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Reinventing the Wheel: Examining the Antecedents, Moderators, and Outcomes of the Innovation Process

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REINVENTING THE WHEEL: EXAMINING THE ANTECEDENTS, MODERATORS, AND OUTCOMES OF THE INNOVATION PROCESS

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ABSTRACT

This study extends research on the innovation process at the individual-level by examining antecedents, moderators, and outcomes associated with the generation, promotion, and implementation of innovative ideas in the workplace. In a sample of 667 working adults, this study found that high leader-member exchange was positively related to cognitive and behavioral learning strategies focused towards generating innovative ideas. Employees with proactive personalities were more likely to engage in the innovation process, and a sense of psychological safety in regard to the climate for innovation facilitated the implementation of innovative ideas. This study indicates that the successful implementation of an innovative idea strengthens employees' relationship with the firm in regard to job satisfaction, organization commitment, and reduced turnover intentions. Furthermore, this research provides a unifying theoretical framework, namely social cognitive theory, to individual innovation and extends the phenomenological generalizability of social cognitive theory by applying it to the innovation process.

Keywords: Innovation Process, Leader-Member Exchange (LMX), Proactive Personality, Learning Strategies, Psychological Climate for Innovation

DEDICATION

This dissertation is dedicated to God, who is directing me for His purpose, and my family, who supports me along the way.

LIST OF ABBREVIATIONS

CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CLS	Cognitive Learning Strategies
BLS	Behavioral Learning Strategies
IG	Idea Generation
II	Idea Implementation
IP	Idea Promotion
JC	Job Control
JS	Job Satisfaction
LMX	Leader-Member Exchange
PCI	Psychological Climate for Innovation
PSD	Problem Solving Demand
OC	Organizational Commitment
RMSEA	Root Mean Square Error of Approximation
RMSR	Standardized Root Mean Square Residual
SCT	Social Cognitive Theory
TI	Turnover Intentions
χ^2	Chi-squared

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CHAPTER ONE: INTRODUCTION

"There's a way to do it better - find it." - Thomas Edison

The rapid rate of environmental change and the increasing competitive intensity of today's globalized marketplace necessitate innovations at the individual and organizational level as a primary source of competitive advantage (Fuller & Marler, 2009). Innovations have been identified as the foundation of core competencies for organizations aspiring to maintain competitiveness in the contemporary hypercompetitive business environment (Bledow, Frese, Anderson, Erez, & Farr, 2009; Choi & Chang, 2009; Hansen & Levine, 2009; Somech & Drach, 2011). While a substantial amount of research has focused on the impact of innovation at the organizational level, the process by which innovations are generated at the individual-level is still embryonic in its conceptualization (Choi & Price, 2005).

Therefore, the primary contributions of this research study are twofold. First, this research employs social cognitive theory as a unifying theoretical framework to the innovation process. Second, this study models relevant antecedents, moderators, and outcomes of the innovation process which are consistent with social cognitive theory, and empirically tests these hypothesized relationships.

Innovations are defined as the intentional development and application of ideas, procedures, processes, or products new to the workplace which are designed and used to benefit the individual, the organization, and ultimately society (Somech & Drach, 2011; West & Wallace, 1991). This definition of innovations emphasizes two key points which are important to this research study. First, innovations are intentional as they result from the personal agency of

individuals who intentionally enact change in their environment (Bandura, 2001). Second, innovations include both the generation *and* implementation of innovative ideas (De Dreu & West, 2001; George, 2007; Hülsheger, Anderson, & Salgado, 2009; Shalley, Zhou, & Oldham, 2004) in a process evolving over multiple stages (Somech & Drach, 2011; Holman et al. 2011).

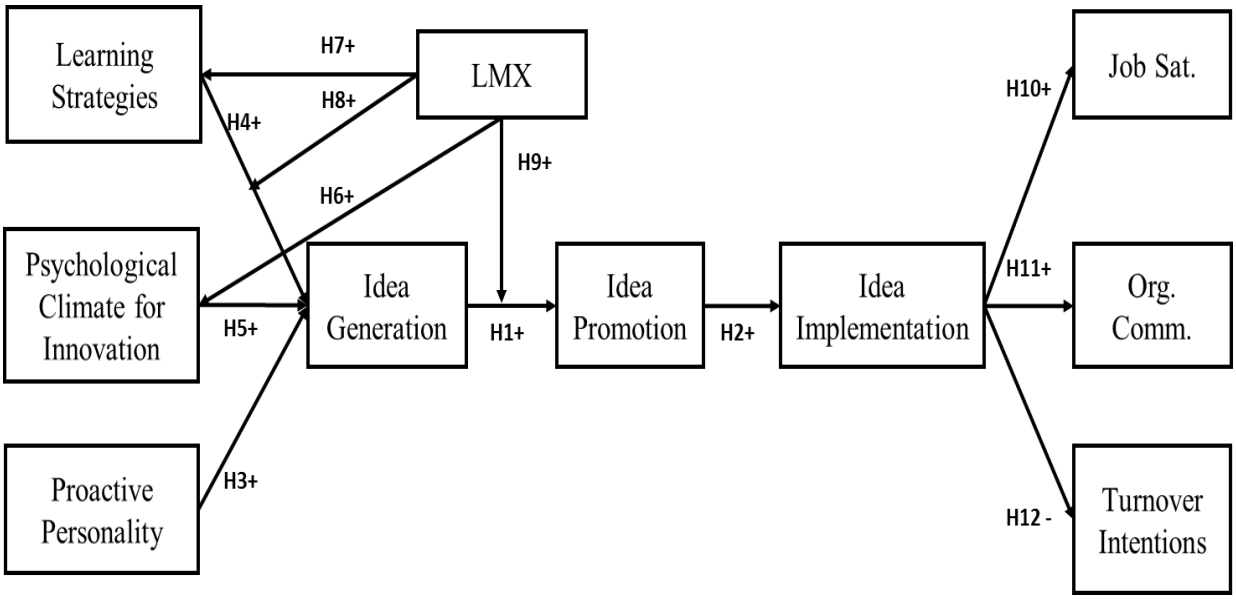
According to social cognitive theory, agentic processes are driven by both personal and situational factors (Choi, Anderson, & Veillette, 2009; George & Zhou, 2001; Somech & Drach, 2011; Taggar, 2002). Social cognitive theory maintains that human functioning is influenced by interactions and reciprocal relationships among a person's internal characteristics, his or her behavioral patterns, and his or her surrounding environment (Bandura, 1986; 2001). Thus, to fully understand the innovation process and resulting behaviors, individual differences must be examined in conjunction with contextual or situational influences.

Building upon Bandura's (2001, 2012) agentic perspective of social cognitive theory, this study posits that a variety of individual factors are likely to impact the behaviors or courses of action in which individuals choose to engage. The internal factors posited by this study to antecede the innovation process are individual learning strategies and proactive personality. The situational factor posited to antecede the innovation process in this study is the individual's perception of the climate for innovation. Thus, learning strategies, proactive personality, and psychological climate for innovation are conceptualized as the individual factors which capture the impact of internal and situational influences on the innovation process. Leader-member exchange (LMX) is conceptualized as the socio-structural factor which can facilitate or inhibit the innovation process. The agentic perspective of social cognitive theory maintains that human behaviors are a product of a socially mediated model of human agency (Bandura, 2001). Thus, social relationships are a determining factor in human actions, and LMX is used in this study to

measure the extent to which a follower's relationship with his or her leader influences his or her innovativeness.

The influence of the innovation process on employees' relationships with their employers is investigated by examining three affective reactions to innovation implementation: employee job satisfaction, organizational commitment, and turnover intentions. The proposed model depicted in Figure 1 integrates personal, situational, and social factors in a unified causal structure. This conceptualization is consistent with the application of social cognitive theory as a comprehensive framework for describing human functioning (Bandura, 2001).

Figure 1 – Theoretical Model



This model is developed in response to several calls for research. Brown and Leigh (1996) called for research examining how a supportive psychological climate may motivate employees not only to work harder (e.g., put forth more effort), but also to work smarter (e.g., be more innovative), and experience subsequent beneficial affective and behavioral reactions. This model examines the extent to which a supportive psychological climate for innovation influences

employee affective reactions through the innovation process. Cascio and Aguinis (2008) called for research investigating the role of management in the innovation process. This research examines the extent to which subordinates' relationships with their leader influence the innovation process. Finally, this study responds to Rank, Pace, and Frese's (2004) call for research examining individual-level antecedents and outcomes of the innovation process.

The research study that investigates the proposed model of the individual-level innovation process (Figure 1) is presented in the following manner. First, an overview of social cognitive theory is provided to explain the theoretical foundation of the innovation process. Second, the innovation process is described in terms of the stages through which innovations progress from conceptualization to implementation. Third, theory-based hypotheses are developed to predict the influence of the antecedents and moderators on the outcomes of the innovation process. Fourth, the research design for testing these hypotheses is described, followed by the data analyses used to test these hypotheses. The implications of the findings are then discussed along with promising directions for future research.

