant positive relationship with employee creativity [β(t)= .18(2.60), p<.01] and explains 3% of the total variance in employee creativity [ΔR^2= .03, $\Delta F_{1, 182}$= 6.75, p< .01]. Therefore, hypothesis 5 is supported. This finding suggests that information exchange provides exposure to alternative ideas and suggestions that stimulate employee creativity.

Table 7.7: Hierarchical Regression of Creativity on Information Exchange

	Step 1	**Step 2**
	β(t)	β(t)
Control		
Age	-.12(1.26)	-.11(1.24)
Gender	.002(0.03)	.01(0.07)
Education	-.05(0.64)	-.07(0.97)
Job level	.24(2.48)**	.25(2.62)**
Supervisor relationship tenure	-.10(1.42)†	-.09(1.29)†
Company 1	.09(1.21)	.09(1.20)
Company 2	.19(1.90)**	.17(1.77)*
Company 3	.04(0.53)	.03(0.47)
Information exchange		.18(2.60)**
R^2	.11	.14
Adjusted R^2	.07	.10
ΔR^2	.11	.03
F	2.89**	3.40***
ΔF	2.89**	6.75**

Note: Standardized coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05, † p<.10; N= 192.

7.5 MEDIATION AND INDIRECT EFFECTS

To test the mediation hypotheses, Baron and colleagues four-step mediation analysis was adopted (Baron & Kenny, 1986; Judd & Kenny, 1991; Kenny *et al.*, 1998) (see Table 6.10 for summary of mediation steps). Once the conditions for mediation were met, the significance of the indirect path was tested using a bias-corrected bootstrap analysis based on 2,000 bootstrap samples using Hayes' (2012) PROCESS programme.

7.5.1 Hypothesis 6: Mediation Effect of Social Exchange Relationships

Hypothesis 6(a-c) proposes that each social exchange relationship (i.e. LMX, TMX, and POS) mediates the relationship between attachment styles and information exchange behaviour. For hypothesis 6(a), the first three conditions for mediation were met for attachment avoidance. Attachment avoidance had a significant effect on information exchange (X→Y) and LMX (X→M). Also, LMX had a significant effect on information exchange (M→Y) (see Section 7.4). However, for attachment anxiety, the second mediation step (X→M) was not met as it did not have a significant effect on LMX at the $p < .05$ level [see hypothesis 1(a), Table 7.3]. As a result, further mediation analysis was not conducted for attachment anxiety. For hypothesis 6(b), the first three conditions for the mediation were verified by previous hypotheses (see Section 7.4). However, for hypothesis 6(c), the second condition for mediation (M→Y), the effect of POS on information exchange, was not met as the F-statistic did not reach significance [see hypothesis 3(c), Table 7.5]. Thus, further analysis was not conducted and hypothesis 6(c) is not supported.

To test the fourth step of mediation (XM→Y), control variables were entered into the first step of the regression equation. Control variables included age, gender, education, job level, and three dummy-coded organisations. In the second step, the two attachment dimensions were entered into the equation. Finally, the focal mediator variable was entered into step three upon which information exchange was regressed. In addition, the combined mediating effect of LMX and TMX was also examined. A summary of the mediation results can be found on Table 7.8.

Hypothesis 6(a) proposes that LMX will mediate the relationship between attachment dimensions and information exchange behaviour. Results from the mediation analysis show that, in the presence of LMX, the effect of attachment avoidance reduced to an insignificant level indicating full mediation [β(t)= -.16(1.98), *p*< .05 to β(t)= -.12(1.48), *p*< .10]. After accounting for the effects of control variables, bias-corrected bootstrap results show that this mediation effect is significant for attachment avoidance [Indirect Effect (IE)= -.04, Standard Error (SE)= .02, Lower Level Confidence Interval (LLCI): -.10, Upper Level Confidence Interval (ULCI): -.01]. Therefore, hypothesis 6(a) receives partial support. Hypothesis 6(b) states that TMX will mediate the relationship between attachment dimensions and information exchange behaviour. Results show that the effect of attachment anxiety on information exchange, in the presence of TMX, reduced though maintained significance at the *p*< .05 level implying a partial mediation [β(t)= -.18(2.31), *p*< .01 to β(t)= -.14(1.72), *p*< .05]. In the presence of TMX, the effect of attachment avoidance on information exchange reduced to insignificance indicating full mediation [β(t)= -.16(1.98), *p*< .05 to β(t)= -.09(1.13), *p*= ns]. After accounting for the effects of control variables, biased-corrected bootstrap confidence intervals show that the mediation effect is significant for both attachment anxiety (IE= -.04, SE= .02, LLCI: -.09, ULCI: -.01) and avoidance (IE= -.05, SE= .03, LLCI: -.12, ULCI: -.01).[2] Thus, hypothesis 6(b) is supported in the study. These results suggest that avoidant employees' negative perception of their LMX quality fully explain why these individuals engage in lower levels of information exchange. Also, the full mediation effect of TMX quality on the relationship between attachment avoidance and information exchange suggests that TMX is also meaningful in explaining why avoidant employees engage in lower levels of this behaviour. Furthermore, anxious employees' unfavourable evaluation of their TMX quality partially account for their lower information exchange behaviour. This partial mediation suggests that other variables may explain this relationship and is considered in the next chapter.

[2] As the bootstrap confidence interval excludes zero, we can conclude that the indirect effect is significantly different from zero at the *p<05* level (Preacher & Hayes, 2004).

Finally, additional analysis was conducted to test the combined mediating effect of LMX and TMX. The results show that, in the presence of both LMX and TMX, the effect of attachment anxiety on information exchange reduced though maintained significance implying partial mediation [β(t)= -.18(2.31), *p*< .01 to β(t)= -.13(1.65), *p*< .05].[3] The effect of attachment avoidance however reduced to insignificance implying full mediation [β(t)= -.16(1.98), *p*< .05 to β(t)= -.08(.94), *p*= ns]. Bias-corrected bootstrap results show that when included as mediators in the same regression, LMX and TMX significantly mediate the relationship between attachment avoidance and information exchange (TMX: IE= -.04, SE= .03, LLCI: -.11, ULCI: -.00; LMX: IE= -.03, SE= .02, LLCI: -.09, ULCI: -.00). For attachment anxiety, the mediating effect of TMX is also significant (IE= -.03, SE= .02, LLCI: -.08, ULCI: -.00), however the mediating effect of LMX was not significant (IE= -.01, SE= .01, LLCI: -.06, ULCI: .00). The non-significant mediating effect of LMX for attachment anxiety is anticipated given that anxiety did not exert a significant effect on LMX (X→M).

[3] POS is not included as it is uncorrelated with information exchange. Thus, its inclusion is unlikely to contribute meaningful prediction and would reduce the statistical power of the test.

Table 7.8: Hierarchical Regression of Information Exchange on Attachment and Social Exchange Relationships

	Step 1	Step 2	Step 3-1	Step 3-2	Step 3-3
	β(t)	β(t)	β(t)	β(t)	β(t)
Control					
Age	-.04(0.40)	.01(0.06)	.05(0.54)	02(0.26)	.05(0.59)
Gender	-.01(0.17)	-.03(0.39)	-.03(0.42)	-.01(0.20)	-.02(0.27)
Education	.13(1.75)*	.14(1.85)*	.14(1.92)*	.14(1.96)*	.14(1.99)*
Job level	-.05(0.53)	-.10(1.03)	-.16(1.57)†	-.13(1.30)†	-.16(1.65)*
Company 1	.02(0.25)	.02(0.29)	-.004(0.06)	-.01(0.12)	-.02(0.29)
Company 2	.10(0.95)	.05(0.48)	.04(0.42)	.03(0.27)	.03(0.27)
Company 3	.03(0.41)	.04(0.53)	.03(0.38)	.03(0.37)	.02(0.29)
Employee Attachment					
Anxiety		-.18(2.31)**	-.16(2.06)*	-.14(1.72)*	-.13(1.65)*
Avoidance		-.16(1.98)*	-.12(1.48)†	-.09(1.13)	-.08(0.94)
Social Exchange Relationships					
LMX			.20(2.66)**		.16(2.03)*
TMX				.21(2.55)**	.16(1.88)*
R^2	.03	.10	.13	.13	.15
Adjusted R^2	-.01	.05	.08	.08	.10
ΔR^2	.03	.07	.03	.03	.05
F	0.66	2.19*	2.74**	2.68**	2.85**
ΔF	0.66	7.37***	7.09**	6.51**	5.37**

Note: Standardized coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05, † p<.10; N= 192.

7.5.2 Hypothesis 7: Mediation Effect of Information Exchange

Hypothesis 7(a-c) proposes that information exchange will mediate the relationship between each social exchange relationship variable (i.e. LMX, TMX, and POS) and employee creativity. The first three conditions of the mediation analysis were verified for LMX and TMX in previous hypotheses (see Section 7.4). However, for hypothesis 7(c), the second condition for mediation (X→M) was not met as the relationship between POS and information exchange did not reach significance at the $p < .05$ level [see hypothesis 3(c), Table 7.5]. As a result, further mediation testing was not conducted and hypothesis 7(c) is not supported.

To test the fourth step of mediation (XM→Y), a three-step hierarchical multiple regression is performed for LMX and TMX. Control variables entered into the first step included age, gender, education, job level, supervisory relationship tenure, and three dummy-coded organisations. Employee creativity was then regressed on information exchange and each social exchange relationship. In addition, LMX and TMX were included in the same equation to test the mediating effect of information when both social exchange relationships are considered. A summary of the mediation results are provided in Table 7.9.

Hypothesis 7(a) proposes that information exchange will mediate the relationship between LMX and employee creativity. Results indicate that the effect of LMX on employee creativity reduced however maintained its significance at the $p < .05$ level indicating partial mediation [β(t)= .17(2.31), $p < .05$ to β(t)= .12(1.66), $p < .05$]. Bias-corrected bootstrap confidence intervals show that the partial mediation found is significant (IE= .04, SE= .02 LLCI: .01, ULCI: .10). Thus, hypothesis 7(a) is supported. Hypothesis 7(b) states that information exchange will mediate the relationship between TMX and employee creativity. The results show that the effect of TMX reduced however maintained its significance at the $p < .05$ level in the presence of information exchange implying partial mediation [β(t)= .19(2.57), $p < .01$ to β(t)= .15(2.00), $p < .05$]. Bias-corrected bootstrap confidence intervals confirm the significance of this partial mediation (IE= .08, SE= .05, LLCI: .01, ULCI: .18). Thus, hypothesis 7(b) is supported. These results suggest that the provision of support

and ideas in LMX and TMX relationships enhance employee information exchange behaviour which in turn stimulates higher levels of creative behaviour. However, this mediation effect is partial which suggest that other mechanisms may explain the means through which these exchange relationships influence creativity and are explored in the next chapter.

Finally, additional analysis tested the mediating effect of information exchange by including both LMX and TMX as independent variables in the same regression equation. The results show that the effect of TMX on employee creativity reduces to an insignificant level in the presence of information exchange [β(t)= .14(1.87), p< .05 to β(t)= .12(1.55), p< .10]. Bias-corrected bootstrap results show that this indirect effect is significant (IE= .05, SE= .04, LLCI: .00, ULCI: .16). When employee creativity was regressed on both TMX and LMX, the effect of LMX appears to be significant only at the p< .10 which does not reach the cut off criteria set in this study. However, bias-corrected bootstrap results show that the mediation effect of information exchange is significant for the relationship between LMX and employee creativity (IE= .03, SE= .02, LLCI: .00, ULCI: .08).

Table 7.9: Hierarchical Regression of Creativity on Social Exchange Relationships and Information Exchange

	Step 1	Step 2-1	Step 3-1	Step 2-2	Step 3-2	Step 2-3	Step 3-3
Control	β(t)	β(t)	β(t)	β(t)	β(t)	β(t)	β(t)
Age	-.12(1.26)	-.09(0.94)	-.09(1.0)	-.06(0.68)	-.07(0.77)	-.06(0.59)	-.06(0.69)
Gender	.00(0.03)	.01(0.14)	.01(0.14)	-.002(0.03)	.001(0.02)	.00(0.06)	.01(0.08)
Education	-.05(0.64)	-.04(0.59)	-.06(0.85)	-.04(0.60)	-.06(0.88)	-.04(0.55)	-.06(0.81)
Job level	.24(2.48)**	.21(2.15)*	.22(2.33)**	.18(1.86)*	.20(2.07)*	.17(1.77)*	.19(1.97)*
Supervisor tenure	-.10(1.42)†	-.11(1.54)†	-.10(1.40)†	-.12(1.64)*	-.11(1.49)†	-.12(1.68)*	-.11(1.53)†
Company 1	.09(1.21)	.07(0.87)	.07(0.94)	.06(0.87)	.07(0.92)	.05(0.71)	.06(0.79)
Company 2	.19(1.90)**	.15(1.56)†	.15(1.54)†	.17(1.72)*	.16(1.65)*	.15(1.52)†	.15(1.51)†
Company 3	.04(0.53)	.03(0.43)	.03(0.41)	.03(0.40)	.03(0.38)	.03(0.36)	.03(0.35)
Social Exchange Relationships							
LMX		.17(2.31)*	.12(1.66)*			.11(1.50)†	.09(1.10)
TMX				.19(2.57)**	.15(2.00)*	.14(1.87)*	.12(1.55)†
Info exchange			.15(2.03)*		.14(2.03)*		.13(1.75)*
R^2	.11	.14	.16	.14	.16	.15	.17
Adjusted R^2	.07	.10	.11	.10	.12	.11	.12
ΔR^2	.11	.03	.02	.03	.02	.04	.01
F	2.89**	3.22***	3.36***	3.38***	3.01***	2.86***	2.83***
ΔF	2.89**	5.33*	4.14*	6.61*	4.10	4.45**	3.05†

Note: Standardized coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05, † p<.10; N= 192.