CHAPTER TWO: THEORETICAL FRAMEWORK, LITERATURE REVIEW, AND DEVELOPMENT OF HYPOTHESES

This chapter provides an overview of social cognitive theory (SCT) and employs this framework to derive hypotheses regarding antecedents and outcomes of the innovation process. This chapter also hypothesizes how a socio-structural factor can serve as an antecedent or moderator which can facilitate or inhibit the innovation process. First, the conceptual foundations of social cognitive theory are discussed along with the core constructs of this theoretical framework as identified by Bandura (2001, 2011). Second, a review of extant literature on each of the constructs which are theoretically relevant to the innovation process is provided. Third, based on social cognitive theory and supported by extant literature, hypotheses are proposed regarding relationships among the constructs in the proposed model (see Figure 1).

Theoretical Framework: Social Cognitive Theory

The foundations of social cognitive theory emerged in the 1970s as psychological research shifted from examinations of behaviors to cognitions. Albert Bandura was one champion of this paradigm shift as it was his book entitled *Social Learning Theory* (1977b) as well as his Psychological Review article (Bandura, 1977a) on self-efficacy which built upon the role social modeling plays in the human motivation process. Prior to these works, psychological research was primarily based on behavioristic principles which maintained that human behavior was primarily controlled by environmental stimuli (Bandura, 2001). Bandura initially utilized the behavioristic approach to examine role-modeling (Bandura, 1959; 1973), but noticed that people

often learn through social observation. This led him to deduce that humans develop abstract models of rule-governed behavior and act in accordance with those rules. Bandura demonstrated that social modeling of knowledge, skills, and abilities is a shortcut by which the tedious, trial-and-error learning method can be circumvented. Thus, Bandura introduced an agentic perspective into theories of human motivation to explain how individuals play an important part in their self-development, self-renewal, and adaptation throughout changing times (Bandura, 2001).

As Bandura's social learning theory gained in popularity, researchers began to recognize the strong influence social modeling has on human thought, motivation, and action. The social modeling perspective proposed that individuals are capable of creating new behavior patterns by going beyond response mimicry (Bandura, 1977a). Thus, according to social learning theory, individuals are not only capable of adapting to new environments through behavioral modeling, they are also capable of innovating and improving on those behavior patterns to create an entirely new set of competencies.

Bandura (1986) extended this perspective with social cognitive theory, which proposed a model of triadic reciprocal causation in which individuals are both actors and products of their environment. In other words, individuals both exert influence on, and are influenced by, the environment in which they operate. Social cognitive theory explains how human motivations and actions are regulated by forethought through anticipatory expectations of outcomes achieved through various courses of action (Bandura, 2000). According to social cognitive theory, individual factors, outcome expectations, and sociostructural factors are related to individual behaviors through the mediating mechanism of goals (Bandura, 2012). Individual factors are directive mechanisms which regulate individuals' thoughts, motivation, and actions (Bandura,

1997). Outcome expectations refer to individuals' beliefs regarding the potential outcomes of their actions, and socio-structural variables are factors that facilitate or impede the successful accomplishment of a task (Bandura, 1997). Goals are the purpose toward which endeavors are directed, and behaviors are the actions taken to achieve that goal.

Social cognitive theory has had tremendous influence in the behavioral and organizational sciences since its inception, and continues to maintain its relevance to today's research as reflected by Bandura's recent extension of social cognitive theory which incorporates an agentic perspective (Bandura, 2001; 2011). The agentic perspective of social cognitive theory is based upon an emergent interactive agency model (Bandura, 1986) in which "cognitive processes are emergent brain activities that exert determinative influence" (Bandura, 2001, p. 4). The essence of agency is a person's capacity to carry out intentions through actions. This perspective accounts for the self-regulatory capabilities, characteristics, belief systems, structures, and functions through which individual influence is exerted (Bandura, 2001).

The agentic perspective of social cognitive theory emphasizes the role cognitions play in accessing and processing information for selecting, assembling, modifying, and evaluating various courses of action (Bandura, 2012). This process of evaluating individual capabilities and matching them with alternative courses of action is the way by which individuals solve complex challenges in the workplace. Thus, cognitions are the directive force behind the mechanisms with which humans leverage their capabilities to exert influence on their environment and achieve success in their chosen endeavors. According to Bandura (2001, p. 3), "forethoughtful, generative, and reflective capabilities are, therefore, vital for survival and human progress."

Individual Innovation in the Workplace

In the traditional model of industrial employment, employees learned a particular trade and performed that trade in the same way, often in the same organization, for the duration of their professional careers (Bandura, 2001). However, knowledge, skills, and abilities quickly become outdated in today's ever-changing workplace which forces employees to develop adaptive competencies and keep abreast of technological advancement (Bandura, 2001). Furthermore, jobs are no longer being conceptualized as fixed bundles of tasks as firms also seek to develop adaptive competencies by hiring employees who are capable of taking on various roles and projects over the course of their careers (Cascio, 1995). As a result, employees in the modern workplace are responsible for engaging in a process of self-development to meet the demands of their dynamic occupations (Bandura, 2001).

Employees and organizations often receive mutual benefits as the innovations which are generated through this developmental process simultaneously improve the work environment and increase employee productivity (Calantone, Cavusgil, & Zhao, 2002; Baer & Frese, 2003). As a result, innovativeness has become a highly valued competency in today's business environment. This demand for individual innovation in the workplace has also fueled interest in innovation research at the individual, group, and organizational level for over thirty years (Anderson, De Dreu, & Nijstad, 2004). In that time, innovation research at the individual level has focused on the extent to which individual factors, job-related factors, and contextual factors influence employees' innovativeness. For ease of interpretation, the primary antecedents to individual innovation have been summarized in Table 1. Please note that these antecedents are specific to individual-level innovation rather than general creativity, which will be distinguished in the following section.

Table 1. Individual Innovation Antecedents

Factors	Dimension	Key Articles
Individual Factors	Above average general intellect ('g')	Barron and Harrington (1981); Patterson (1999)
	Task-specific knowledge	West (1987); Wallach (1985); Taggar (2002)
	Divergent thinking style	Kirton (1976, 1989)
	Ideational fluency	Barron and Harrington (1981)
	Cognitive and Behavioral Learning Strategies	Holman et al., (2011)
	Need for cognition	Wu, Parker, and De. Jong (2011)
	Problem solving style (neg. relationship)	Scott & Bruce (1994, 1998)
	Domain-specific knowledge	(Amabile, 1988; Shalley & Gilson, 2004)
	Intrinsic/extrinsic motivation	West (1987); Frese et al. (1999); Yuan and Woodman (2010)
	Determination to succeed	Amabile (1983)
	Personal initiative	Frese and Zapf (1994)
	Self-efficacy	Farr and Ford (1990)
	Tolerance of ambiguity	Barron and Harrington (1981); Patterson (1999)
	Self-confidence	Barron and Harrington (1981)
	Openness to experience	West (1987); Patterson (1999); George and Zhou (2001)
	Unconventionality	West and Wallace (1991); Frese et al. (1999)
	Originality	West and Wallace (1991); Patterson (1999)
	Rule governed (negative relation)	Simonton (1991); Frese et al. (1999)
	Authoritarianism (negative relation)	Simonton (1991)
	Independence	West (1987); Patterson (1999)
	Locus of control	Harper (1996)
	Proactivity	Seibert et al. (2001); Wu et al. (2011)
	Negative moods	George and Zhou (2002)
	Reputation	Yuan and Woodman (2010)
Job Factors	Autonomy	Spreitzer, (1995); Parker et al., 2006)
	Span of Control	Axtell et al., (2000); Axtell, Holman, and Wall (2006); Holman et al., (2011)
	Job Demands	Janssen (2000); Holman et al., (2011)
	Job dissatisfaction	Zhou and George (2001); Yuan and Woodman (2010)
	Support for innovation	Eisenberger et al., (1990); Axtell et al., (2000); Yuan and Woodman (2010)
	Mentor guidance	Simonton (1991); Walberg, Rasher, and Parkerson (1980); Csikszentmihalyi (1996); Zhou (1998)
	Appropriate training	Basadur, Graen, and Green (1982); Basadur, Graen and Scandura (1986)
	Innovation strategy	De Jong & Den Hartog (2005)
	Slack resources	Brand (1998)
	Reward system	Eisenberger & Armeli (1997); Baer, Oldham & Cummings (2003)
	Career Stage (neg. relationship)	Scott & Bruce (1994)
	Innovativeness as a job requirement	Yuan and Woodman (2010)
	External work contacts	De Jong & Den Hartog (2005)
Contextual Factors	LMX/Supervisor relationship quality	Scott & Bruce (1994, 1998); Yuan and Woodman (2010)
	Leader Role Expectations	Scott & Bruce (1994)
	Transformational leadership	Janssen, (2002); Shin & Zhou, (2003)
	Participative leadership	Axtell et al., (2000); Kanter, (1983)
	Knowledge sharing	Aulawi et al., (2009)
	Climate for innovation/Positive Climate	Hamond, Neff, Farr, Schwall, and Zhao (2011)

Individual innovation was first conceptualized as a trait-driven phenomenon (Kirton, 1976; West, 1987), as researchers assumed that individual differences would explain the variance in innovativeness among people. This emphasis is illustrated in Table 1, as more studies have focused on individual factors than on job factors and contextual factors combined. However, as innovation research progressed over time, researchers found that individual factors were not as robust and consistent as other factors in predicting individual-level innovation (Hammond et al. 2011). As a result, research attention began to shift towards job and contextual factors, which found stronger and more consistent relationships with individual innovation (Zhou, 2003; Zhou & Oldham, 2001). Hammond and colleagues (2011) found empirical support for this transition by conducting a meta-analytic quantitative analysis of innovation research and found that personality factors play a relatively small role as antecedents to individual-level innovation. Contextual factors were found to be fairly consistent predictors of innovation, but job factors, such as job complexity, role expectations, and autonomy, are very robust predictors of individual innovation (Hammond et al. 2011).

Recently, innovation research has adopted an interactional approach, positing that individual and situational factors mutually influence innovative behavior (Choi, Anderson, & Veillette, 2009; George & Zhou, 2001; Somech & Drach, 2011; Taggar, 2002). This approach indicates that in order to completely understand how to facilitate individual innovativeness, research should account for both the individual's characteristics as well as characteristics of the context and job in which the individual operates. This nascent area of research is the focus of this study, and it holds tremendous potential to advance our understanding of innovation in the workplace.

The Innovation Process

Employees develop and refine adaptive competencies by utilizing their job expertise (knowledge, skills, and abilities) to engage in a process of innovation and improve work activities, tools, and strategies (Lansisalmi, Kivimaki, and Elovainio, 2004). Somech and Drach (2011) recently examined the innovation process at the group level as a dual-stage process consisting of idea generation and implementation. The authors found that individual factors (e.g., creativity), led to idea generation which subsequently interacted with the team's climate for innovation before leading to idea implementation.

Holman et al. (2011) conceptualized the innovation process as a three-stage process of idea generation, idea promotion, and idea implementation. Idea generation, the first stage of the innovation process, is the development of ideas that are novel and useful to the individual and/or organization (Holman et al. 2011; Janssen, 2000; Rank, Pace, & Frese, 2004). The novelty or "newness" of an idea is context-specific, meaning that an old idea applied to a new setting is just as much an innovation as a new idea in a new setting. The construct of idea generation is similar to creativity (Amabile, 1996; Rank et al. 2004; Somech & Drach, 2011), but the context-specificity of idea generation is the differentiating factor between idea generation and creativity. Within the employee innovation literature, idea generation includes both unoriginal and highly original ideas applied to a new context, whereas creativity is limited to highly original ideas (Holman et al. 2011).

Once an innovative idea has been generated, the idea often has to be promoted by suggesting, persuading, or even championing the idea to others in the organization to gain support for the value the idea contributes. Innovative ideas can be promoted horizontally within organizations to gain peer support for an idea, or ideas may be promoted upwardly to individuals

in positions of authority via written or verbal communication. Once support has been accumulated, the final step of the innovation process is the implementation of the innovative idea into organizational processes or products to improve individual and/or organizational efficiency and effectiveness. Extant research has found support for the relationships among idea generation, idea promotion, and idea implementation (Holman et al. 2011; Rank et al. 2004; Scott & Bruce, 1994). Therefore, these relationships will also be hypothesized in the current study, as the innovation process is the phenomenon of interest.

Hypothesis 1: Idea generation will be positively related to idea promotion.

Hypothesis 2: Idea promotion will be positively related to idea implementation.

One of the primary reasons individuals generate, promote, and implement innovative ideas is to improve their jobs and/or the organization in which they operate (Holman et al. 2011; Janssen, 2000). Thus, these aspects of the innovation process are the behaviors through which employees obtain the goal of improving their job in some fashion. However, few antecedents or moderators of these behaviors have been conceptualized and tested. Holman et al. (2011) found that two specific job design characteristics (i.e., job control and problem demand) were significantly related to individual innovation. Job control is the level of discretion an employee has over the timing of work tasks and methods used in work tasks, and problem demand is the frequency and difficulty of task problems (Jackson, Wall, Martin, & Davids, 1993).

The current research seeks to identify the antecedents and moderators that explain incremental variance in individual innovation beyond that explained by the job design characteristics measured by Holman et al. (2011). Furthermore, this study builds upon Holman and colleagues' (2011) study by investigating how the innovation process influences employees' relationship with the firm through affective outcomes. Because social cognitive theory maintains

that human behavior is influenced by both the person's internal characteristics and his or her surrounding environment (Bandura, 1986; 2001), the next sections conceptualize the primary individual and contextual factors which influence the innovation process.

Proactive Personality

According to social cognitive theory, a comprehensive theoretical approach should integrate personal and social causal factors to form a unified causal structure (Bandura, 2001). The personal factors examined in the current study are proactive personality and learning strategies. Due to the rapid pace of change in the modern workplace, personality traits which reflect the willingness to enact change in oneself and in one's environment facilitate the success of the individual employee and the organization in which he or she operates (Fugate, Kiniki, & Ashforth, 2004; Fuller & Marler, 2009). Personality traits such as creativity have been found to be moderately related to the innovation process (Somech & Drach, 2011). However, the trait which most closely aligns with the *willingness to enact change* is proactive personality, as it is defined as an individual's natural disposition to take initiative and influence his or her environment to effect constructive changes (Bateman & Crant, 1993).

Social cognitive theory (SCT) maintains that the person and environment are in a continuous process of reciprocal influence (Bandura, 1986). Proactive personality is rooted in SCT (Fuller & Marler, 2009) as individuals with proactive personalities are naturally inclined to exert influence on their environment. A core feature of the agentic perspective of social cognitive theory is intentionality, as agency refers to a person's capacity to carry out intentions through actions. While intentions are not actions, they are present representations of future actions and a very strong indicator of future behavior (Azjen, 1991). Intentions are also not expectations or

predictions, but are rather a proactive commitment to bringing future actions to pass (Bandura, 2001). Intentions involve not only the ability to make deliberate choices and action plans, but also "the ability to give shape to appropriate courses of action and to motivate and regulate their execution" (Bandura, 2001, p. 8). Thus, proactive personality, as the natural disposition to make constructive changes to one's environment, should be a key determinant of innovative behaviors such as idea generation and idea promotion.

While human actions can be influenced by incentives such as money or recognition, these inducements are only partial determinants of behaviors as individuals maintain the capacity to ignore those inducements if they so desire (Bandura, 2001). For instance, organizations utilize monetary incentives and job design characteristics to motivate employees (Hackman & Oldham, 1975), but responses to these incentives differ among individuals (Inceoglu & Warr, 2012). In other words, influencing the situation does not explain all employee behavior, as individual differences also have a strong influence on actions. Therefore, if an individual has a natural disposition to enact constructive change in his or her environment, he or she is likely to engage in behaviors to generate innovative ideas to accomplish that change.

Extant research has found that proactive personality is related to many outcomes which are relevant to the innovation process such as job performance (Thompson, 2005), career success (Erdogan & Bauer, 2005; Fuller & Marler, 2009), individual development through motivation to learn (Major, Turner, & Fletcher, 2006), entrepreneurial intentions (Crant, 1996), job satisfaction, and organizational commitment (Chan, 2006). Fuller and Marler's (2009) meta-analytic literature review indicated that proactive personality is positively related to voice behavior which is "constructive change-oriented communication intended to improve the situation" (LePine & Van Dyne, 2001, p. 326) and is often directed at leaders in the organization.

In other words, the natural disposition of proactive personality drives individuals to make constructive changes and improve their situation, and voice behavior is the action through which these changes are accomplished. Because idea promotion is a form of voice behavior, proactive personality is expected to be positively related to idea promotion. However, an idea must be generated before it is promoted. Therefore, the following hypothesis is posited:

Hypothesis 3: Proactive personality will be positively related to idea generation.

Learning Strategies

Social cognitive theory maintains that individuals set goals they wish to achieve, anticipate the probable consequences of potential actions, and select or create courses of action which are likely to produce favorable outcomes and avoid unfavorable outcomes (Bandura, 1991, 2001). Thus, the anticipation of future events can motivate as well as regulate individual behaviors through the use of forethought. The cognitive representation of anticipated events enables individuals to "transcend the dictates of their immediate environment and to shape and regulate the present to fit a desired future" (Bandura, 2001, p. 7) by regulating behaviors and adopting courses of action that are likely to produce desired outcomes. In the innovation process, individuals set the personal goal to create, promote, and implement innovations that benefit the innovator and/or the organization. Thus, individuals are likely to regulate their behaviors and actions to maximize the potential of innovation implementation.

Self-regulation is particularly relevant to organizational life as employees must cope with an increasingly fast past of change in regard to changing technology and job demands (Bandura, 2001). Knowledge, skills, and abilities (KSAs) can quickly become outdated in today's dynamic environment (Dane, 2010) and, as a result, individuals are often responsible for developing new

competencies by learning on-the-job. Thus, the learning process is very important to understanding how employees strengthen or gain new KSAs through self-development.