7.5.3 Hypothesis 8: Indirect Effect of Attachment Styles on Employee Creativity

The final hypothesis 8(a-c) proposes that both attachment anxiety and avoidance have an indirect effect on employee creativity through two sequential intervening variables: (1) each social exchange relationship (i.e. LMX, TMX, and POS) and (2) information exchange behaviour. As an indirect path is hypothesised, Baron and Kenny's (1986) first mediation step (X→Y) can be skipped (Kenny *et al.*, 1996). For hypothesis 8(a), the second condition for mediation (X→M) was met for attachment avoidance however not for attachment anxiety as it did not have a significant effect on LMX at the $p < .05$ level [see hypothesis 1(a), Table 7.3]. Thus, further mediation analyses were not conducted for attachment anxiety in hypothesis 8(a). The first three conditions for mediation were met for hypothesis 8(b) in prior testing (see Section 7.4). However, for hypothesis 8(c), the relationship between POS and information exchange was not significant in earlier testing [see hypothesis 3(c), Table 7.5]. Thus, the indirect path through POS and information exchange was not pursued further and hypothesis 8(c) did not receive support.

To test the final mediation step (XM→Y) control variables included in the first step of the regression equation were age, gender, education, job level, supervisory relationship tenure, and three dummy-coded organisations. Next, the attachment dimensions were entered into the second step of the regression equation. In the third step, each social exchange relationship variable was entered. This is followed by information exchange in the fourth step upon which employee creativity was regressed. In addition to this, LMX and TMX were included in the same equation to test the sequential path when both exchange relationships are considered. The results are summarised in Table 7.10 below.

Hypothesis 8(a) proposes that both attachment anxiety and avoidance will have a significant indirect effect on employee creativity through two sequential mediators: LMX and information exchange. For this hypothesis, only the indirect path from attachment avoidance to employee creativity through LMX and information

exchange was tested.[4] Bias-corrected bootstrap confidence intervals show that attachment avoidance has a significant indirect effect on employee creativity (IE: -.01, SE: .01, LLCI: -.03, ULCI: -.00). Thus, hypothesis 8(a) is supported for attachment avoidance but not for attachment anxiety. Hypothesis 8(b) proposes that attachment anxiety and avoidance will have a significant indirect effect on employee creativity through two sequential mediators: TMX and information exchange. The results of the bias-corrected bootstrap test show that the indirect effect of attachment anxiety on employee creativity is significant (IE= -.01, SE= .01, LLCI: -.03, ULCI: -.00). Also, the indirect effect of attachment avoidance on employee creativity reached significance (IE= -.01, SE= .01, LLCI: -.04, ULCI: -.00). Thus hypothesis 8(b) is supported. These results suggest that attachment avoidance indirectly influences employee creativity through 1) LMX and information exchange and 2) TMX and information exchange. Also, attachment anxiety can be seen to significantly influence employee creativity indirectly through its effect on TMX and information exchange.

Finally additional analysis was conducted to test the sequential mediation path by including both LMX and TMX in the same equation. Bias-corrected bootstrap results show, when controlling for the effects of TMX and control variables, the indirect effect of attachment avoidance and anxiety on employee creativity through LMX and information exchange is insignificant (Anxiety: IE: -.00, SE: .00, LLCI: -.01, ULCI: .00; Avoidance: IE: -.00, SE: .02, LLCI: -.06, ULCI: .01). After controlling for the effects of LMX and control variables, the indirect effect of attachment avoidance and anxiety on employee creativity through TMX and information exchange is also insignificant (Anxiety: IE: -.00, SE: .00, LLCI: -.02, ULCI: .01; Avoidance: IE: -.01, SE: .01, LLCI: -.03, ULCI: .00).

[4] Attachment anxiety was included in the equation as a means of controlling for the effects of anxiety on the proposed mediators and dependent variable.

Table 7.10: Hierarchical Regression of Creativity on Attachment, Social Exchange Relationships, and Information Exchange

	Step 1	Step 2	Step 3-1	Step 4-1	Step 3-2	Step 4-2	Step 3-3	Step 4-3
	β(t)	β(t)	β(t)	β(t)	β(t)	β(t)	β(t)	β(t)
Control								
Age	-.11(1.26)	-.10(1.09)	-.06(0.65)	-.07(0.76)	-.09(0.94)	-.09(1.02)	-.06(0.62)	-.07(0.72)
Gender	.00(0.03)	-.01(0.13)	-.01(0.16)	-.01(0.10)	.00(0.003)	.00(0.03)	-.02(0.07)	-.00(0.03)
Education	-.05(0.64)	-.05(0.65)	-.04(0.62)	-.06(0.86)	-.04(0.59)	-.06(0.85)	-.04(0.58)	-.06(0.81)
Job level	.24(2.48)	.22(2.25)**	.17(1.77)*	.19(1.97)*	.20(2.08)*	.22(2.26)**	.17(1.72)*	.19(1.93)*
Supervisor tenure	-.10(1.42)	-.11(1.50)†	-.12(1.69)*	-.11(1.53)*	-.11(1.57)†	-.10(1.43)†	-.12(1.70)*	-.11(1.56)†
Company 1	.09(1.21)	.10(1.29)†	.07(0.99)	.08(1.02)	.08(1.00)	.08(1.04)	.06(0.83)	.07(0.89)
Company 2	.19(1.90)*	.17(1.73)*	.16(1.67)*	.16(1.65)*	.16(1.58)†	.16(1.59)†	.16(1.57)†	.15(1.57)†
Company 3	.04(0.53)	.04(0.53)	.03(0.38)	.03(0.35)	.03(0.41)	.03(0.37)	.02(0.33)	.02(0.30)
Employee Attachment								
Anxiety		-.14(1.87)*	-.13(1.65)*	-.11(1.37)†	-.11(1.45)†	-.09(1.21)	-.12(1.39)†	-.09(1.18)
Avoidance		-.01(0.14)	.02(0.28)	.04(0.47)	.03(0.40)	.05(0.06)	.05(0.58)	.06(0.69)
Social Exchange Relationships								
LMX			.17(2.25)**	.14(1.86)*			.14(1.82)*	.12(1.56)†
TMX					.14(1.75)*	.11(1.38)†	.10(1.17)	.08(0.94)
Information Exchange				.13(1.77)*		.14(1.87)*		.12(1.62)†
R^2	.11	.13	.16	.17	.15	.16	.16	.18
Adjusted R^2	.07	.09	.11	.12	.10	.11	.11	.12
ΔR^2	.11	.02	.02	.01	.02	02	.03	.01
F	2.89**	2.77**	3.03***	3.07***	2.83**	2.92***	2.90***	2.90***
ΔF	2.89**	2.16	5.06*	3.11†	3.07†	3.51†	3.22*	2.61

Note: Standardized coefficients and t-statistics are reported; All tests are one-tailed; *** p< .001, ** p<.01, * p<.05, † p<.10; N= 192.

7.6 CONCLUSION

The purpose of this chapter was to provide a detailed overview of the results from the data analysis conducted to test the hypothesised research model. First, descriptive statistics were presented to provide an overview of the sample and correlations among variables. In the second part of the chapter, results of the hypotheses testing were presented and offered support for the majority of the study's hypotheses. In the final chapter, a discussion of the findings is presented and the theoretical and practical implications are outlined. In addition, limitations and future research recommendations are provided.

CHAPTER EIGHT

DISCUSSION AND CONCLUSIONS

8.1 INTRODUCTION

The overall objective of this study was to investigate the relationship between attachment styles and employee creativity. To interpret this relationship, Ford's (1996) theory of creative action was adopted as a theoretical framework. The study proposed that attachment styles have an indirect effect on employee creativity through a set of intervening variables: organisational social exchange relationships (i.e. LMX, TMX, and POS) and information exchange behaviour. Data were collected from 192 employee-supervisor dyads operating within the engineering function across 12 organisations in Ireland. The hypotheses developed in the study were tested using hierarchical multiple regression. The analysis tested five direct effect hypotheses and three tests of mediation using Baron and Kenny's (1986) four-step mediation approach. This chapter begins with a discussion of the study's findings which is followed by an overview of the theoretical contributions and implications for management practice. Finally, the chapter concludes with an outline of the study's limitations and recommendations for future research.

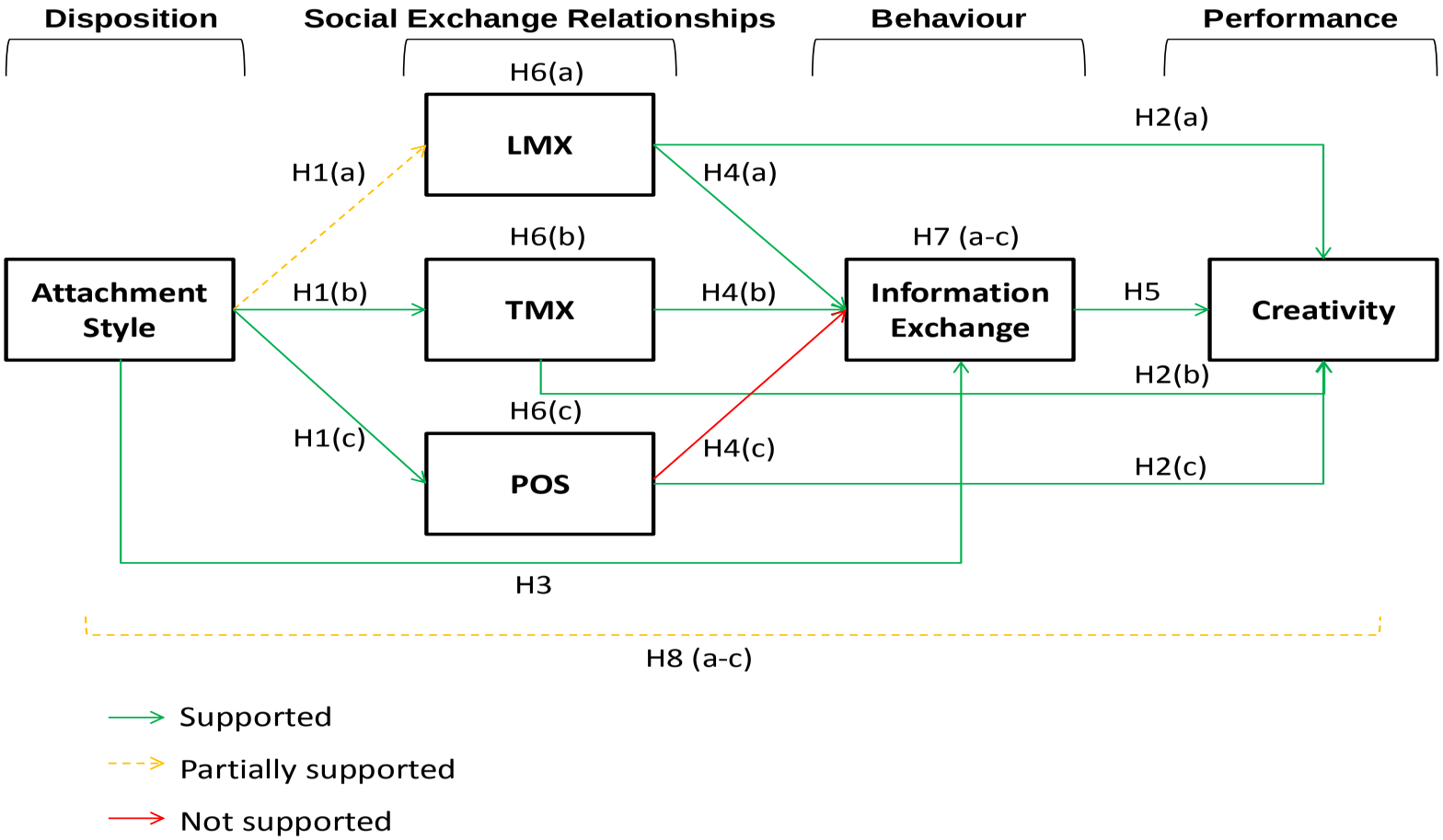
8.2 SUMMARY OF THE RESEARCH FINDINGS

The results from the study reveal interesting findings which are discussed in this section. Overall, support was found for the majority of the hypotheses. A summary of the results are provided in Table 8.1 on the next page followed by a graphical depiction of the relationships in Figure 8.1.

Table 8.1: Summary of the Results of Hypothesis Testing

Hypothesis	Result
1 Both attachment anxiety and avoidance will have a negative relationship with:	
a) LMX	Partial Support
b) TMX	√
c) POS	√
2 Both attachment anxiety and avoidance will have a negative relationship with information exchange.	√
3 a) High quality LMX will be positively related to information exchange.	√
b) High quality TMX will be positively related to information exchange.	√
c) High quality POS will be positively related to information exchange.	X
4 a) High quality LMX will have a positive relationship with employee creativity.	√
b) High quality TMX will have a positive relationship with employee creativity.	√
c) High quality POS will have a positive relationship with employee creativity.	√
5 Information exchange will have a positive relationship with employee creativity.	√
6 The effect of attachment anxiety and avoidance on information exchange will be mediated by:	
a) LMX,	Partial Support
b) TMX,	√
c) POS.	X
7 Information exchange will mediate the relationship between:	
a) LMX and employee creativity,	√
b) TMX and employee creativity,	√
c) POS and employee creativity.	X
8 Both attachment anxiety and avoidance will have an indirect effect on employee creativity through:	
a) LMX and information exchange,	Partial support
b) TMX and information exchange,	√
c) POS and information exchange.	X

Figure 8.1: Summarised Results on the Theoretical Model



8.3 DIRECT EFFECT HYPOTHESES

In this section a discussion on the results of the direct effect hypotheses is presented. For the non-significant findings, the author contemplates possible theoretical reasons for these weak effects.

8.3.1 Hypothesis 1: Attachment Styles → Social Exchange Relationships

The findings show that attachment anxiety and avoidance play a significant role in influencing employees' perception of the quality of their TMX relationship and POS. However, only attachment avoidance exerted a significant effect on LMX. The consistent pattern of results for avoidant employees reflects their general undifferentiated negative appraisal of relationships. These findings correspond with attachment literature that shows that avoidant adults possess negative perceptions of support received from others and are dissatisfied with relationships in general (Hazan & Shaver, 1987; Bartholomew & Horowitz, 1991). Consistencies can also be found with research in organisational settings. For example, avoidant employees have been shown to report dissatisfaction with interpersonal work relationships (Hardy & Barkham, 1994) and critical judgements of their co-workers (Little *et al.*, 2010).

The findings also show that attachment anxiety had a significant negative effect on employees' perception of the quality of their TMX relationships and POS. The negative effect of attachment anxiety on TMX and POS is potentially a consequence of their view of others as inconsistent in their availability, supportiveness, and responsiveness (Bartholomew & Horowitz, 1991). This creates a sense of interpersonal anxiety and dissatisfaction in work relationships (Hardy & Barkham, 1994; Hazan & Shaver, 1990). These findings are inline with previous studies that show that anxious employees perceive a lack of reciprocation due to their unmet attachment needs (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1990).

The effect of attachment anxiety on LMX however was non-significant which is consistent with Richards and Hackett (2012) findings. These authors also investigated the moderating effect of emotional regulation and found that when anxious employees use emotional regulatory strategies their perceptions of LMX relationship quality improved. However, when these strategies were not used, perceptions of LMX relationship quality deteriorated to a significant level. As anxious adults are hypervigilant to social cues and possess a strong desire for closeness they may adapt their behaviour in line with their supervisor's preferences (Keller, 2003). However, avoidant adults are less open to this adaptation given their resistance of using new information for forming judgements (Green-Hennessy & Reis, 1998; Keller, 2003). This may shed some light on the weak effect for attachment anxiety found in the present study. The non-significant effect of attachment anxiety on LMX may also be attributed to the vertical nature of the LMX relationship. Leaders generally possess a formal power advantage over subordinates in terms of their capacity to promote, punish, and reward. Thus, anxious employees may perceive greater consequences (i.e. rejection and punishment) in explicitly expressing dissatisfaction with their immediate supervisor.

It is also possible that LMX differentiation (i.e. the unequal dispersion of support from leaders to employees in their work group) may moderate the relationship between attachment anxiety and LMX perceptions. That is, high LMX differentiation may strengthen the negative effect of attachment anxiety on employees' LMX perceptions. Prior research shows that anxious adults are characteristically over-dependent and clingy in relationships and hypersensitive to social cues (Hazan & Shaver, 1987; Mikulincer & Sheffi, 2000). Moreover, these individuals express strong emotional reactions to the perceived unavailability of others as it signals a threat of rejection (Mikulincer *et al.*, 2003). Thus, if anxious employees perceive that their leader has a higher quality LMX relationship with their peer co-workers, this may trigger a strong negative response in the form of jealously and

resentment. In terms of the avoidant employee, LMX differentiation is not expected to impact their negative LMX perceptions. The reason being is that avoidant adults perceive others as consistently unavailable and thus possess no desire to develop close bonds with others as, in their view, seeking out support from others is futile (Mikulincer *et al.*, 2003). This difference is a consequence of their underlying defensive attachment regulatory strategies. Overall, these findings suggest that attachment styles play a critical role in the sensemaking process by influencing employees' interpretation of social cues and evaluation of their relationship quality.

8.3.2 Hypothesis 2: Attachment Styles → Information Exchange

Results from the study also show that attachment anxiety and avoidance have a significant negative effect on employees' information exchange behaviour. Given insecure employees negative expectations of other, it appears that the perceived costs associated with information exchange exceed the benefits of engaging in this behaviour. However, as previously mentioned anxious and avoidant adults differ in their underlying construal and expectation of others. Anxious employees possess low efficacy in task activities (Davidovitz *et al.*, 2007) and anticipate negative evaluations from others (Keller & Cacioppe, 2003). In addition, these individuals fear rejection from others due to their self-perceived poor work performance (Hazan & Shaver, 1990). Taken together, these negative expectations of others and low self-efficacy may cause anxious employees to view information exchange as an undesirable behaviour. In contrast, avoidant employees' distrust and critical judgement of their co-workers competency and aversion to social interaction at work (Davidovitz *et al.*, 2007; Hazan & Shaver, 1990) may dissolve any desire to seek out or share information and knowledge with others.

8.3.3 Hypothesis 3 Social Exchange Relationships → Information Exchange

Interesting findings were found in relation to the effect of organisational social exchange variables on information exchange behaviour. As expected, the results show that both TMX and LMX have a significant effect on information exchange. However, the effect of POS on information exchange was not supported. The significant effect of LMX on information exchange supports Khazanchi and Masterson's (2011) finding of the significant relationship between LMX and information sharing in work teams. Employees' exchange of information, both within and outside their work group, can be seen as an indirect reciprocation to their leader as this behaviour contributes to the greater objectives of their unit.

The significant effect of TMX on information exchange shows that norms of information sharing, feedback, and helping in high TMX relationships (Liden *et al.*, 2000; Seers *et al.*, 1989) stimulates information exchange behaviour across units. As this behaviour is targeted at co-workers, information exchange can be seen as a natural outcome of TMX. This finding also supports Liu and colleagues (2011) study that shows TMX predicts employees' intentions to share knowledge- an attitudinal measure of knowledge sharing. From a sensemaking perspective, the open communication and sharing of ideas in LMX and TMX relationships stimulate positive receptivity beliefs regarding the responsiveness of social environment to information exchange. Moreover, the accumulation of knowledge through this process may enhance employees' knowledge self-efficacy and further motivate information exchange behaviour.

The non-significant effect of POS found in this study is inconsistent with King and Marks (2008) who report a significant relationship between POS and employee knowledge contributions. However, evidence from multi-foci research shed some light on this anomaly. This research shows that different social exchange relationships have unique antecedents and consequences (e.g. Cropanzano *et al.*, 2002; El Akremi *et al.,* 2010; Magni &

Pennarola, 2008; Masterson *et al.*, 2000; Tekleab *et al.*, 2005; Wayne *et al.*, 2002). Though organisations value knowledge sharing (Cabrera & Cabrera, 2006), high quality LMX and TMX appear to be more salient than the distal supportiveness of the organisation for motivating this behaviour as it is directed at immediate co-workers. The work of Bartol and colleagues (2009) may bring further clarity to this non-significant effect. In their study, the authors found that POS significantly influences employee knowledge sharing however only for employees who experience high job security. The provision of job security explicates to the employee that their organisation is committed to their long-term employment and invested in their actions (Bartol *et al.*, 2009). As a consequence, these employees feel invested in the organisation's long-term goals and thus voluntarily reciprocate with higher levels of knowledge sharing. Though not included, job security could be a moderating mechanism that explains the weak effect of POS on information exchange in the present study.

8.3.4 Hypothesis 4: Social Exchange Relationships → Employee Creativity

The results of this study also show that perceptions of high quality LMX, TMX, and POS each have a significant direct effect on employee creativity. This is consistent with Ford's (1996) theory that positive social cues from the social domain lead to the formation of positive expectations regarding the receptivity of the environment to creative action. From these findings we can conclude that the organisation, work group, and supervisor are important sources of motivation for employee creativity. As employee creativity was evaluated by immediate supervisors concerns regarding accentuated relationships due to common method bias is mitigated which strengthens the conclusions of these findings (Podsakoff *et al.*, 2003).

In terms of the relationship between LMX and employee creativity, the extant research has been inconsistent. Tierney and colleagues (1999), Liao and colleagues (2010), and Khazanchi and Masterson (2011) each confirm the significant direct effect of LMX on employee creativity. However,

Olsson and colleagues (2012) failed to support this relationship. The present study found support for the significant effect of LMX and thus supports the relevance of this relationship to creativity in the Irish engineering context. It appears that the benefits accrued from high quality LMX relationships such as interpersonal trust, open communication, provision of resources, and autonomy (Graen & Uhl-Bien, 1995) are important factors that contribute to employee creativity. A sense of interpersonal trust, socio-emotional support, and sharing of ideas and feedback in high quality TMX relationships (Seers, 1989) is also shown to be an important source of motivation for creative behaviour. This finding is consistent with Liao and colleagues (2010) study which found TMX significantly influences employee creativity. The significant relationship between POS and employee creativity also supports the work of Eisenberger and colleagues (1990). Organisations that emulate supportiveness and recognise the value of employee actions (Eisenberger *et al.*, 1990) can be seen to stimulate employees' creative action.

As additional analysis, the study included all three social exchange relationship variables simultaneously in a regression analysis to evaluate their combined effect on employee creativity. The results show that combined these variables did not significantly influence creativity. The author can identify two possible explanations for this. Firstly, the bivariate correlations between the social exchange variables were moderately high (ranged from r= .40 to r= .49; see Chapter 7, Table, 7.1).[3] These correlates are reflective of the conceptual overlap between these variables due to their shared theoretical roots in social exchange and reciprocity theory (Blau, 1964; Gouldner, 1960). Once entered into the regression together, the relationship between these variables, coupled with the study's modest sample size (N= 192), may not have had a sufficient distribution of cases to

[3] Discriminant validity analysis shows that no cross-loading was evident between these variables (see Appendix G).

differentiate their effect and thus led to inaccurate conclusions.[4] Secondly, evidence from prior research found that POS acts as a moderator in the relationship between LMX and employee outcomes (Erdogan & Enders, 2007). Thus, POS was explored as a possible moderator of the effect of LMX and TMX on employee creativity. However, in the present study, there was no evidence of a moderation effect. Thus, for the purposes of this study, simple regression results are considered and no conclusions are made with respect to simultaneous analyses.

8.3.5 Hypothesis 5: Information Exchange → Employee Creativity

The relationship between information exchange and employee creativity also received support. This suggests that when employees engage in higher levels of information exchange they develop greater creative suggestions and ideas. From a sensemaking perspective, employees' active exchange of information and knowledge implies that the environment is receptive to their creative ideas and suggestions resulting in greater creative action. Also, the accumulation of alternative perspectives may enhance employee capability beliefs regarding the significance of their ideas leading to higher levels of creative performance. This empirical evidence is also consistent with suggestions from Amabile (1996) that information exchange enhances employee creativity through the provision of cognitive resources.

Similar to these findings, Khazanchi and Masterson (2011) found that higher levels of information sharing in teams enhance employee creativity. By examining information exchange within and outside ones work group, the present study demonstrates the importance of cross-departmental exchange for creative performance. In a previous study, Gong and colleagues (2010) did not find support for this relationship in a sample of retail sales staff. Gong and colleagues suggest that job complexity is a

[4] SEM was considered as an alternative to test the variables simultaneously however, the modest sample size would not be sufficient to yield reliable SEM results (Chou & Bentler, 1995; Quintana & Maxwell, 1999; Kline, 2004) and thus this avenue was not pursued.

possible boundary condition for the relevance of information exchange for creativity. The significant result found here, in a sample of engineering professionals, certainly alludes to this possibility. Engineering professionals may require information exchange as an integral component in the creative process as it facilitates the accrual of alternative perspectives and in turn enhances creative ideas, suggestions, and solutions to technical problems.

8.3 MEDIATION AND INDIRECT EFFECTS

In this section, findings relating to the mediation and indirect effect hypotheses are discussed. For the non findings, the author presents some plausible theoretical rationale.

8.3.1 Hypothesis 6: Mediation Effect of Social Exchange Relationships

The first mediation hypothesis proposed that employee perceptions of their social exchange relationships will mediate the effect of attachment insecurities on information exchange behaviour. From a sensemaking perspective, social cues extracted from the social environment inform employee expectations of the perceived personal consequences of their actions (Ford, 1996; Weick, 1995). As the motivational effect of exchange relationships are conditional on their perceived quality (Graen & Uhl-Bien, 1995; Liden & Maslyn, 1998), attachment insecurities may limit the perceived obligation to reciprocate with information exchange behaviour.

Findings show that both LMX and TMX fully mediated the relationship between attachment avoidance and information exchange. This suggests that the means through which avoidant adults engage in information exchange is fully accounted for by the perceived quality of their LMX and TMX relationships. As a result of these evaluations of others and general withdrawal from relationships, it is unlikely avoidant employees feel they have gained sufficiently to reciprocate with valued behaviour. This is

reflected in prior work that has found that avoidant employees exhibit lower levels of instrumental helping behaviours towards co-workers (Geller & Bamberger, 2009), less effort in team tasks (Rom & Mikulincer, 2003), lower levels of organisational citizenship and commitment, and perceived interpersonal injustice (Desivilya *et al.*, 2007; Richards & Schat, 2011).

The study's findings show that attachment anxiety does not have a significant effect on LMX thus this mediation hypothesis failed to retrieve support. However, the relationship between attachment anxiety and information exchange was partially mediated by perceptions of TMX. This partial mediation suggests that other mechanisms beyond those considered in this study play a role in explaining this relationship. One such variable may be employee self-efficacy. A number of studies have shown that employee self-efficacy is a strong predictor of knowledge sharing behaviour (Bock & Kim, 2002; Kankanhalli *et al.*, 2005; Lin, 2007). Similarly, attachment literature shows that anxious adults typically report low task efficacy (Davidovitz *et al.*, 2007), anticipate critical performance appraisals from others (Keller & Cacioppe, 2003), and fear rejection from others for poor work performance (Hazan & Shaver, 1990). Thus, employee self-efficacy may represent an alternative mediating mechanism through which attachment anxiety influences employee information exchange.