Holman et al. (2011) examined how employees learn by measuring the impact of two types of learning (i.e., cognitive and behavioral learning) on the innovation process. *Cognitive learning strategies* involve "intentional modes of thinking in which time and effort is spent deliberating on a topic" (Holman et al. 2011, p. 4). Cognitive learning strategies enable individuals to organize new information into existing cognitive schemas to determine its implications on existing knowledge (Holman et al. 2011). *Behavioral learning strategies* refer to the acquisition of knowledge from written materials (e.g., training manuals), coworkers, and the application of ideas (Holman, 2001; 2011). While cognitive learning strategies are a means by which individuals understand the fundamental principles of problems, behavioral learning strategies are a means by which individuals obtain new information to resolve problems (Holman et al. 2011). Thus, both cognitive and behavioral learning strategies are likely to promote knowledge acquisition in regard to employees' job tasks and problems.

When employees encounter problems in their jobs, they are likely to search for solutions to these problems which often take the form of some type of innovation (Scott & Bruce, 1994). Holman et al. (2011) tested the impact of cognitive and behavioral learning strategies on the innovation process, and found that both were significantly directly related to idea generation, but only indirectly related to idea promotion and idea implementation through idea generation. Because the relationship between learning strategies and innovative idea generation has been established previously, this relationship is also hypothesized in the current work.

> *Hypothesis 4a: There will be a positive relationship between cognitive learning strategies and idea generation.*

Hypothesis 4b: There will be a positive relationship between behavioral learning strategies and idea generation.

Psychological Climate for Innovation

In addition to internal characteristics, social cognitive theory maintains that human behavior is also influenced by the individual's surrounding environment (Bandura, 1986; 2001). Specifically, social cognitive theory maintains that human functioning is socially interdependent and highly contextualized to the situation in which the individual operates (Bandura, 2001). Thus, there is a psychological component that should be accounted for when examining the innovation process because thoughts, feelings, motivation, and actions are influenced by external stimuli in addition to internal cognitive processes (Bandura, 1991).

Individual behaviors within organizations are influenced by the perceived level of organizational support received from the general work context by impacting the employee's perceptions of the work environment (Eder & Eisenberger, 2008; Podsakoff, Whiting, Podsakoff, & Blume, 2009). An employee's perception of the impact that the work environment has on his or her well-being is known as the psychological climate (James & James, 1989; Glisson & James, 2002). Thus, the *psychological climate for innovation* is an employee's perception of the extent to which the organization supports and encourages employees to take initiative and explore innovative methods (Sarros, Cooper, & Santora, 2008).

It is important to distinguish the psychological climate from the organizational climate and the organizational culture, as each has been a source of confusion in prior research (Glisson & James, 2002; Sarros et al. 2008). Perceptions of climate and culture remain a property of individuals regardless of the extent to which those individuals agree or disagree in their perceptions (James et al. 2007). As both psychological climate and organizational climate are

typically measured at the individual level, the difference between these constructs is whether the responses are aggregated to get an overall measure of climate. Specifically, psychological climate is strictly an individual-level construct, and the aggregation of these individual responses within a work unit has been used as a proxy for the organizational climate, which has been found to influence various employee behaviors (James et al. 2007).

Organizational culture, on the other hand, is the shared behavioral expectations, principles, and normative beliefs (Cooke & Szumal, 1993) which prescribe work approaches and reflect the way things are done within an organizational unit (Glisson & James, 2002). Culture is typically referred to as a 'deeper' construct than climate because it deals with underlying values and assumptions that are often universally held among employees rather than surface level perceptions and associated affective reactions (Hofstede, 1998). Thus, whereas organizational culture is concerned with normative beliefs and shared behavioral expectations within a work unit, the psychological climate focuses on the impact that perceptions of the work environment have on individual behaviors (Sarros et al. 2008). Organizational culture has been found to be an antecedent to climate for organizational innovation (Sarros et al. 2008), but the current study is concerned with the influence of the psychological climate for innovation on the innovation process at the individual employee level.

While the climate for innovation at the organizational level has been found to moderate the relationship between team creativity and innovation implementation (Somech & Drach, 2011), the current study posits that the climate for innovation at the individual level (i.e., psychological climate for innovation) will influence employees to pursue or withdraw from generating innovative ideas which is the first step in the innovation process. Brown and Leigh (1996) found that when employees perceive a motivating and supportive psychological climate,

they are more involved in their jobs, which increases effort and subsequent performance. In response to Brown and Leigh's (1996) call for research on the relationship between psychological climate and working smarter (e.g., innovating), the current study examines how the psychological climate for innovation impacts employees' engagement in the innovation process. Conceptualizing psychological climate for innovation as an antecedent to idea generation is consistent with social cognitive theory as well as extant innovation literature (Yuan & Woodman, 2010). Because social cognitive theory maintains that human behavior is highly contextualized, (Bandura, 2001), and because climate for innovation is a contextual factor (Somech & Drach, 2011), innovative behavior in the workplace is likely to be influenced by the individual's perceived level of support for innovation. Stated formally:

> *Hypothesis 5: Psychological climate for innovation will be positively related to idea generation.*

Leader-Member Exchange

In addition to contextual influences, social cognitive theory views human behaviors as socially interdependent functions influenced by external stimuli, thus indicating the need for comprehensive theoretical approaches to account for personal and social constructs in a unified causal structure (Bandura, 2001). Social cognitive theory indicates that socially interdependent constructs, (i.e., socio-structural factors) can facilitate or impede the accomplishment of a task through a socially mediated model of personal agency (Bandura, 2012). Socio-structural factors at the individual level include the relationships with whom employees are socially interdependent in the workplace such as peers, subordinates, and, most relevant to the current study, supervisors.

The quality of an employee's relationship with his or her leader is often examined in terms of leader-member exchange (LMX) (Dienesch & Liden, 1986). According to LMX theory, relationships between leaders and followers develop over time into what can be categorized along a continuum ranging from impersonal and formal (i.e., low LMX) to feelings of mutual respect, trust, and liking (i.e., high LMX) (Scott & Bruce, 1994; Yuan & Woodman, 2010). Relationships high in LMX are viewed as evidence of successful trust-building (Bauer & Green, 1996), and trust is particularly important in the innovation process due to the risk of rejection or failure faced by employees when developing innovative ideas.

Consistent with attribution theory, supervisors tend to attribute positive performance outcomes to employees with whom they have high LMX, and negative outcomes to the situation in which the employees operate (Green & Mitchell, 1979; Regan & Totten, 1975).Thus, employees with high LMX are more likely to perceive their environment as a psychologically safe climate in which to experiment with innovations. Therefore, LMX is likely to share a direct relationship with psychological climate for innovation. Stated formally:

> *Hypothesis 6: Leader-member exchange will be positively related to psychological climate for innovation.*

LMX is founded in role theory as it posits that leaders and followers engage in a role-development process through which mutual understandings are established regarding influence, decision latitude, and autonomy (Scott & Bruce, 1994; Yuan & Woodman, 2010). Subordinates in high LMX relationships are often provided greater decision latitude, autonomy, and resource support which are often required for contemplating and experimenting with innovative ideas to improve existing processes and products (Kanter, 1988). Contemplating is consistent with cognitive learning strategies and experimenting is consistent with behavioral learning strategies,

both of which have been found to positively relate to the innovation process (Holman et al. 2011). Furthermore, decision latitude, autonomy, and resource support have also been found to be positively related to innovative behavior (Pelz & Andrews, 1966). Therefore, consistent with LMX theory (Scott & Bruce, 1994), LMX should play an important role in facilitating individual innovation through the learning processes of cognitive and behavioral learning strategies. Stated formally:

> *Hypothesis 7a: Leader-member exchange will be positively related to cognitive learning strategies.*
>
> *Hypothesis 7b: Leader-member exchange will be positively related to behavioral learning strategies.*

The majority of extant innovation research has examined leadership constructs as an antecedent to innovation and have found support for this relationship overall (Sarros et al. 2008; Scott & Bruce, 1994; Yuan & Woodman, 2010). However, this study seeks to extend our understanding of innovations by adopting an interactional approach that accounts for the individual's characteristics as well as the individual's interactions in the social context. In the organizational context, the most important social interaction individuals have is likely with his or her leader, as leaders influence how employees respond to perceptions of their social context. For example, Rosen, Harris, and Kacmar (2011) found that employees' responses to the perceived fairness of the social context are contingent upon their LMX relationship quality.

A high-quality relationship with one's supervisor constitutes a valuable political resource (Yuan & Woodman, 2010) on which employees can capitalize by seeking job-related information and gaining support for innovative ideas. Seeking technical information is a form of learning behavior which has been found to be an antecedent to the innovation process (Holman et al. 2011), and employees typically seek technical information from supervisors, but seek

normative and social information from peers (Morrison, 1993). Morrison and Bies (1991) found that employees seek information for performance-related purposes as well as for impression management purposes, such as seeking information to show diligence. However, if employees do not feel safe in exhibiting learning behaviors due to a poor LMX relationship, and thus ask fewer questions from supervisors, the idea generation process should be inhibited due to a lack of supervisory information and support.