In addition to this, group cohesion may moderate the mediation effect of TMX. From the attachment literature, research has shown the moderating effect of group cohesion on the relationship between attachment anxiety and burnout (Ronen & Mikulincer, 2010) and instrumental functioning in group tasks (Rom & Mikulincer, 2003). These studies demonstrate that high levels of group cohesion significantly reduce the negative impact of attachment anxiety on employee outcomes. The logic underlying this effect is that group cohesion provides a sense of approval and psychological safety which serve to pacify the intensity of attachment anxiety (Rom & Mikulincer, 2003). Interestingly, both studies found group cohesion had a

non-significant moderating effect on attachment avoidance and outcome variables. This non-responsiveness to favourable climate conditions is consistent with avoidant adults' inherent disinterest in interacting with others. In this study, the effect of attachment anxiety on information exchange via TMX may fluctuate under different conditions of group cohesion. For instance, low group cohesion may strengthen the negative effect of attachment anxiety on information exchange through TMX. In contrast, high group cohesion may weaken the negative indirect effect. Finally, as previously discussed, POS did not exert a significant effect on information exchange and thus this mediation hypothesis did not receive support. Given Bartol and colleagues (2009) findings, the mediation effect of POS on the relationship between attachment anxiety and information exchange may strengthen under conditions of high job security. Overall, these findings are congruent with previous studies that show personal characteristics impact employee behaviour through proximal motivational processes such as social exchange relationships (e.g. Gong *et al.*, 2010; Kinicki & Vecchio, 1994; Harris *et al.*, 2007).

8.3.2 Hypothesis 7: Mediation Effect of Information Exchange

Information exchange is included in the present study as an explanatory cognitive mechanism through which social exchange relationships are believed to influence employee creativity. Drawing upon Ford's (1996) theory of creative action, the present study contends that employees' evaluation of the quality of their relationships informs their decision to take creative action. Employees in high quality exchange relationships report higher levels of information exchange and as a consequence form positive receptivity and capability beliefs about creative action. Findings from the mediation analysis show that information exchange partially mediates the relationship between LMX and employee creativity. This mediation effect for LMX is consistent with Khazanchi and Masterson's (2011) study that found information sharing mediated the relationship between LMX and creativity. Similarly, the effect of TMX on employee

creativity was partially mediated by information exchange. From this it can be concluded that the resources, open communication, and sharing of ideas in LMX and TMX relationships are important sources of motivation for employees' information exchange and creative behaviour. As POS did not exert a significant effect on information exchange this part of the hypothesis was not supported.

However, for LMX and TMX this mediation effect was only partial implying that other factors may explain these relationships. Previous research shows that self-efficacy functions as a mediating mechanism through which both LMX and TMX influence employee creativity (Liao *et al.*, 2010). Liao and colleagues argue that employee self-efficacy can change as a consequence of the quality of their relationship with their work group and supervisor. Another potential mediating mechanism proposed by Liao and colleagues (2010) is creative self-efficacy. Tierney and Farmer (2002) report that creative self-efficacy has a strong effect on employee creativity. Thus, it is possible that self-efficacy beliefs specific to creativity may be another path that explains the effect of LMX and TMX on employee creativity.

8.3.3 Hypothesis 8: Indirect Effect of Attachment Styles on Creativity

The final hypothesis aims to determine whether attachment insecurities have a significant negative indirect effect on employee creativity through a sequential path that includes: 1) social exchange relationships and 2) information exchange. Results show that attachment avoidance had a significant negative indirect effect on employee creativity through LMX and information exchange. However, the indirect path from attachment anxiety through LMX and information exchange did not receive support.[6] The results also show that both attachment anxiety and avoidance have a significant negative indirect effect on employee creativity through TMX and

[6] Anxiety did not have a significant effect on LMX thus further analysis was not conducted.

information exchange. Finally, the indirect effect of attachment anxiety and avoidance through POS and information exchange did not receive support.[7]

Overall, these findings show that perceptions of TMX quality and information exchange are significant in explaining a process through which both attachment anxiety and avoidance negatively impact employee creativity. For the avoidant employee, it also appears their negative perceptions of LMX quality and low levels of information exchange have a significant negative consequence for their creative performance. This is consistent with Bowlby's (1969) theory that attachment and exploration are interlocking components in the behavioural system that cannot be simultaneously activated. Insecure adults' unmet attachment needs create a preoccupation with relationships that distracts them from exploratory activities. Given that both systems cannot be simultaneously activated, the active attachment system disables insecure adults from freely engaging in creative endeavours. These empirical findings are also consistent with Ford's (1996) theory of creative action which emphasises the centrality of the sensemaking process for creative action. In specific terms, attachment styles can be conceived as antecedents of the sensemaking process by shaping employees' interpretation and derived meaning of social cues from the environment. Moreover, the lower level of information exchange limits the accumulation of cognitive resources necessary for creativity. This, in turn, results in a preference for habitual action over creativity as evidenced in this study. From this, attachment styles can be seen to be a meaningful personal disposition that explains variance in employee creativity.

[7] POS did not have a significant effect on information exchange thus further analysis was not conducted.

8.4 CONTRIBUTIONS TO THEORETICAL KNOWLEDGE

The present study makes a number of valuable contributions to theoretical knowledge which are discussed below and summarised in Table 8.2 at the end of this section.

8.4.1 Attachment Styles and Employee Creativity

The first major contribution of this study is the introduction of a new individual difference variable to the organisational creativity field-attachment style. Previous research has shown that attachment styles have a significant effect on a variety of creativity-related constructs such as curiosity (Mikulincer, 1997; Johnston, 1999), exploratory attitudes and behaviour (Elliot & Reis, 2003; Green & Campbell, 2000), cognitive openness (Mikulincer, 1997; Mikulincer & Shaver, 2001), achievement orientation (Elliot & Reis, 2003), and creative problem-solving (Mikulincer & Sheffi, 2000). Despite this, no research to date has considered the role of attachment styles for explaining creativity in workplace settings. This study contributes to theory by extending these links to the domain of organisational creativity. Guided by the work of Gong and colleagues (2010), the present study considers motivational (i.e. relationships) and cognitive (i.e. information exchange) mechanisms to explain the means through which attachment styles impact employee creativity. High levels of attachment anxiety and avoidance can be seen to predispose employees' unfavourable evaluation of their social exchange relationships and shape their tendency toward lower levels of information exchange and creativity.

This contribution goes beyond the simple addition of a new dispositional trait to organisational creativity research. This study also demonstrates the critical role of employees' subjective interpretation for shaping their relational work experiences and ensuing creative action. Thus, the study supports the validity of Ford's (1996) theory of creative action and advances the application of this theory which is underdeveloped in

comparison to other creativity theories (e.g. Amabile, 1996; Woodman *et al.*, 1993). In doing so, the study provides an understanding and appreciation for the sensemaking process that leads to creativity.

8.4.2 Attachment Styles and Social Exchange Relationships

A further contribution of this study lies in the insights it offers to social exchange theory. In social exchange relationships, the perceived value of prosocial actions and level reciprocation is determined by a process of subjective evaluation (Zhang & Epley, 2009). Though prior work has examined broad personality traits that may influence social exchange relationships, particularly with respect to LMX, the results have been somewhat inconsistent. The relational orientation of attachment styles may be particularly insightful in explaining individual differences in employees' evaluative process of the benefits received, expectations of others, and felt obligation to reciprocate. This study contributes to this research field by demonstrating the important role of attachment styles in the evaluative process and estimation of the quality of these relationships.

In doing so, the study supports Richards and Hackett's (2012) findings regarding the significant negative effect of attachment avoidance and non-significant effect of attachment anxiety on perceptions of LMX relationship quality. Avoidant employees appear to be less receptive to developing high quality LMX relationships with their immediate supervisors than their anxious co-workers. This is perhaps a consequence of their rigid disinterest in relationships in general and lack of engagement in sensemaking (Keller, 2003). Also, by testing this relationship in a sample of Irish engineers, the study validates Richards and Hackett's (2012) findings in a different cultural context. By demonstrating the significant effect of attachment avoidance on LMX perceptions, the study also contributes to the broader body of research that applies attachment theory to the leadership field.

The present study also makes a novel contribution to the underdeveloped TMX field. With the exception of Liao and colleagues (2012) who examined the moderating role of extraversion, neuroticism, and conscientiousness on the link between TMX and work engagement, no study has examined the direct relationship between personal dispositions on TMX. This study fills this void as it is the first to demonstrate the direct effect of attachment insecurities on perceptions of TMX quality. In doing so, the study extends the work of Rom and Mikulincer (2003) to work group settings.

The POS literature is also significantly underdeveloped in its consideration of personal dispositions as antecedents of employees' perception of organisational support. Beyond Rhodes and Eisenberger's (2002) meta-analytic work, no research has directly considered the role of personal dispositions for explaining individual differences in POS. The majority of antecedent research in this field considers social and contextual factors. This study is unique in that it is the first to consider attachment styles as a personal dispositional trait that influences employee perceptions of POS and sets the stage for future research in this area. In doing so, this study also responds to Harms (2011) call to explore the relationship between attachment styles and POS. As POS motivates prosocial behaviours directed at the organisation (Rhoades & Eisenberger, 2002; Riggle *et al.,* 2009), the effect of attachment styles on POS found in this study may explain why insecure employees engage in lower levels of organisational commitment and citizenship behaviour (Desivilya *et al.*, 2007; Richard & Schat, 2011).

8.4.3 Attachment Styles and Information Exchange

The role of attachment styles for explaining information exchange also contributes to the knowledge sharing literature. In this field, the majority of antecedent research considers organisational culture and managerial determinants of knowledge sharing (Matzler *et al.*, 2008). Though work has begun to consider personal characteristics as determinants of knowledge sharing, the results have been inconsistent. As information exchange is

interpersonal in nature, the relational orientation of attachment styles may be particularly insightful to this behaviour. Though anxious and avoidant employees differ in their underlying motives, both engage in lower levels of information exchange. To the authors knowledge no previous research has considered this relationship. The study also compliments previous research that has shown attachment insecurities lead to lower levels of employee helping behaviour and instrumental support directed at co-workers (Geller & Bamberger, 2009; Richards & Schat, 2007).

8.4.4 Mediating Role of Social Exchange Relationships

A further contribution of this study exists in establishing a unique pathway through which attachment styles impact information exchange. To the author's knowledge, no research to date has considered the role of social exchange relationships as mediating mechanisms to explain the effect of attachment styles on employee behaviour. The present study also supports previous research that identifies LMX is an important motivational process through which employee personal traits influence employee outcomes (Harris *et al.*, 2007; Kinicki & Vecchio, 1994). Moreover, this study is first to consider TMX as a motivational mechanism that explains the path from employee personal traits to work behaviour. In doing so, the study demonstrates the significance of both supervisory and work group exchange relationships as important motivational mechanisms through which attachment styles influence information exchange behaviour.

8.4.5 Social Exchange Relationships and Employee Creativity

A small body of research has begun to explore the relationship between social exchange relationships and employee creativity. The relationship between LMX and employee creativity has received the greatest attention and returned inconsistent findings. As a consequence, calls have been made to further explore this relationship (Olsson *et al.,* 2012; Tierney *et al.,* 1999; Tierney, 2008). The significant effect of LMX on creativity found in this study is consistent with the work of Tierney and colleagues (1999), Liao

and colleagues (2010), and Khazanchi and Masterson (2011). In terms of TMX, no study beyond the work of Liao and colleagues (2010) has considered the effect of TMX on employee creativity. The present study supports Liao and colleagues (2010) findings and thus provides further support for the important role of the work group relationship for employees' creative performance.

This study also shows that a supportive organisation (i.e. POS) motivates employees to engage in higher levels of creative behaviour. In doing so, the study supports Eisenberger and colleagues (1990) finding that POS influences employee ideas and suggestions to improve organisational operations. By using supervisory reports of creativity, this study builds Eisenberger and colleagues work using a different creativity indicator. The study also responds to Shalley and Zhou's (2004) call to examine antecedents in different contextual conditions to validate their relevance for employee creativity. This study is the first to examine the significance of social exchange relationships for employee creativity in the Irish context.

8.4.6 Social Exchange Relationships and Information Exchange

This study also contributes to knowledge sharing literature by demonstrating the important role of LMX and TMX for encouraging information exchange behaviour. Only two previous studies consider the role of these relationships for knowledge sharing. Khazanchi and Masterson (2011) found that LMX effects information sharing while Liu and colleagues (2011) report that TMX impacts knowledge sharing intentions. The present study builds on this work by demonstrating the influence of both TMX and LMX for information exchange inside and outside the work group. Also, by examining this relationship in an Irish engineering sample, the relevance of these relationships is validated in a new context.

8.4.7 Information Exchange and Employee Creativity

Despite Amabile's (1996) contention that information exchange provides cognitive resources crucial for creativity only two studies have considered this empirically (i.e. Gong *et al.*, 2010; Khanzanchi & Masterson, 2011). However, these studies produce conflicting results. This study supports Khazanchi and Masterson's (2011) findings of the significant influence of information sharing on creativity and develops it by adopting a broader conceptualisation (i.e. the giving and receiving of information within and outside ones' work unit). The study also responds to Gong and colleagues (2010) call to test the effect information exchange in a sample of knowledge workers (i.e. engineers) as no direct effect was found in a sample of retail staff. The significant effect found in this study certainly alludes to the possibly that job complexity may determine the relevance of information exchange in the process that leads to creativity.

8.4.8 Mediating Role of Information Exchange

The study's final contribution to theory exists in demonstrating the role of information exchange as an important cognitive process through which LMX and TMX influence employee creativity. This supports Khazanchi and Masterson's (2011) finding that information sharing acts as a pathway through which LMX impacts creativity. In addition, this study is the first to demonstrate the indirect effect of TMX on employee creativity through information exchange. This provides empirical evidence for the importance of information sharing and collaborative norms in high quality TMX relationships for enhancing creative behaviour.