While Bandura (2012) depicts social cognitive theory as a socially mediated model of personal agency, facilitators and impediments can not only describe the mechanisms through which agentic relationships operate, but also strengthen or weaken the relationships among agentic constructs. Thus, socio-structural factors, such as LMX, can also act as moderators of the relationship between individual cognitions and behaviors. As a result, in the innovation process, the relationship between learning strategies and idea generation likely varies as a function of the employee's LMX. Stated formally:

> *Hypothesis 8a: LMX will moderate the positive relationship between cognitive learning strategies and idea generation such that decreases in LMX will attenuate the positive relationship between cognitive learning strategies and idea generation, and increases in LMX will enhance the positive relationship between cognitive learning strategies and idea generation.*
>
> *Hypothesis 8b: LMX will moderate the positive relationship between behavioral learning strategies and idea generation such that decreases in LMX will attenuate the positive relationship between behavioral learning strategies and idea generation, and increases in LMX will enhance the positive relationship between behavioral learning strategies and idea generation.*

According to the agentic perspective of social cognitive theory, people try to secure the outcomes they desire by getting others who wield influence and power to act on their behalf (Bandura, 2001). Consistent with this perspective, subordinates attempt to gain the support of superiors in order to achieve desired outcomes. Because supervisors tend to show more support

for the ideas from employees with whom they have high LMX (Zhou & Woodman, 2003), these employees have greater potential for image enhancement if the innovation succeeds, and less risk of image loss if it fails (Yuan & Woodman, 2010).

In the innovation process, if employees perceive the social environment to be risky (e.g., unsupportive or judgmental), then they will be less likely to promote their innovative ideas due to fear of substantial image loss. Thus, employees' responses to perceived support for innovation in their social context are likely to be contingent on the quality of their LMX relationship. In other words, even if an individual is capable of generating ideas, the promotion of those ideas within the organization is likely to be contingent on the quality of his or her LMX relationship due to the risk of image loss in a low LMX relationship. Stated formally:

> *Hypothesis 9: LMX will moderate the positive relationship between idea generation and idea promotion such that decreases in LMX will attenuate the positive relationship between idea generation and idea promotion, and increases in LMX will enhance the positive relationship between idea generation and idea promotion.*

Individual Affective Outcomes of the Innovation Process

Extant innovation research have found that process innovations at the organizational level improve firm performance (Calantone, Cavusgil, & Zhao, 2002; Baer & Frese, 2003), turnover rates, employment growth (Kemp, Folkeringa, Jong, Wubben, Zoetermeer, 2003), and revenue growth (Thornhill, 2006). Another popular stream of innovation research has focused on organizational characteristics which impact the effectiveness of innovation implementation such as organizational culture and structure (Clayton, 1997), support systems (Klein & Sorra, 1996), and implementation strategies (Leonard-Barton, 1988; Majchrzak, 1988). Due to the focus on organizational-level factors which influence innovation in a top-down manner, research on individual innovation is limited (Choi & Price, 2005).

While some research has examined the antecedents of individual innovation, little research attention has been given to the individual-level outcomes of the innovation process even though there have been calls for research into this domain (Rank, Pace, and Frese, 2004). Individual-level research has primarily limited the examination of innovation outcomes to the actual implementation of an innovative idea (Chan, Oerlemans, & Pretorius, 2011; West, 2002). While the successful implementation of an innovation is certainly important, this study examines employees' reactions to the innovation process to identify the extent to which it influences their relationship with the firm.

Extant research has found that employee reactions to innovations are a primary determinant of the long-term impact of the innovation (Hartwick & Barki, 1994; Leonard-Barton, 1988). Thus, investigating individual reactions to innovation implementation is of paramount importance for understanding the implications and effectiveness of the innovation process. For instance, if an individual's innovative idea is well-received by others in the organization, and is subsequently implemented into organizational operations, does this increase the innovator's job satisfaction and organizational commitment because s/he feels valued by the organization? On the other hand, does the refusal of an innovative idea increase an employee's turnover intentions because s/he has suffered image loss or feels less valued by the organization?

To answer questions such as these, the current study extends research beyond the innovation process to examine individual reactions to either the successful or unsuccessful implementation of innovative ideas. Thus, this study is not examining employee reactions to *organizational* innovations (Choi & Price, 2005). Rather, this research is concerned with employees' affective reactions to the innovation process in regard to the implementation, or lack thereof, of their own innovative ideas.

While the focal dependent variable in social cognitive theory is individual behaviors, it is important for organizational research to understand the implications the innovation process has on employees' relationships with the firm. According to the agentic perspective of social cognitive theory, individuals are agents of their own experiences from which they derive direction, meaning, and satisfaction in their lives (Bandura, 1997; 2001; Harre & Gillet, 1994). In forming their experiences, individuals evaluate their own adequacies by setting personal goals and evaluating the results of their actions (Bandura, 2001). Based on these evaluations, individuals develop affective perceptions such as a sense of satisfaction and commitment. When individuals in the organizational context set personal goals of implementing an innovation in their job, the extent to which efforts directed towards those goals lead to success are likely to increase the employees' sense of satisfaction with their job and commitment to their employer. However, if an individual does not meet with success in his or her innovative endeavors, whether due to personal inadequacies or a lack of organizational support, the failure is likely to reduce the individual's sense of job satisfaction and organizational commitment, while increasing his or her turnover intentions.

While few studies exist which directly test the relationship between innovation implementation and subsequent job satisfaction or organizational commitment, there are studies which lend support to the hypothesis that these relationships will hold. For instance, extant research has found that perceived organizational support is positively related to job satisfaction (Allen, Shore, & Griffeth, 2003; Eisenberger, Cummings, Armeli, & Lynch, 1997) and organizational commitment (Allen, Shore, & Griffeth, 2003; Pazy & Ganzach, 2009), and is negatively related to turnover intentions (Allen et al., 2003). In other words, if individuals do not feel valued and supported by the organization for their innovative ideas, they will likely be less

satisfied, less committed, and more likely to leave an organization to find employment where their ideas are valued.

Research has also found that perceived supervisor support is positively related to organizational commitment (Pazy & Ganzach, 2009), and individuals who are successful in their job performance experience increased job satisfaction (Judge, Thoreson, Bono, & Patton, 2001), and decreased turnover intentions (Wright & Cropanzano, 1998). Thus, individuals who feel supported by their supervisor and experience success in their jobs are more satisfied, committed, and less likely to turnover. Therefore, it is likely that employees who receive support from their organization for their innovative idea, and are subsequently successful in implementing that idea into organizational processes, will be more satisfied with their job, more committed to the organization, and less likely to turnover. Stated formally:

> *Hypothesis 10: Innovation implementation will be positively related to job satisfaction.*
>
> *Hypothesis 11: Innovation implementation will be positively related to organizational commitment.*
>
> *Hypothesis 12: Innovation implementation will be negatively related to turnover intentions.*

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

Data Collection Procedure

Working adults from a wide range of industries, organizations, and occupational levels were recruited as the sample in this study via the peer-nomination method of data collection. This data collection method has generated sufficient reliability and validity for self-report measures (Matthews, Barnes-Farrell, & Bulger, 2010; Matthews, Kath, & Barnes-Farrell, 2010; Mitchelson, 2009). One primary benefit of the peer-nomination method is its ability to generate, given a large enough sample size, a variety of respondent characteristics in the sample, which reduces the likelihood of range restriction in the sample while increasing the likelihood of generalizability. Empirical results found in single-organizational samples are potentially more at risk of being sample specific, given attraction-selection-attrition processes that lead to homogeneity within the single organizational sample (Schneider, Smith, Taylor, & Fleenor, 1998), compared to the sample gained via the peer-nomination method. Furthermore, increased homogeneity of a sample within a single organization can also lead to Type II errors arising from a lack of statistical power due to range restriction within that sample.

Because innovations can be generated at any level of the organizational hierarchy and within any job context (Drach-Zahavy & Somech, 2002), the peer-nomination approach is a beneficial data collection method because it generates a diverse sample in regard to organizational level and type of industry to investigate the individual innovation process. Furthermore, the support for social cognitive theory has been found in a in a variety of contexts such as healthcare (Godin, Belanger-Gravel , Eccles, & Grimshaw, 2008), family life (Grych &

Fincham, 1990), education (Reynolds, Hinton, & Shewchuk, 1999), and other business contexts (Bandura, 2012). Thus, the peer-nomination method of data collection is adequate for the current study in regard to both the conceptual framework and the phenomenon under investigation.

Participants in this research study were recruited by students enrolled in an upper-level business administration course at a large university in the southeastern United States. Student recruiters were trained by the researcher on the methodology and ethics of this type of data collection, and were provided an email invitation to be distributed to working adults who fit the characteristics of the desired population (i.e., currently working a minimum of 20 hours per week, minimum age of 21, and not a college student). The recipients of these email invitations (i.e., the sample participants) were asked to follow a link to the online survey which took approximately 15 minutes to complete. Participation was completely voluntary and the student recruiters received extra credit for each completed survey which included the student recruiter's name, the respondent's name, and the respondent's phone number. After the surveys were completed, each respondent was contacted to verify his or her identity, and to thank them for participating in this research.

The final sample consisted of 667 working adults with an average age of 37.9 years old and 58.5% of the sample was female. The average job tenure in this sample was 7.75 years and the average organizational tenure was 9.39 years. 351 respondents in the sample managed one or more subordinates, and the average number of subordinates among those managers was 22. A full outline of the sample characteristics in regard to sex, race, and education is provided in appendix C.

Measures

All measures in the current study are established multi-item scales which have demonstrated sound psychometric properties in previous research studies. Each item within the measures was responded to on a 5-point Likert scale ranging from S*trongly Disagree* to S*trongly Agree*, unless otherwise noted, to maintain consistency with the format of the original scale.

Individual learning strategies include both cognitive and behavioral learning strategies (Holman, Epitropaki, & Fernie, 2001). While cognitive and behavioral learning strategies have been found to relate to the innovation process (Holman et al. 2011), the moderating impact of LMX on the relationship between these learning strategies and idea generation has yet to be tested. Therefore, Holman et al.'s (2001) scale was used to measure both cognitive and behavioral learning strategies. A sample item from the 8-item *cognitive learning strategies* scale is "I think about how my work fits into the ''bigger picture'' at my organization." The standardized coefficient alpha for the cognitive learning strategies scale was 0.89. A sample item from the 7-item *behavioral learning strategies* scale is "I get someone to help me when I need assistance." The standardized coefficient alpha for the behavioral learning strategies scale was 0.80. The only adaptation made to these scales was a replacement of the name of the respondent's specific organization with "my organization." This was done because respondents in this sample were from a variety of organizations.

Respondents' *proactive personality* was measured with Parker's (1998) scale, which captured respondents' natural dispositions to take initiative and influence constructive changes in their environments. A sample item from this 6-item scale is "If I see something I don't like, I fix it." The standardized coefficient alpha for the proactive personality scale was 0.83.

The term *psychological climate for innovation* is utilized in the current study to clarify that this construct is measuring an individual's perception of the climate for innovation, rather than the actual climate for innovation within the organization. Furthermore, this study is concerned with how individual-level perceptions influence individual-level innovations and outcomes, rather than how organization-level factors influence organization-level innovations and outcomes. Scott and Bruce (1994) operationalized climate for innovation as a second-order factor made up of two first-order factors (i.e., support for innovation and resource-supply). This conceptual framework is concerned with the support for innovation factor rather than the resource-supply factor. Thus, psychological climate for innovation was operationalized with Scott and Bruce's (1994) support for innovation scale which contained 16 items. A sample item from the scale is "Around here, people are allowed to try to solve the same problems in different ways." The standardized coefficient alpha for the psychological climate for innovation scale was 0.90.

The quality of the respondents' relationship with their leaders was measured with Dunegan, Duchon, and Uhl-Bien's (1992) measure of *leader-member exchange* (LMX). To maintain consistency with Dunegan et al. (1992), as well as with the response scale for the innovation measures, LMX was measured on a 5 point Likert scale ranging from *Not at All* to *A Great Deal.* A sample item from this scale is "Can you count on your supervisor to help you out when you need it?" The standardized coefficient alpha for the leader-member exchange scale was 0.88.

The *innovation process* at the individual-level is composed of idea generation, idea promotion, and idea implementation (Holman et al. 2011). These are separate scales operationalized with 3-items each, rather than subscales of an overarching construct. To maintain

consistency with Holman et al. (2011), the items for these scales were presented as questions rather than statements, and were responded to on 5-point Likert scales ranging from *Not at All* to *A Great Deal*. The directions before each scale stated "Please indicate the extent to which you have done this in your job within the last year." A sample item measuring the *idea generation* construct is "Had ideas about how things might be improved." The standardized coefficient alpha for the idea generation scale was 0.90. A sample item measuring the *idea promotion* construct is "Attempted to get support from others for your ideas." The standardized coefficient alpha for the idea promotion scale was 0.91. A sample item measuring the *idea implementation* construct is "Had your ideas implemented." The standardized coefficient alpha for the idea implementation scale was 0.95.

To examine the influence the acceptance or rejection of an individual's innovative ideas has on his or her relationship with the firm, this study examined participants' affective reactions to the innovation process. Specifically, participant's job satisfaction, organizational commitment, and turnover intentions were measured as outcomes relevant to innovation implementation. Employee *job satisfaction*, as the degree to which the employee is happy with the job (Hackman & Oldham, 1980), was assessed with three items from Hackman and Oldham's (1975) job diagnostics survey. A sample item from this scale is "Generally speaking, I am satisfied with my job." The standardized coefficient alpha for the job satisfaction scale was 0.84.

Organizational commitment is defined as employees' emotional attachment to, identification with, and involvement in the organization (Solinger, Van Olffen, & Roe, 2008). Participants' commitment to their employers was assessed with Meyer and Allen's (1991) 5-item affective commitment to the organization scale. A sample item from the organizational

commitment scale is “I would be happy to spend the rest of my career with this organization.” The standardized coefficient alpha for the organizational commitment scale was 0.94.

Turnover intentions, or employees’ intentions to quit their jobs (Chen, Ployhart, Thomas, Anderson, & Bliese, 2011), was measured with Schaubroeck, May, and Brown’s (1994) turnover intentions scale. A sample item from the turnover intentions scale is “I frequently think of quitting my job.” The standardized coefficient alpha for the turnover intentions scale was 0.85.

Holman et al. (2011) found that *job control* and *problem solving demand* are two job characteristics which are antecedents to the innovation process. Thus, these variables were measured as controls to see if the study's focal variables could explain variance in the innovation process above and beyond the influence of the characteristics of the job. These variables were measured on 5-point Likert scales with “Not at All” and “A great deal” as scale anchors. Consistent with Holman et al. (2011), these variables were measured with Jackson and colleagues’ (1993) 3-item scales. A sample item from the *job control* scale is “Can you decide how to go about getting your job done?” The standardized coefficient alpha for the job control scale was 0.86. A sample item from the *problem solving demand* scale is “Are you required to deal with problems which are difficult to solve?” The standardized coefficient alpha for the problem solving demand scale was 0.86.

Measurement Model

The measurement model was assessed with a confirmatory factor analysis (CFA). All items used in the original scales were administered to the participants and included in the subsequent CFA to maintain consistency with the established measurements. All latent variable factors were allowed to correlate, but the error terms associated with the items in each scale were

not. The model fit was assessed with Bentler's comparative fit index (CFI; benchmark for acceptable values is ≥ 0.90), root mean square error of approximation (RMSEA; benchmark value is 0.08 for acceptable fit and ≤ 0.05 for excellent fit), and standardized root mean square residual (RMSR; benchmark value is ≤ .08 for acceptable fit; Bentler, 1990; Browne & Cudeck, 1993; Hoyle, 1995; Hu & Bentler, 1999).

The measurement model fit was acceptable, with latent factor loadings between .80 and 0.95, χ^2 = 4678.62, *df* = 2066, CFI = 0.90, RMSEA 0.04, and RMSR = 0.05. Furthermore, all of the corrected item-total correlations in the Cronbach's alpha scale reliability analyses were positive, indicating that these correlations were in the expected direction. The Cronbach's alpha corrected item-total correlations and fit statistics are depicted in Table 2.

Table 2
Confirmatory Factor Analysis

Constructs and Items	Cronbach Alpha	Corrected Item-Total Correlation
Problem Solving Demand	0.86	
PSD_1		.774
PSD_2		.726
PSD_3		.688
Job Control	0.86	
JC_1		.686
JC_2		.751
JC_3		.745
Leader-Member Exchange	0.88	
LMX_1		.790
LMX_2		.769
LMX_3		.795
LMX_4		.511
LMX_5		.756
Cognitive Learning Strategies	0.89	
CLS_1		.715
CLS_2		.665
CLS_3		.727
CLS_4		.666

CLS_5		.727
CLS_6		.541
CLS_7		.689
CLS_8		.611
Behavioral Learning Strategies	0.80	
BLS_1		0.48
BLS_2		0.60
BLS_3		0.55
BLS_4		0.47
BLS_5		0.53
BLS_6		0.56
BLS_7		0.56
Proactive Personality	0.83	
PP_1		.547
PP_2		.664
PP_3		.621
PP_4		.520
PP_5		.635
PP_6		.579
Psych. Climate for Innovation	0.90	
CI_SI_1		.677
CI_SI_2		.638
CI_SI_3		.535
CI_SI_4R		.412
CI_SI_5R		.611
CI_SI_6		.595
CI_SI_7R		.648
CI_SI_8R		.610
CI_SI_9R		.450
CI_SI_10		.658
CI_SI_11R		.522
CI_SI_12R		.442
CI_SI_13R		.665
CI_SI_14		.531
CI_SI_15		.513
CI_SI_16R		.642
Idea Generation	0.90	
IG_1		.818
IG_2		.792
IG_3		.799
Idea Promotion	0.91	

IP_1		.830
IP_2		.812
IP_3		.816
Idea Implementation	0.95	
II_1		.900
II_2		.907
II_3		.885
Turnover Intentions	0.85	
TI_1		.733
TI_2		.733
Job Satisfaction	0.84	
JS_1		.711
JS_2		.759
JS_3		.651
Organizational Commitment	0.94	
OC_1		.748
OC_2		.861
OC_3		.865
OC_4		.803
OC_5		.869

Overall Fit:	
$\chi 2$ (and d.f.)	4678.62 with 2066 d.f.
CFI	0.90
RMSEA	0.04
RMSR	0.05

Descriptive Statistics

The descriptive statistics and intercorrelations among the variables are presented in Table 3. As shown in Table 3, most of the correlations were significant and in the expected direction, which provided preliminary evidence of support for the hypothesized relationships. Due to the high correlation between cognitive learning strategies and behavioral learning strategies, a CFA was performed on these variables to see if a one-factor model would be acceptable, thereby increasing the parsimony of the model. The CFA was run in AMOS, and the results indicated

that the more parsimonious models (i.e., the two-factor orthogonal model and the one-factor model) were significantly different than the two-factor oblique model. Thus, the two-factor oblique model was used to test the hypothesized relationships.