Table 8.2: Summary of Theoretical Contributions of the Present Study

Theoretical Relationship	Supports	Develops	New
Attachment Styles → Employee Creativity	Supports previous research that examines the effect of attachment styles on creativity related constructs (i.e. trait curiosity, cognitive openness, achievement orientation, exploration, and creative problem solving).	Extends Bowlby's (1969) attachment-exploration hypothesis to organisational creativity domain. Builds on Ford's (1996) theory by considering attachment style as an antecedent to the sensemaking process.	New theorising and empirical evidence for the indirect effect of attachment styles on employee creativity through: 1) LMX and information exchange, 2) TMX and information exchange.
Attachment Styles → Social Exchange Relationships	Supports Richard & Hackett's (2012) findings regarding the effect of attachment styles on LMX.	Extends Rom & Mikulincer's (2003) work by examining attachment styles in work group settings.	New theorising and empirical evidence for the effect of attachment styles on TMX and POS.
Attachment Styles → Information Exchange	Supports research that examines the role of attachment styles for helping behaviour and instrumental support directed at co-workers.	Develops previous research that has considers employee personal traits as determinants of knowledge sharing.	New theorising and empirical evidence for the relationship between attachment styles and information exchange.
Mediating Role of Social Exchange Relationships	Supports previous research that considers the mediating role of LMX in the relationship between personal traits and employee behaviour.	Presents a unique pathway via TMX and LMX through which attachment styles influence employee behaviour.	New theorising and empirical evidence for LMX and TMX as mediating mechanism through which attachment styles influence information exchange. Consideration for the mediating effect of TMX on the link between personal traits and employee behaviour.
Social Exchange Relationships → Employee Creativity	Complements previous research that has found support for the relationship between social exchange relationships and employee creativity.	Responds to Shalley and Zhou's (2004) call by considering the role of social exchange relationships for employee creativity in an Irish context.	First study to explore the effect of social exchange relationships and employee creativity in an Irish context.

Table 8.2 continued

	Supports	Develops	New
Social Exchange Relationships → Information Exchange	Supports previous research that demonstrates the effect of LMX and TMX on knowledge sharing intentions and behaviour.	Extends the relevance of LMX and TMX to a broader conceptualisation of information exchange (i.e. giving and receiving information inside and outside one's work unit).	Empirically tests the effect of social exchange relationships on information exchange in a sample of Irish engineers.
Information Exchange → Employee Creativity	Supports Khanzanchi and Masterson's (2011) study that shows the significant effect of information sharing on employee creativity.	Develops Khanzanchi & Masterson (2011) study by considering both the giving and receiving of information within and outside one's work unit for employee creativity.	Examines the relationship between information exchange and employee creativity in a sample of engineers and thus responds to Gong and colleagues (2010) call.
Mediating Role Information Exchange	Supports Khanzanchi & Masterson's (2011) work that shows the mediating effect of information sharing on the link between LMX and creativity.	Develops Khanzanchi & Masterson's (2011) work be considering both the giving and receiving of information within and outside ones work unit.	First study to test the mediating role of information exchange in the relationship between TMX and employee creativity.

8.5 IMPLICATIONS FOR MANAGEMENT PRACTICE

Organisations operating in highly competitive environments depend on their employees' creativity to achieve an advantage over their industry competitors (Oldham & Cummings, 1996). Thus, to maximise their creative potential, this study suggests that organisations need to consider the implications of employee attachment insecurities for relationship development, information exchange, and creative performance. The author offers valuable recommendations for practice regarding attachment dynamics in the workplace. Also, recommendations are made with respect to relationship development, information exchange, and creativity.

8.5.1 Attachment Initiative: Awareness, Intervention, and Leadership

Though attachment styles are generally stable dispositions, they are not entirely impenetrable (Mikulincer & Shaver, 2005) and efforts can be taken on the part of the organisation to facilitate employee personal growth. This study recommends an initiative that organisations can adopt to facilitate this process. This initiative incorporates three core elements- attachment awareness, intervention, and leadership. The value of such an initiative is reliant on the investment and commitment at all organisational levels.

Organisational Awareness

Defensive strategies that arise from attachment insecurities often operate outside a persons' consciousness and thus individuals may not be aware of their own dysfunctional repetitive patterns in relationships.[8] An understanding of behavioural patterns associated with attachment insecurities is often the first step in facilitating personal development and psychological wellbeing. An organisational wide awareness of attachment dynamics active in the workplace is a critical first step in dealing with attachment-related problems. Though attachment insecurities are individual dispositions, Kets de Vries (2004: 193) argues that unconscious defensive dynamics are *'woven into the fabric of an organisation'* and should be addressed to ensure healthy functioning. Altering habitual behavioural patterns can be difficult however necessary to maximise employee potential (Kets de Vries, 2004).

One means through which organisations can be proactive in raising awareness is through mental health awareness events. The topic of attachment should be incorporated as a key component in these events. In doing so, organisations can explicate their concern for employee health and wellbeing and create an authentic sense of community. Human resource management professionals are well placed to lead such events. Though this effort provides an opportunity for attachment awareness, interventions are indispensable to get to the root of these insecurities and realistically achieve behavioural change.

Intervention

Employee assistant programmes are a cost effective means of helping employees overcome personal problems that may have an adverse effect on their workplace relationships and performance is left unaddressed. To conduct effective interventions clinically trained organisational psychologist consultants need to lead such programmes. These individuals are professionally equipped to assist

[8] Self-report measure accesses feelings and behaviours about relationships and are convenient surface indicators of individuals' underlying attachment orientation (Shaver & Mikulincer, 2007) and reliably access attachment styles in normative populations (Bartholomew & Morretti, 2002).

employees understand their patterned behaviour and facilitate their reorientation towards healthy behavioural strategies. Kets de Vries and Balazs (1998) point out three prerequisite conditions for personal change: accepting the need to change, a focal event, and a public declaration of intent. While accepting the need to change is a first step towards personal growth, a focal event, which is often accessed retrospectively through reflection, gives individuals the drive to commit to personal change (Kets de Vries & Balazs, 1998). According to Kets de Vries and Balazs (1998), a public declaration is indicative of a person's acceptance and determination to commit to the change process.

Education seminars can facilitate an understanding of attachment defensive strategies, behavioural patterns, and the implications of these for the professional and personal domain. Seminars can also suggest healthy coping strategies to prevent employees from depending on dysfunctional strategies associated with attachment insecurities. This increases employee awareness and also provides useful strategies to facilitate personal change. Group sessions, directed by a trained psychologist, should be used in conjunction with education seminars to delve deeper into the change process. In these group sessions, open discussions on attachment issues and interpersonal dynamics can be hosted to help employees learn from each other's retrospective relational experiences (Kleinberg, 2000). These sessions should be oriented towards clear learning goals and objectives. From this, employees can begin to develop insights into their own habitual relationship patterns and develop a consideration for the needs of others. Both work group members and supervisors should participate in these sessions to enhance the cohesiveness of their groups.

Interpersonal skills development workshops that include topics such as effective communication and conflict management skills should also be considered. These workshops can provide employees with the tools for effective behavioural change in interpersonal relationships. Previous research shows that emotional regulation strategies moderate the negative effect of attachment anxiety on LMX perceptions

(Richards & Hackett, 2012). Thus, coaching on effective emotional management strategies should be a central component of these workshops. Also, employee participants should use reflective diaries to log their personal development goals. Trained psychologists should hold personalised consultations over the course of interventions to ensure a realistic strategy is in place for each employee participant. This facilitates the effective formation and implementation of employees' personal development plan. Taken together, the various components of these interventions can help employees, particularly anxious adults, to learn to regulate their habitual reactions and behaviour and improve their workplace and personal relationships.

The Role of the Leader

Given that leaders are often an organisations primary access point to employees, a leadership commitment to this initiative is imperative. Leaders often act as role models and drivers of change within an organisation. Thus, individuals in leadership positions cannot underestimate the visibility of their actions and behaviours in the eyes of the employee. Leadership development trainers should incorporate an attachment element in their programmes to ensure an awareness of attachment dynamics in the workplace. Through this, leaders can begin to understand *how* and *why* employees differ in their response to others in relationships and be better equipped to build relationships in their work groups.

Transformational leaders are believed to promote employee personal growth and development (Popper, Mayseless, Castelnovo, 2000). Other researchers suggest that transformational leaders security enhancing behaviour enables the activation of a 'broaden and build cycle' of attachment security and exploratory courage (Popper & Mayseless, 2003). The 'broaden and build cycle' is believed to enhance individuals emotional stability, self-esteem, confidence, and reduce dependency on defensive strategies (Mikulincer & Shaver, 2007b). Thus, transformational leadership coaching may furnish these individuals with the knowledge and skills necessary to provide security enhancing leadership. Leaders should also work towards promoting group cohesiveness given that previous research shows this

reduces the effect of attachment anxiety on instrumental functioning in groups and burnout (Rom & Mikulincer, 2003; Ronen & Mikulincer, 2010). Through the provision of a supportive and psychologically safe environment, leaders can play a central role in mitigating the effect of attachment anxiety on relationship and behavioural outcomes. However, Mikulincer and Shaver (2007b) point out that the 'broaden and build cycle' is equally vulnerable to overturn. Thus, it is not enough to implement an initiative and contradict this in their personal behaviour and practices as mixed messages from leadership can invalidate these interventions. Insecure employees receptive to these efforts may perceive this inconsistency as a violation of their trust which validates their pre-existing view of others and thus triggers a deeper commitment to defensive attachment strategies. Therefore, organisations need to be aware of the fragility of attachment insecurities and commit to these efforts to achieve worthwhile and lasting results.

8.5.2 Relationship Development

The findings of this study suggest that the development and maintenance of strong relationships are critical for cultivating employees' creative potential. Leadership development programmes should include interpersonal skills training to improve supervisors' communication and interaction with their immediate subordinates. Given supervisors position of leadership in their work groups, these individuals often act as role models for behaviour. Thus, these individuals are well placed to facilitate the development of stronger relational ties between group members and in doing so encourage higher levels of group cohesion. Team building exercises can also be used to improve relational functioning between co-workers. By improving the quality of supervisory and work group relationships, organisations can enhance information exchange processes which are an important resource for creativity. Organisational support is also shown to directly impact employee creativity. Organisations would benefit greatly from clearly articulating their supportiveness and long-term commitment to their employees. This can be communicated through the provision of job security and formal practices and policies (e.g. flexible work schedules for working mothers, investment in health care packages and pension

plans, fair performance appraisals, and attractive reward systems). Human resource managers are key figures to promote this message of support to employees.

8.5.3 Knowledge Management Workshops

As evidenced in the study's findings information exchange is an important cognitive process that influences employee creativity. Human resources managers are well positioned to provide in-house training to facilitate information exchange and thus enhance employee creativity. These training sessions can include coaching on the formal and informal mechanisms through which information and knowledge can be exchanged. Moreover, an account of the knowledge and expertise associated with different units can highlight sources of specific information that employees can access. Also, immediate supervisors should support, encourage, and reward such behaviour. Cabrera and Cabrera (2005) also suggest that fair human resource practices and open communication promote a culture that stimulates knowledge sharing. Taken together, the availability of knowledge management workshops, fair HR practices, and supervisory support sends a clear message to employees that this behaviour is valued and promoted within the organisation.

8.5.4 Creative Problem-solving Workshops

The final recommendation for practice is the inclusion of creative problem-solving training programmes. Coaching on creative thinking, the development of analytical and problem-solving skills, and how to apply these skills in the engineering context would be particularly beneficial. In addition, these workshops could include timed group tasks with the objective of developing creative solutions with limited resources. Following these problem-solving tasks, a group discussion should be hosted by a trainer highlighting factors that obstruct creativity and the importance of relationships and collaboration for creative performance. These workshops can furnish employees with the skills to improve their creativity in their own work practices and procedures.

8.6 LIMITATIONS & FUTURE RESEARCH RECOMMENDATIONS

There are a number of limitations of the present study that need to be taken into account when considering the research findings. These limitations can be overcome by incorporating the following recommendations in future research designs. Firstly, despite strong theoretical rationale for the sequence of linkages between variables, the cross-sectional design means that causal inferences cannot be made with respect to the findings. Future research should replicate this study using a longitudinal design to enable a causal understanding of the relationships.

Future longitudinal research could begin by gathering data from new organisational members. The most feasible sample for this design would be graduate programme candidates given that this would provide access to a cohort of new entrants. Data gathered at the first phase could include self-reported attachment style and current evaluations of their social exchange relationships. In addition, peer evaluations of information exchange would be useful as co-workers are typically recipients of information and thus well positioned to evaluate this behaviour. The use of objective creativity indicators would be beneficial to evaluate the reliability of the supervisory assessments and facilitate a comprehensive evaluation of creativity. The second phase can involve gathering this data at the end of an 18 month graduate programme. Gathering data from multiple sources in a longitudinal design will enable researchers to determine the causal effect between variables in the model. Another interesting proposal is the inclusion of a 360 degree evaluation of supervisors' transformational leadership behaviour. Transformational leaders are believed to have corrective changes on attachment insecurities and enable personal growth and exploratory courage (Popper & Mayseless, 2003). In doing so, future research can determine whether the presence of such leaders mitigate the negative effect of attachment insecurity over time.

A second limitation exists in the use of self-report data for independent and mediating variables in the study. This may threaten the findings due to common method bias issues. However, Harman's one factor test was used to determine

whether common method bias was a problem. Results show that the first factor accounted for only 21.61% of the total variance suggesting this is not a serious concern in this study. Also, efforts taken in the research design phase mitigated common method bias issues by gathering creativity reports from immediate supervisors. The decision to use employee evaluations of exchange relationships was intentional in the design of this study. As employee attachment styles are believed to influence their sensemaking process, these individuals were the most appropriate source for this data. Common method bias issues could be further alleviated by introducing a time delay in the data collection phase. This effort would strengthen a study's validity and should be considered in future research designs.

A third limitation is the restricted generalisability of the findings to the engineering context in Ireland. Engineers were surveyed from 12 organisations operating in different industries across Ireland who share similarities in their emphasis on creativity and innovation. While this gives confidence to the generalisability of the findings to Irish engineers, differences in work contexts may influence the variables under enquiry and create unnecessary noise in the observed relationships. To mitigate this, three organisations that differed significantly from others in a one-way ANOVA test were controlled for in the data analysis stage. This ensured that the observed individual-level effects were not biased by organisational sampling.