Table 3

Descriptive Statistics and Intercorrelations

			Correlations											
Variable	Mean	Std. Deviation	BLS	CLS	PP	JC	PSD	LMX	IG	IP	II	JS	OC	TI
BLS	4.04	0.50												
CLS	3.90	0.60	0.70											
PP	3.74	0.58	0.35	0.38										
JC	4.14	0.86	0.28	0.33	0.26									
PSD	3.58	0.89	0.22	0.31	0.20	0.31								
LMX	3.96	0.72	0.28	0.26	0.26	0.29	0.01							
IG	3.69	0.75	0.44	0.50	0.42	0.35	0.44	0.20						
IP	3.34	0.87	0.41	0.46	0.42	0.37	0.48	0.21	0.67					
II	3.17	0.91	0.29	0.33	0.37	0.51	0.40	0.25	0.55	0.67				
JS	4.17	0.71	0.31	0.34	0.24	0.40	0.13	0.43	0.26	0.25	0.34			
OC	3.70	1.01	0.20	0.24	0.19	0.40	0.08	0.42	0.15	0.21	0.38	0.65		
TI	2.20	1.17	-0.12	-0.13	-0.01	-0.29	0.01	-0.39	-0.04	-0.04	-0.19	-0.58	-0.63	
PCI	3.44	0.63	0.25	0.22	0.24	0.42	0.10	0.49	0.16	0.16	0.35	0.45	0.54	-0.45

Correlations ≥ .08 are significant at $p \leq 0.05$ level

CHAPTER FOUR: RESULTS AND INTERPRETATION

Empirical analyses of the hypothesized relationships were conducted using two separate statistical procedures. First, seemingly unrelated regression (SUR) was used to test the model as a series of regressions, which is appropriate to use when the dependent variable in one regression becomes an independent variable in subsequent regressions (Johnston, 1984). The advantage of SUR is that it allows the error terms to be correlated and heteroscedastic, which would normally violate assumptions of linear regression, by estimating and controlling for the covariance among the residuals (Brown, Jones, and Leigh, 2005; Johnston, 1984; Zellner, 1962). Structural equation modeling (SEM) was used as a second statistical technique to determine how well the entire hypothesized model fit together when testing all relationships simultaneously, which is not possible in a SUR analysis. SEM is ideal for examining the relationships among many variables at the same time, as it extracts the relative impact each variable has on the hypothesized model (Hoobler, Wayne, & Lemmon, 2009).

Seemingly Unrelated Regression

To test the hypothesized relationships, two separate SUR analyses were conducted using the statistical software package SAS. The first SUR procedure (Model 1, see Figure 2) included all possible correlations among variables measured in the study including direct effects, indirect effects, and interactions. While not all of these paths were hypothesized, all of these relationships were tested to provide a base model to which subsequent models could be compared. Model 2 (see Figure 3) and Model 3 (see Figure 4) were tested to ensure that multicollinearity between

cognitive learning strategies and behavioral learning strategies was not influencing the interaction results. Model 4 (see Figure 5) represented the theory-based model, as it tested only the relationships hypothesized in the current study. Similar to models 2 and 3, Model 5 (see Figure 6) and Model 6 (see Figure 7) were tested to verify that multicollinearity between the learning strategies variables was not influencing the interaction results.

Table 4 presents the results of Model 1, which specifies all paths among the endogenous and exogenous latent variables, thus allowing all predictors to load on each subsequent dependent variable in the model, as well as the interactions to load on the appropriate variables. The independent variables were first mean-centered to alleviate potential collinearity problems among the variables when testing for interaction effects (Kraemer & Blasey, 2004). Variables were entered in one step, with each of the preceding variables entered as control variables. This process enabled us to identify the amount of variance each variable accounted for above and beyond the other variables in the model. Performing this type of test provided a more rigorous analysis of the hypothesized relationships, as variables are forced to compete for variance with each of the other preceding variables. The system-weighted R-squared for Model 1 was 0.348.

Problem solving demand and job control were entered in the first three equations as they were the hypothesized control variables in the model. LMX was also entered in the first three equations as it was hypothesized as the exogenous variable leading to cognitive learning strategies, behavioral learning strategies, and psychological climate for innovation. The variable correlations in Table 4 indicate that LMX is significantly related to cognitive learning strategies (Standardized Estimate = .196, $p < .01$) and behavioral learning strategies (Standardized Estimate = .237, $p < .01$), even when controlling for problem solving demand and job control. Thus, Hypotheses 7a and 7b were supported. Furthermore, LMX is significantly related to

psychological climate for innovation (Standardized Estimate = .400, $p < .01$), which provided support for Hypothesis 6.

In addition to PSD, JC, and LMX, the next equation included psychological climate for innovation, proactive personality, cognitive learning strategies, and behavioral learning strategies in the prediction of idea generation to test the hypothesized direct effects and interactions. Among the direct effects, psychological climate for innovation was not significantly related to idea generation, which did not support Hypothesis 5. Proactive personality was significantly related to idea generation (Standardized Estimate = .177, $p < .01$), which provided support for Hypothesis 3. The direct relationship between cognitive learning strategies and idea generation was significant (Standardized Estimate = .233, $p < .01$), as was the direct relationship between behavioral learning strategies and idea generation (Standardized Estimate = .112, $p < .01$), which supported Hypotheses 4a and 4b. The interaction between cognitive learning strategies and LMX, as well as the interaction between behavioral learning strategies and LMX, in the prediction of idea generation, were not significant. Thus, Hypotheses 8a and 8b were not supported.

The equation for idea promotion added idea generation and the interaction of idea generation with LMX, to the variables which had previously been tested. While not hypothesized, analyzing the direct relationship between LMX and idea promotion is important for interpreting the hypothesized interaction between LMX and idea generation. LMX was significantly related to idea promotion (Standardized Estimate = .071, $p <.05$). Idea generation was also significantly related to idea promotion (Standardized Estimate = .439, $p < .01$), which provided support for Hypothesis 1. However, the interaction between idea generation and LMX in the prediction of idea promotion was not significant. Thus, Hypothesis 9 was not supported.

Idea implementation was entered in the next equation and a significant relationship was found with idea promotion (Standardized Estimate = .482, $p < .01$), which supported Hypothesis 2. Idea generation was also significantly related to idea implementation (Standardized Estimate = .146, $p < .01$), which indicated that idea promotion partially mediates the relationship between idea generation and idea implementation. While this partial mediation was not explicitly hypothesized a priori, it does add to our current understanding of the innovation process, as innovative ideas do not necessarily have to be self-promoted to be implemented. For instance, a coworker could champion an idea that was not originally his or her own, in which case the innovator would not have to engage in idea promotion in order for the idea to be implemented. Furthermore, job control was significantly related to idea implementation (Standardized Estimate = .233, $p < .01$). This finding coupled with the relationship between idea generation and idea implementation could indicate that empowering employees with control can potentially facilitate the innovation process by reducing the need to gain support for one's ideas by self-promoting them within the organization. In other words, individuals with high job control may not need to promote the innovative idea within the organization if they have the authority to implement the idea on their own.

The final outcome variables of job satisfaction, organizational commitment, and turnover intentions were entered in the last three equations of the analysis. Idea implementation was marginally related to job satisfaction (Standardized Estimate = .095, p = .051) and turnover intentions (Standardized Estimate = -0.091, $p < .10$). Thus, Hypotheses 10 and 12 received limited support. However, idea implementation was strongly related to organizational commitment (Standardized Estimate = .218, $p < .01$), which provided support for Hypothesis 11.