A fourth limitation relates to the dimensional approach to assessing attachment (i.e. anxiety and avoidance). This is considered the most effective means of accessing sensitive individual differences in attachment (Brennan *et al.*, 1998; Fraley & Waller, 1998; Mikulincer & Florian, 2000; Shaver & Mikulincer, 2004; Mikulincer & Shaver, 2007). However, Mikulincer and Shaver (2007: 92) state that '*by focusing so intently on anxiety and avoidance*, [this approach] *may be deficient in assessing security, except in the vague absence of avoidance and anxiety'*. As a result, conclusions cannot be made regarding attachment security. Future research could consider using an additional measure to directly access attachment security.

Finally, for methodological thoroughness, this study includes employee surveys and supervisory reports of creativity. Given that attachment styles influence self-evaluations (Collins & Read, 1990; Davidovitz *et al.,* 2007) this was a necessary consideration to ensure a comprehensive study of the relationship between attachment styles and employee creativity. Though thorough, this presented great challenges to gain access to organisations as it required heavy investment from management to provide a list of employees and corresponding supervisors. Despite this, the researcher gained access to 12 organisations through personal contacts, cold calling, and a public advertisement on a professional engineering website. However, for employee participants, the supervisor's creativity evaluations posed as a deterrent despite extensive efforts to reassure employees that only the lead researcher had access to individual reports and that their identities were protected (i.e. the ID coding system). As the inclusion of a single case required both employee and supervisor participation this resulted in a final sample size of 192 usable cases.

The use of SEM to simultaneously analyse the research model was not deemed appropriate as it requires a significantly larger sample size which was not possible in the present study.[15] Given the complexity of the hypothesised model (i.e. 14 predictors including control variables) and the sample size (N=192), hierarchical multiple regression is the preferred analytical procedure (Jaccard & Wan, 1996). Baron and Kenny's (1986) four step mediation procedure was adopted to test the simple mediation effects and is used extensively in psychological research (MacKinnon, *et al.*, 2002). Though the entire research model cannot be tested simultaneously using this procedure, this is a trade-off accepted in preference for reliable and accurate results in this study.

[15] A general consensus exists that SEM is a large sample statistical procedure and a greater sample size is needed to yield reliable results (Kline, 2004; Quintana & Maxwell, 1999; Schumacker & Lomax, 2004; Ullman, 2007).

A great deal of research opportunities stem from this study. One avenue involves considering alternative mediating mechanisms through which attachment styles may influence employee creativity. Research has shown that attachment styles are consistently related to self-efficacy (Collins & Read, 1990; Lopez & Gormley, 2002; Pietromonaco & Carnelley, 1994; Wei, Russell, & Zakalik, 2005). Anxious adults tend to report general low self-efficacy while avoidant adults perceive themselves unfavourably in the social domain however report high self-efficacy in achievement and instrumental domains. Given the strong predictive effect of creative self-efficacy on employee creativity (Tierney *et al.*, 1999; Tierney & Farmer, 2002), creative self-efficacy may be an alternative path through which attachment styles influence creativity. Another potential mediating mechanism is intrinsic motivation which is regarded as a critical driver of employee creativity (Amabile, 1996; Ford, 1996; Woodman *et al.*, 1993). Previous research in the attachment field links attachment styles to achievement and exploratory motivation (Elliot & Reis, 2003; Green & Campbell, 2000). Based on the empirical linkages between attachment and motivation to succeed, future research should consider intrinsic motivation as an alternative mechanism through which attachment styles may influence creativity.

Future research would also benefit greatly from controlling for the effects of the Big Five personality traits and trait anxiety when considering the effect of attachment styles on employee perceptions and behaviour. Research has already shown that attachment styles explain additional variance in relationship quality beyond the Big Five personality traits (Noftle & Shaver, 2006). Also, when controlling for trait anxiety, Mikulincer and Sheffi (2000) found that attachment anxiety exerted a significant effect on creative problem-solving. This is a promising avenue to pursue and could demonstrate the relative importance of attachment styles above and beyond these broad personal traits in the organisational setting. It would also be interesting to examine the interaction between subordinate and supervisor attachment styles and the implications of this for relationship quality, information exchange, and creativity. Some preliminary work has already set the stage for this research avenue and acts as a good reference point for further investigation (i.e.

Davidovitz *et al.*, 2007; Keller, 2003; Richards & Hackett, 2012). Finally, future research should use intervention studies and experimental designs to rigorously test the effectiveness of the organisational interventions proposed in this study. This would verify the usefulness of such interventions and inform the planning and design of these efforts in the future. Attachment research in organisational settings is building and opportunities to add new knowledge to this field are plentiful. The recommendations outlined here represent only a small portion of the promising opportunities in this research area.

8.7 CONCLUSION

The present study is the first attempt to empirically investigate the relationship between attachment styles and employee creativity. It was proposed that this relationship is an indirect one through a sequential mediation path that includes social exchange relationships (i.e. LMX, TMX, and POS) and information exchange behaviour. These intervening variables represent motivational and cognitive pathways through which attachment styles were proposed to influence employee creativity. To theoretically explain the role of attachment styles in employee creative behaviour, Ford's (1996) theory of creative action was adopted as an interpretative framework. This study argues that the relational orientation of attachment styles play an important role in employees' sensemaking of their social environment and through this impact their information exchange and creativity.

Data was gathered from 192 employee-supervisor dyads operating in the engineering function across 12 organisations in Ireland. Immediate supervisors were included in the study to provide an observer rating of employee creativity. Hierarchical multiple regression analysis was the analytical method adopted to test the study's hypotheses. The results that emerged from this analysis are supportive of the majority of these hypotheses. By considering the mediating effect of social exchange relationships and information exchange, this study has begun to explain part of the process through which attachment styles influence creativity. It appears

that attachment insecurities play a significant role not only in employees' construal of the quality of their relationships but their information exchange behaviour and creativity. This demonstrates the significance of employee interpretive processes for employee creativity as advocated by Ford's (1996) theory of creative action.

These findings make a number of novel contributions to theory regarding the role of employee attachment styles in explaining individual differences in perceptions of social exchange relationships, information exchange, and creative behaviour. The study also supports and builds previous research that endorses the important role of social exchange relationships and information sharing for creativity. In addition, the study offers a variety of practical recommendations for management practice. To remain competitive and benefit from employee creativity, organisations are facing a necessity to consider the softer side of people management and invest in their employees in a meaningful way. The present study proposes a novel initiative that organisations can adopt to help employees overcome the deleterious effect of attachment insecurities on workplace relationship development and behaviour. This initiative consists of three interrelated components: attachment awareness, intervention, and leadership. The author also endorses the inclusion of relationship development, knowledge management, and creative problem-solving workshops to cultivate these valuable behaviours. Overall, this study provides new evidence for role of attachment styles for explaining why some employees are less creative than others and the complex relational process through which this happens. In doing so, the study sets the stage for future studies to further explore this research avenue.

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APPENDIX A

Employee Survey and Supervisor Creativity Report

Employee Creativity: Personal Characteristics and Workplace Relationships

A study conducted by Rachel Kidney, doctoral candidate, under the supervision of Professor Patrick Flood & Dr. Melrona Kirrane. This project is funded by the Irish Research Council for the Humanities & Social Sciences

INTRODUCTION

What is the purpose of the study?

This study explores the extent to which personal characteristics and workplace relationships influence employee creativity.

What will be involved if I choose to participate?

This survey takes approximately 20 minutes to complete and consists of four sections: personal characteristics, workplace relationships, work behaviour, and background information. Please note there is no right or wrong answer to these questions, the researcher in interested in your opinion and experiences. Your immediate supervisor will rate your creativity and return this report to the researcher. This is the limit of your supervisor's involvement. S/he does not have access to your survey responses.

Is there an online version of the survey?

Yes, if you prefer to complete the survey electronically please contact the researcher directly who will provide you with a link to the survey.

What measures are taken to ensure confidentiality & privacy?

1. No names are entered into **any** survey. Unique ID codes are used in place of names to ensure the highest level of privacy and confidentiality. Supervisors will be provided with a different code to enter in place of employee names in their creativity report.
2. Supervisors will not have access to employee surveys. Only the lead researcher knows both ID codes and thus is the only individual capable of identifying participants.
3. Data is gathered is research purposes only. Under no circumstances will anyone in your organisation or any other organisation have access to your individual answers.
4. Findings will be reported in aggregate form thereby protecting the identity of all participants.
5. Online surveys are protected by SSL (secure sockets layer) enhanced encryption technology. This ensures that information is safe, secure, and available only to the lead researcher.

Your participation in this study is completely voluntary and you can withdraw at anytime. If you would like more information please don't hesitate to contact me at: 087-6260506 or rachel.kidney2@mail.dcu.ie Answering questions in this survey indicates your agreement to participate and understanding that anonymity is ensured in the thesis & the publication of research findings.

SECTION 1: PERSONAL CHARACTERISTICS

Q 1. The following statements concern how you generally feel in close relationships (e.g. close friends, family members, partner etc.). Respond to each statement by indicating how much you agree or disagree with it.

Totally disagree 1	Disagree 2	Somewhat disagree 3	Neutral 4	Somewhat agree 5	Agree 6	Totally agree 7

1. Overall, I am a worthwhile person.	1	2	3	4	5	6	7
2. I am easier to get to know than most people.	1	2	3	4	5	6	7
3. I feel confident that other people will be there for me when I need them.	1	2	3	4	5	6	7
4. I prefer to depend on myself rather than other people.	1	2	3	4	5	6	7
5. I prefer to keep to myself.	1	2	3	4	5	6	7
6. To ask for help is to admit that you're a failure.	1	2	3	4	5	6	7
7. People's worth should be judged by what they achieve.	1	2	3	4	5	6	7
8. Achieving things is more important than building relationships.	1	2	3	4	5	6	7
9. Doing your best is more important than getting on with others.	1	2	3	4	5	6	7
10. If you have got a job to do, you should do it no matter who gets hurt.	1	2	3	4	5	6	7
11. It's important to me that others like me.	1	2	3	4	5	6	7
A							
12. It's important to me to avoid doing things that others won't like.	1	2	3	4	5	6	7
13. I find it hard to make a decision unless I know what other people think.	1	2	3	4	5	6	7
14. My relationships with others are generally superficial.	1	2	3	4	5	6	7
15. Sometimes I think I am no good at all.	1	2	3	4	5	6	7
16. I find it hard to trust other people.	1	2	3	4	5	6	7
17. I find it difficult to depend on others.	1	2	3	4	5	6	7
18. I find that others are reluctant to get as close as I would like.	1	2	3	4	5	6	7
19. I find it relatively easy to get close to other people.	1	2	3	4	5	6	7
20. I find it easy to trust others.	1	2	3	4	5	6	7
21. I feel comfortable depending on other people.	1	2	3	4	5	6	7
22. I worry that others won't care about me as much as I care about them.	1	2	3	4	5	6	7
23. I worry about people getting too close.	1	2	3	4	5	6	7
24. I worry that I won't measure up to other people.	1	2	3	4	5	6	7
25. I have mixed feelings about being close to others.	1	2	3	4	5	6	7
26. While I want to get close to others, I feel uneasy about it.	1	2	3	4	5	6	7
27. I wonder why people would want to be involved with me.	1	2	3	4	5	6	7
28. It's very important to me to have a close relationship.	1	2	3	4	5	6	7
29. I worry a lot about my relationships.	1	2	3	4	5	6	7
30. I wonder how I would cope without someone to love me.	1	2	3	4	5	6	7
31. I feel confident about relating to others.	1	2	3	4	5	6	7
32. I often feel left out or alone.	1	2	3	4	5	6	7
33. I often worry that I do not really fit with other people.	1	2	3	4	5	6	7
34. Other people have their own problems, so I don't bother them with mine.	1	2	3	4	5	6	7
35. When I talk over my problems with others, I generally feel ashamed or foolish.	1	2	3	4	5	6	7
36. I am too busy with other activities to put much time into relationships.	1	2	3	4	5	6	7
37. If something is bothering me, others are generally aware & concerned.	1	2	3	4	5	6	7
38. I am confident that other people will like & respect me.	1	2	3	4	5	6	7
39. I get frustrated when others are not available when I need them.	1	2	3	4	5	6	7
40. Other people often disappoint me.	1	2	3	4	5	6	7

SECTION TWO: WORKPLACE RELATIONSHIPS

Q 1. Listed below are statements that represent possible opinions that you may have about working at [Company Name]. Please indicate your level of agreement with the following statements.

Strongly disagree 1	Disagree 2	Somewhat disagree 3	Uncertain 4	Somewhat agree 5	Agree 6	Strongly agree 7

1. [Company Name] values my contribution to its well-being.	1	2	3	4	5	6	7
2. [Company Name] fails to appreciate any extra effort from me.	1	2	3	4	5	6	7
3. [Company Name] would ignore any complaint from me.	1	2	3	4	5	6	7
4. [Company Name] really cares about my well-being.	1	2	3	4	5	6	7
5. Even if I did the best job possible, [Company Name] would fail to notice.	1	2	3	4	5	6	7
6. [Company Name] cares about my general satisfaction at work.	1	2	3	4	5	6	7
7. [Company Name] shows very little concern for me.	1	2	3	4	5	6	7
8. [Company Name] takes pride in my accomplishments at work.	1	2	3	4	5	6	7

Q 2. Using the scale provided above, indicate your level of agreement with the following statements about your work group.

1. When I am in a bind, my co-workers will take on extra work to help ensure the completion of my important tasks.	1	2	3	4	5	6	7
2. My co-workers have asked me for advice in solving a job-related problem of theirs.	1	2	3	4	5	6	7
3. I would come to my co-workers defense if s/he were being criticized.	1	2	3	4	5	6	7
4. I respect my co-workers as professionals in our line of work.	1	2	3	4	5	6	7
5. My co-workers create an atmosphere conducive to accomplishing my work.	1	2	3	4	5	6	7
6. My co-workers are the kind of people one would like to have as friends.	1	2	3	4	5	6	7
7. Even when they disagree with me, my co-workers respect the value of my judgments and decisions.	1	2	3	4	5	6	7
8. I feel that I am loyal to my co-workers.	1	2	3	4	5	6	7
9. My co-workers value the skills & expertise that I contribute to our work group.	1	2	3	4	5	6	7

Q 3. Using the scale provided above, please indicate the extent to which you agree or disagree with the statements describing your relationship with your immediate manager.

1. I respect my manager's knowledge of and competence on the job.	1	2	3	4	5	6	7
2. My manager would defend me to others in the organisation if I made an honest mistake.	1	2	3	4	5	6	7
3. My manager is the kind of person one would like to have as a friend.	1	2	3	4	5	6	7
4. I do not mind working my hardest for my manager.	1	2	3	4	5	6	7
5. My manager would come to my defense if I were "attacked" by others.	1	2	3	4	5	6	7
6. I like my manager very much as a person.	1	2	3	4	5	6	7
7. I do work for my manager that goes beyond what is specified in my job description.	1	2	3	4	5	6	7
8. I admire my manager's professional skills.	1	2	3	4	5	6	7
9. My manager defends (would defend) my work actions to a superior, even without complete knowledge of the issue in question.	1	2	3	4	5	6	7
10. My manager is a lot of fun to work with.	1	2	3	4	5	6	7
11. I am willing to apply extra efforts, beyond those normally required, to meet my manager's work goals.	1	2	3	4	5	6	7
12. I am impressed with my manager's knowledge of his/her job.	1	2	3	4	5	6	7

SECTION THREE: WORK BEHAVIOUR

Q 1. Think about your work activities. To what extent do you agree or disagree with the following statements?

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

1. I interact & exchange information with colleagues in my unit.	1	2	3	4	5	6	7
2. I interact & exchange ideas with people from different units of the company.	1	2	3	4	5	6	7
3. I exchange information & knowledge with colleagues to analyze & solve problems.	1	2	3	4	5	6	7
4. I apply knowledge & experience from other units to the problems & opportunities in my unit.	1	2	3	4	5	6	7

SECTION FOUR: DEMOGRAPHIC INFORMATION

1. Gender: ☐Female ☐Male

2. Age: _____ Years

3. What is your employment status?
☐Full-time Permanent ☐Full-time Contract
☐Part-time Permanent ☐Part-time Contract

4. Which category best represents your job level?
☐Senior Management
☐Middle Management
☐Junior Management
☐Professional
☐Technical

5. How long have you been working…
a) with [Company Name]? _____ Years _____ Months
b) with your current work group? _____ Years _____ Months
c) with your current supervisor? _____ Years _____ Months
d) in your current position? _____ Years _____ Months

6. Indicate the highest level of education you have completed. If your qualification is not listed please specify details under 'other':

☐No formal qualification
☐Junior Certificate (or equivalent)
☐Leaving Certificate(or equivalent)
☐Third-level Certificate
☐Third-level Diploma
☐ Bachelors degree
☐Masters degree
☐Doctorate degree
Other _____

7. If you have additional information, comments, or creative work experiences you would like to share please use the space provided:

As a second stage of the study we may carry out follow-up interviews. Would you be willing to participate? If so, please tick the box provided: ☐

Dublin City University
Ollscoil Chathair Bhaile Átha Cliath

Employee Creativity: Personal Characteristics and Workplace Relationships

A study conducted by Rachel Kidney, doctoral candidate, under the supervision of Professor Patrick Flood & Dr. Melrona Kirrane. This project is funded by the Irish Research Council for the Humanities & Social Sciences

INTRODUCTION

What is the purpose of the study?
This study explores the extent to which personal characteristics and workplace relationships influence employee creativity.

What will be involved if I choose to participate?
In this survey, you are asked to rate your direct reporting subordinate's creativity. Reports take approximately 3 minutes to complete. There is no right or wrong answer this study is interested in your opinion. Only the lead researcher has access to reports.

Is there an online version of the survey?
Yes, if you prefer to complete the survey electronically please contact the researcher directly who will provide you with a link to the survey.

What measures are taken to ensure confidentiality & privacy?

1. Attached to this survey is a master sheet with unique ID codes corresponding to each employee. **Enter this code in place of your subordinate's name.** This coding system is in place to ensure the highest level of privacy and confidentiality possible. Only the lead researcher has access to this participant list and will use this code to match creativity reports to employee surveys.
2. Data is gathered for research purposes only. Under no circumstances will anyone in your organisation or any other organisation have access to your individual answers. Only the lead researcher has access to your responses.
3. Findings will be reported in aggregate form thereby protecting the identity of all participants.
4. The on-line survey is protected by SSL (secure sockets layer) enhanced encryption technology to ensure that information is safe, secure, and available only to the lead researcher.

Your participation in this study is completely voluntary and you can withdraw at anytime. If you would like more information please don't hesitate to contact me at: 087-6260506 or rachel.kidney2@mail.dcu.ie Answering questions in this report indicates your agreement to participate and understanding that anonymity is ensured in the thesis & the publication of research findings.

Employee ID Code: _____

Creativity is defined as the generation of novel and useful ideas, processes, procedures and/or products. Think about your subordinate's behaviour and using the scale provided below please indicate your level of agreement with the statements below relating to their creativity.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

1. Suggests new ways to achieve goals or objectives.	1	2	3	4	5	6	7
2. Comes up with new & practical ideas to improve performance.	1	2	3	4	5	6	7
3. Searches out new technologies, processes, techniques, and/or product ideas.	1	2	3	4	5	6	7
4. Suggests new ways it increase quality.	1	2	3	4	5	6	7
5. Is a good source of creative ideas.	1	2	3	4	5	6	7
6. Is not afraid to take risks.	1	2	3	4	5	6	7
7. Promotes and champions ideas to others.	1	2	3	4	5	6	7
8. Exhibits creativity on the job when given the opportunity to.	1	2	3	4	5	6	7
9. Develops adequate plans and schedules for the implementation of new ideas.	1	2	3	4	5	6	7
10. Often has new and innovative ideas.	1	2	3	4	5	6	7
11. Comes up with creative solutions to problems.	1	2	3	4	5	6	7
12. Often has a fresh approach to problems.	1	2	3	4	5	6	7
13. Suggests new ways of performing work tasks.	1	2	3	4	5	6	7

APPENDIX B

Introduction Letter to Participants

Dear Member of Staff,

My name is Rachel Kidney and I am a PhD candidate working on a study examining employee creativity and would like to invite you to participate in my research. Outlined below are questions you may have before considering participation:

What is the purpose of the study?

Employee creativity is increasingly recognised as a critical means for organisations to increase competitive advantage, overall performance, and create meaningful and lasting value. However, to truly benefit from creativity it is necessary to identify factors driving this key organisational resource. The aim of this study is to examine the role of personal characteristics and workplace relationships for creativity.

Why should I participate?

In return for your participation, your organisation will receive a free customised summary report of the research findings. In this report you will find:

- An analysis of your organisations current creative potential in comparison to the aggregate creative performance of participating firms. The identity of participants and firms will not be disclosed in published work.
- A set of recommendations to enhance creativity in your organisations' creative potential.
- A summarised copy of the overall research findings.

What will be involved if I choose to participate?

The study is survey based and involves the distribution of surveys to employees and immediate supervisors. Each supervisor is required to report on each of their direct reporting employees' creativity. Each creativity report takes approximately 3 minutes to complete. Employee surveys take approximately 20 minutes to complete and focuses on personal characteristics, workplace relationships, and work behaviour.

Both the employee and immediate supervisor surveys have unique ID codes to ensure the protection of your identity. Employee surveys are pre-coded. For the supervisor creativity reports, your immediate supervisor will be provided with a code to enter in place of your name. As supervisors are given codes to enter into

the report they will know the identity of participant employees. However, supervisors will not have access to completed employee surveys, only the lead researcher (Rachel Kidney) has access to these surveys.

What measures are taken to preserve confidentiality and privacy?

The researcher has taken significant measures to ensure the highest level of privacy and confidentiality possible:

- A unique ID code is assigned to each employee and supervisor survey. This code is in place to protect participants' identity and facilitate data analysis. Only the lead researcher knows this code and is the only person capable of identifying participants and matching supervisory creativity reports.
- The online version of the survey is protected by SSL (secure sockets layer) enhanced encryption technology. This ensures that information is safe, secure, and available only to the lead researcher.
- Feedback reported to your organisation will be presented in aggregate form in combination with other surveys. Under no circumstances will anyone in your organisation or any other organisation have access to your individual answers. Only the lead researcher has access to responses.
- Data gathered is for research purposes only and presented in aggregate form in the thesis and publications stemming from this work.
- Surveys will be destroyed after surveys are analysed by the lead researcher.

I would like to assure you that your participation in this study is completely voluntary, you are under no obligation to participate and can withdraw at anytime before, during, or after the research is conducted. If you would like to learn more about the details of this study before considering participation, please feel free to contact me at 087-6260506 and/or rachel.kidney2@mail.dcu.ie.

Yours sincerely,
Rachel Kidney.

APPENDIX C

Dublin City University Research Ethics Committee

Approval Letter

Dublin City University
Ollscoil Chathair Bhaile Átha Cliath

Prof. Patrick Flood
DCUBS

3rd June 2011

REC Reference: DCUREC/2011/054

Proposal Title: **Towards a multi-foci model of employee creativity: An attachment theory and social exchange perspective**

Applicants: Prof. Patrick Flood, Dr. Melrona Kirrane, Ms Rachel Kidney

Dear Patrick,

Further to expedited review, the DCU Research Ethics Committee approves this research proposal. Please forward a scanned copy of the letters of permission from the remaining two organisations when available. Should substantial modifications to the research protocol be required at a later stage, a further submission should be made to the REC.

Yours sincerely,

pp Fiona Brennan

Dr. Donal O'Mathuna
Chair
DCU Research Ethics Committee

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APPENDIX D

Company Overview

Table D1: Summary of Participant Organisations

Firm	Yrs Est.	Location	Total no. of employees	Industry	N
Company 10*	36	Cork	1,006	Energy Provider	16
Company 2*	86	Dublin	7,783	Energy Provider	61
Company 6*	25	Dublin	4,100	Infrastructure & Transport	17
Company 4	39	Cork	300	Environmental Services	15
Company 5	32(Globally) 20 (Ireland)	Dublin	500 (Globally) 33 (Ireland)	Technology/ Logistics & Supply Chain	10
Company 1	61(Globally) 31(Ireland)	Cork	10,300 (Globally) 250 (Ireland)	Technology design/ manufacturing	11
Company 7	33(Globally) 18 (Ireland)	Derry	50,000(Globally) 1,418 (Ireland)	Technology design/ manufacturing	18
Company 3	32(Globally) 13 (Ireland)	Dublin	536 (Globally) 12 (Ireland)	Technology design/ manufacturing	2
Company 11	25	Dublin	50	Design & manufacturer (plastics)	3
Company 9	66	Dublin	10,000 (Globally) 380 (Ireland)	Engineering design/ consultancy	27
Company 12	32(Globally) 12 (Ireland)	Dublin	17,800 (Globally) 300 (Ireland)	Biotechnology/ Pharmaceutical	3
Company 8	13 (Globally) 4 (Ireland)	Limerick	30	R & D Design Centre	9
					N= 192

* Semi-state organisations

APPENDIX E

Missing Data Analysis

Table E1: Missing Data Analysis for dataset N= 192

Items	Missingness		
	N	Count	%
Attachment Style			
AS 3: I feel confident that other people will be there for me when I need them.	191	1	0.5
AS 5: I prefer to keep to myself.	191	1	0.5
AS 8: Achieving things is more important than building relationships.	191	1	0.5
AS 9: Doing your best is more important than getting on with others.	191	1	0.5
AS 10: If you have got a job to do, you should do it no matter who gets hurt.	192	0	0.0
AS 11: It's important to me that others like me.	190	2	1.0
AS 13: I find it hard to make a decision unless I know what other people think.	192	0	0.0
AS 14: My relationships with others are generally superficial.	191	1	0.5
AS 15: Sometimes I think I am no good at all.	192	0	0.0
AS 16: I find it hard to trust other people.	192	0	0.0
AS 17: I find it difficult to depend on others.	192	0	0.0
AS 18: I find that others are reluctant to get as close as I would like.	189	3	1.6
AS 19: I find it relatively easy to get close to other people.	192	0	0.0
AS 20: I find it easy to trust others.	192	0	0.0
AS 21: I feel comfortable depending on other people.	192	0	0.0
AS 22: I worry that others won't care about me as much as I care about them.	192	0	0.0
AS 23: I worry about people getting too close.	192	0	0.0
AS 25: I have mixed feelings about being close to others.	192	0	0.0
AS 27: I wonder why people would want to be involved with me.	191	1	0.5
AS 29: I worry a lot about my relationships.	192	0	0.0
AS 30: I wonder how I would cope without someone to love me.	191	1	0.5
AS 31: I feel confident about relating to others.	192	0	0.0
AS 32: I often feel left out or alone.	192	0	0.0
AS 33: I often worry that I do not really fit with other people.	192	0	0.0
AS 34: Other people have their own problems, so I don't bother them with mine.	191	1	0.5
AS 37: If something is bothering me, others are generally aware and concerned.	190	2	1.0
AS 38: I am confident that other people will like and respect me.	191	1	0.5

Perceived Organisational Support			
POS 1: My organisation values my contribution to its wellbeing.	191	1	0.5
POS 2: My organisation fails to appreciate any extra effort from me.	191	1	0.5
POS 3: My organisation would ignore any complaint from me.	191	1	0.5
POS 4: My organisation really cares about my wellbeing.	190	2	1.0
POS 5: Even if I did my best job possible, my organisation would fail to notice.	190	2	1.0
POS 6: My organisation cares about my general satisfaction at work.	190	2	1.0
POS 7: My organisation shows very little concern for me.	191	1	0.5
POS 8: My organisation takes pride in my accomplishments at work.	189	3	1.6
Team Member Exchange			
TMX 1: When I am in a bind, my co-workers will take on extra work to help ensure the completion of my important tasks.	192	0	0.0
TMX 2: My co-workers have asked me for advice in solving a job-related problem of theirs.	191	1	0.5
TMX 3: I would come to my co-workers defence if s/he were being criticized.	192	0	0.0
TMX 4: I respect my co-workers as professionals in our line of work.	192	0	0.0
TMX 5: My co-workers create an atmosphere conducive to accomplishing my work.	191	1	0.5
TMX 6: My co-workers are the kind of people one would like to have as friends.	191	1	0.5
TMX 7: Even when they disagree with me, my co-workers respect the value of my judgments and decisions.	192	0	0.0
TMX 8: I feel that I am loyal to my co-workers.	191	1	0.5
TMX 9: My co-workers value the skills & expertise that I contribute to our work group.	192	0	0.0
Leader Member Exchange			
LMX 1: I respect my manager's knowledge of and competence on the job.	192	0	0.0
LMX 2: My manager would defend me to others in the organisation if I made an honest mistake.	192	0	0.0
LMX 3: My manager is the kind of person one would like to have as a friend.	192	0	0.0
LMX 4: I do not mind working my hardest for my manager.	191	1	0.5
LMX 5: My manager would come to my defence if I were "attacked" by others.	192	0	0.0
LMX 6: I like my manager very much as a person.	192	0	0.0

LMX 7: I do work for my manager that goes beyond what is specified in my job description.	190	2	1.0
LMX 8: I admire my manager's professional skills.	192	0	0.0
LMX 9: My manager defends (would defend) my work actions to a superior, even without complete knowledge of the issue in question.	192	0	0.0
LMX 10: My manager is a lot of fun to work with.	192	0	0.0
LMX 11: I am willing to apply extra efforts, beyond those normally required, to meet my manager's work goals.	191	1	0.5
LMX 12: I am impressed with my managers knowledge of his/her job.	192	0	0.0
Information Exchange			
Info X 1: I interact & exchange information with colleagues in my unit.	190	2	1.0
Info X 2: I interact & exchange ideas with people from different units of the company.	191	1	0.5
Info X 3: I exchange information & knowledge with colleagues to analyze & solve problems.	191	1	0.5
Info X 4: I apply knowledge & experience from other units to the problems & opportunities in my unit.	189	3	1.6
Employee Creativity			
Creativity 1: Suggests new ways to achieve goals or objectives	191	1	0.5
Creativity 2: Comes up with new & practical ideas to improve performance.	191	1	0.5
Creativity 3: Searches out new technologies, processes, techniques, and/or product ideas.	189	3	1.6
Creativity 4: Suggests new ways it increase quality.	191	1	0.5
Creativity 5: Is a good source of creative ideas.	191	1	0.5
Creativity 6: Is not afraid to take risks.	190	2	1.0
Creativity 7: Promotes and champions ideas to others	188	4	2.1
Creativity 8: Exhibits creativity on the job when given the opportunity to.	191	1	0.5
Creativity 9: Develops adequate plans and schedules for the implementations of new ideas.	191	1	0.5
Creativity 10: Often has a new & creative solution to problems.	191	1	0.5
Creativity 11: Comes up with creative solutions to problems.	191	1	0.5
Creativity 12: Often has a fresh approach to problems.	191	1	0.5
Creativity 13: Suggests new ways of performing work tasks.	191	1	0.5

Table E2: ML imputation, Mean & Standard Deviation Differences

Items	# of missing values	Original mean (μ)	Original SD (σ)	New μ	New σ	Org μ – New μ	Org σ – New σ
Attachment Style							
AS 3	1	5.586	0.907	5.590	0.906	-0.004	0.001
AS 5	1	3.560	1.565	3.551	1.566	0.009	-0.001
AS 8	1	2.723	1.338	2.730	1.339	-0.007	-0.001
AS 9	1	3.471	1.468	3.478	1.467	-0.007	0.001
AS 11	2	4.695	1.256	4.704	1.253	-0.009	0.003
AS 14	1	2.476	1.273	2.473	1.270	0.003	0.003
AS 18	3	3.106	1.1390	3.100	1.133	0.006	0.006
AS 27	1	2.340	1.167	2.340	1.164	0.000	0.003
AS 30	1	3.680	1.905	3.676	1.901	0.004	0.004
AS 34	1	3.974	1.442	3.980	1.441	-0.006	0.001
AS 37	2	4.221	1.442	4.207	1.441	0.014	0.001
AS 38	1	5.367	1.067	5.370	1.066	-0.003	0.001
Perceived Organisational Support							
POS 1	1	5.173	1.272	5.176	1.269	-0.003	0.003
POS 2	1	3.592	1.619	3.590	1.615	0.002	0.004
POS 3	1	2.675	1.289	2.674	1.286	0.001	0.003
POS 4	2	4.784	1.373	4.794	1.369	-0.01	0.004
POS 5	2	2.937	1.417	2.942	1.415	-0.005	0.002
POS 6	2	4.584	1.396	4.585	1.392	-0.001	0.004
POS 7	1	2.859	1.379	2.853	1.377	0.006	0.002
POS 8	3	4.730	1.319	4.748	1.320	-0.018	-0.001
Team Member Exchange							
TMX 2	1	6.089	0.869	6.083	0.871	0.006	-0.002
TMX 5	1	5.754	0.838	5.752	0.836	0.002	0.002
TMX 6	1	5.466	0.961	5.464	0.959	0.002	0.002
TMX 8	1	6.031	0.623	6.036	0.625	-0.005	-0.002
Leader Member Exchange							
LMX 4	1	5.948	0.956	5.941	0.958	0.007	-0.002
LMX 7	2	5.553	1.139	5.533	1.153	0.02	-0.014
LMX 11	1	5.717	1.038	5.696	1.078	0.021	-0.04

Information Exchange							
Info X 1	2	6.153	0.637	6.158	0.636	-0.005	0.001
Info X 2	1	5.749	1.026	5.746	1.024	0.003	0.002
Info X 3	1	5.953	0.735	5.957	0.735	-0.004	0
Info X 4	3	5.730	0.897	5.728	0.897	0.002	0
Employee Creativity							
Creativity 1	1	5.351	1.213	5.356	1.212	-0.005	0.001
Creativity 2	1	5.325	1.214	5.328	1.211	-0.003	0.003
Creativity 3	3	5.318	1.261	5.323	1.252	-0.005	0.009
Creativity 4	1	5.246	1.132	5.250	1.130	-0.004	0.002
Creativity 5	1	5.178	1.257	5.180	1.253	-0.002	0.004
Creativity 6	2	4.811	1.514	4.824	1.515	-0.013	-0.001
Creativity 7	4	5.138	1.297	5.153	1.294	-0.015	0.003
Creativity 8	1	5.581	1.037	5.583	1.035	-0.002	0.002
Creativity 9	1	5.209	1.321	5.215	1.320	-0.006	0.001
Creativity 10	1	5.189	1.168	5.192	1.166	-0.003	0.002
Creativity 11	1	5.293	1.090	5.296	1.088	-0.003	0.002
Creativity 12	1	5.225	1.251	5.229	1.249	-0.004	0.002
Creativity 13	1	5.246	1.186	5.247	1.183	-0.001	0.003

APPENDIX F

One-way ANOVA: Organisational Differences

Table F1: One-way ANOVA Results: Organisational Differences

Variable	N	Mean	SD	F	Effect Size
Creativity				2.48**	Large (η^2= .13)
Company 12	3	5.03	1.12		
Company 4	15	4.95	1.04		
Company 8	9	5.30	0.62		
Company 5	10	5.44	0.56		
Company 1	11	5.27	0.60		
Company 11	3	5.92	0.63		
Company 3	2	5.15	0.54		
Company 6	17	5.37	1.03		
Company 9	27	4.77	1.05		
Company 10	16	5.26	0.87		
Company 7	18	4.64	1.34		
Company 2	61	5.62	0.87		
Total	192	5.25	0.99		
Info Exchange				0.56(ns)	n/a
Company 12	3	5.92	0.88		
Company 4	15	5.93	0.79		
Company 8	9	5.75	0.81		
Company 5	10	5.69	0.65		
Company 1	11	5.91	0.54		
Company 11	3	5.83	0.29		
Company 3	2	6.00	1.41		
Company 6	17	5.76	0.62		
Company 9	27	5.72	0.70		
Company 10	16	6.03	0.81		
Company 7	18	6.06	0.64		
Company 2	61	5.96	0.61		
Total	192	5.89	0.67		
TMX				[a]1.59 (ns)	n/a
Company 12	3	5.85	0.50		
Company 4	15	5.64	0.64		
Company 8	9	6.10	0.48		
Company 5	10	5.51	0.54		
Company 1	11	5.92	0.57		
Company 11	3	5.30	0.63		
Company 3	2	5.72	0.08		
Company 6	17	5.73	0.41		
Company 9	27	5.87	0.42		
Company 10	16	5.67	0.46		
Company 7	18	5.42	0.89		
Company 2	61	5.93	0.44		
Total	192	5.78	0.55		

LMX				[a]1.59(ns)	n/a
Company 12	3	6.31	0.53		
Company 4	15	5.67	0.56		
Company 8	9	5.44	0.60		
Company 5	10	4.57	1.17		
Company 1	11	5.61	0.63		
Company 11	3	5.33	0.30		
Company 3	2	5.33	0.59		
Company 6	17	5.46	0.78		
Company 9	27	5.71	0.67		
Company 10	16	5.60	0.86		
Company 7	18	4.87	1.30		
Company 2	61	5.63	0.75		
Total	192	5.49	0.86		
POS				[a]7.20***	Large (η^2= .21)
Company 12	3	5.29	0.83		
Company 4	15	4.56	1.20		
Company 8	9	4.67	0.78		
Company 5	10	3.64	1.40		
Company 1	11	5.87	0.28		
Company 11	3	4.75	1.27		
Company 3	2	3.81	1.50		
Company 6	17	4.43	0.79		
Company 9	27	4.93	0.90		
Company 10	16	4.85	1.01		
Company 7	18	4.58	1.33		
Company 2	61	5.31	0.89		
Total	192	4.90	1.08		
Anxiety				1.01 (ns)	n/a
Company 12	3	2.95	1.21		
Company 4	15	3.36	0.81		
Company 8	9	2.78	1.15		
Company 5	10	2.88	0.88		
Company 1	11	3.32	0.76		
Company 11	3	2.74	0.64		
Company 3	2	3.19	0.16		
Company 6	17	3.17	0.76		
Company 9	27	3.05	0.84		
Company 10	16	3.27	0.72		
Company 7	18	2.86	1.00		
Company 2	61	2.85	0.73		
Total	192	3.01	0.82		

Avoidance				2.70**	Large (η^2= .14)
Company 12	3	2.94	0.64		
Company 4	15	3.75	0.84		
Company 8	9	3.36	0.74		
Company 5	10	3.52	0.76		
Company 1	11	3.44	0.67		
Company 11	3	3.03	0.67		
Company 3	2	4.05	0.06		
Company 6	17	3.40	0.63		
Company 9	27	3.03	0.69		
Company 10	16	3.46	0.67		
Company 7	18	3.79	0.88		
Company 2	61	3.07	0.70		
Total	192	3.31	0.76		

*** p< .001, ** p< .01, * p< .05; [a] Welch test used

APPENDIX G

Discriminant Analysis Results

Table G1: Discriminant Analysis of social exchange relationship variables

Items	Factor Loading		
	1	2	3
Leader Member Exchange			
I admire my manager's professional skills. (LMX8)	.80	.18	.02
My manager would come to my defence if I were "attacked" by others. (LMX5)	.79	.14	.15
I like my manager very much as a person. (LMX6)	.77	.21	.10
I am impressed with my manager's knowledge of his/her job. (LMX12)	.74	.17	.05
My manager is the kind of person one would like to have as a friend. (LMX3)	.73	.22	.14
I do not mind working my hardest for my manager. (LMX4)	.73	.09	.31
My manager would defend me to others in the organisation if I made an honest mistake. (LMX2)	.72	.23	.14
My manager is a lot of fun to work with. (LMX10)	.71	.27	.09
I respect my manager's knowledge of and competence on the job. (LMX1)	.70	.09	.07
I am willing to apply extra efforts, beyond those normally required, to meet my manager's work goals. (LMX11)	.67	.06	.32
My manager defends (would defend) my work actions to a superior, even without complete knowledge of the issue in question. (LMX9)	.58	.31	.01
I do work for my manager that goes beyond what is specified in my job description. (LMX7)	.48	.05	.23
Perceived Organisational Support			
My organisation cares about my general satisfaction at work. (POS6)	.25	.80	.09
My organisation values my contribution to its wellbeing. (POS1)	.16	.79	.13
My organisation shows very little concern for me.* (POS7)	.27	.76	.20
Even if I did my best job possible, my organisation would fail to notice.* (POS5)	.18	.75	.14
My organisation really cares about my wellbeing. (POS4)	.12	.73	.03
My organisation fails to appreciate any extra effort from me.* (POS2)	.15	.71	.02
My organisation takes pride in my accomplishments at work. (POS8)	.16	.69	.06
My organisation would ignore any complaint from me.* (POS3)	.40	.68	.15
Team Member Exchange			
I feel that I am loyal to my co-workers. (TMX8)	.23	-.02	.68
Even when they disagree with me, my co-workers respect the value of my judgments and decisions. (TMX7)	.10	.38	.67

My co-workers create an atmosphere conducive to accomplishing my work. (TMX5)	.20	.22	.67
My co-workers value the skills and expertise that I contribute to our work group. (TMX9)	.01	.40	.65
I respect my co-workers as professionals in our line of work. (TMX4)	.15	.07	.61
My co-workers have asked me for advice in solving a job-related problem of theirs. (TMX2)	-.02	-.11	.57
My co-workers are the kind of people one would like to have as friends. (TMX6)	.20	.25	.54
When I am in a bind, my co-workers will take on extra work to help ensure the completion of my important tasks. (TMX1)	.11	.31	.54
I would come to my co-workers defence if s/he were being criticized. (TMX3)	.11	-.17	.42
Eigen value	9.91	3.09	2.61
% of variance explained	34.18	10.65	8.99

Extraction Method: Varimax Rotation; * Reversed Keyed Item.