Table 4

Model 1 - Seemingly Unrelated Regression - All Paths

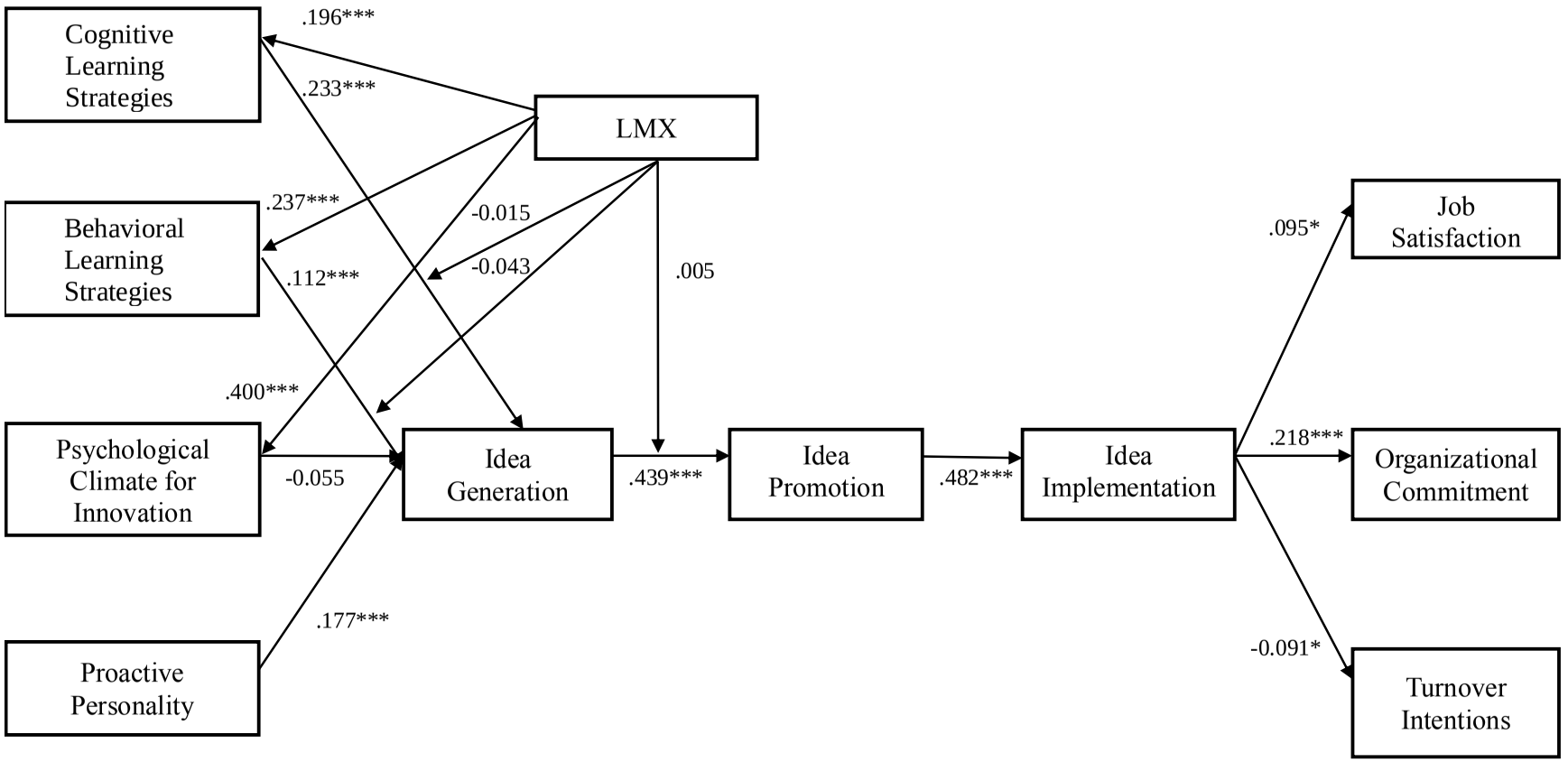
Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	.241***	.163***	-0.002	.279***	0.213***	0.044	-0.018	-0.056	0.040
Job Control (JC)	.201***	.162***	.303***	.114***	.083**	.233***	.145***	.129***	-0.121***
Leader Member Exchange (LMX)	.196***	.237***	.400***	0.057	.071**	-0.011	.226***	.180***	-0.244***
Psych. Climate for Innovation (PCI)				-0.055	-0.050	.166***	.226***	.348***	-0.304***
Proactive Personality (PP)				.177***	.102***	0.044	-0.009	-0.001	.127***
Cognitive Learning Strategies (CLS)				.233***	0.060	-0.071*	.147***	.110**	-0.063
Behavioral Learning Strategies (BLS)				.112***	0.059	-0.040	0.029	-0.052	0.023
CLS X LMX				-0.015	-0.017	0.036	-0.043	-0.094*	0.051
BLS X LMX				-0.043	-0.018	-0.030	-0.069	0.037	0.009
Idea Generation (IG)					.439***	.146***	0.018	-0.108**	0.057
IG X LMX					0.005	0.034	0.033	0.019	-0.033
Idea Promotion (IP)						.482***	-0.041	-0.011	0.078
Idea Implementation							.095*	.218***	-0.091*

*p<.10 **p<.05 ***p<.01

System Weighted R-Square = 0.348

Figure 2

Model 1 – Seemingly Unrelated Regression – All Paths



*p<.10, **p<.05, ***p<.01

Due to the high correlation and multicollinearity between CLS and BLS, two subsequent SUR analyses were run testing the interaction between these variables and LMX in the prediction of idea generation in separate models, rather than in simultaneous tests as conducted in Model 1. Model 2, depicted in Table 5, included all of the direct, indirect, and interaction hypotheses presented in Model 1, except the interaction of behavioral learning strategies and LMX in the prediction of idea generation. All of the hypotheses which were supported in Model 1 were also supported in Model 2, and all of the hypotheses for which no support was found in Model 1 were also not supported in Model 2. Specifically, the interaction of CLS and LMX in the prediction of idea generation is still not significant when the interaction between BLS and LMX is removed from the equation. One change worth noting is the direct relationship between idea implementation and job satisfaction, which was marginally significant in Model 1, broke the $p < .05$ barrier in Model 2 to become traditionally significant.

Table 5

Model 2 - Seemingly Unrelated Regression - CLS X LMX Interaction

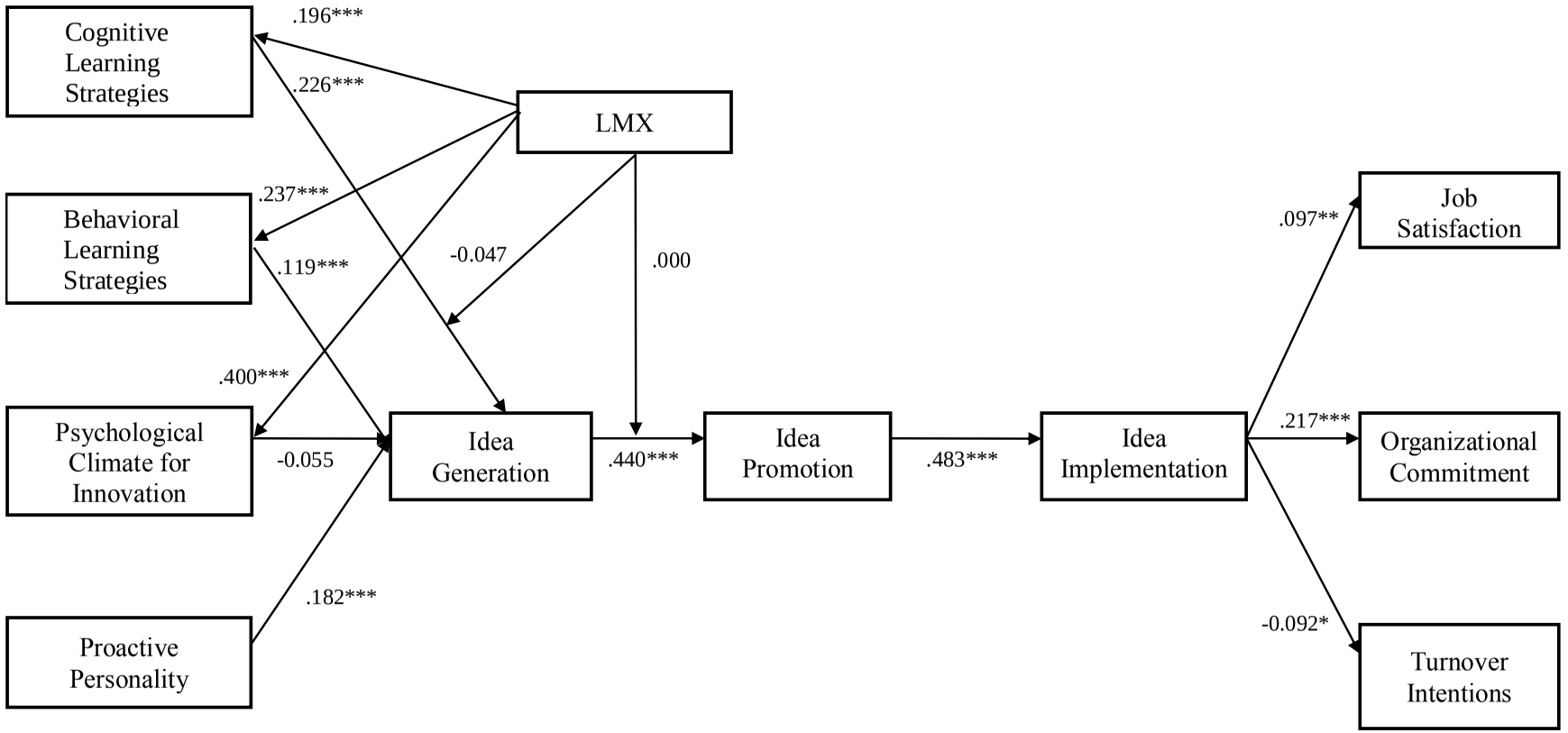
Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	.241***	.163***	-0.002	.277***	0.213***	0.042	-0.022	-0.054	0.040
Job Control (JC)	.201***	.162***	.303***	.114***	.083**	.234***	.147***	.128***	-0.121***
Leader Member Exchange (LMX)	.196***	.237***	.400***	0.056	.070**	-0.013	.223***	.182***	-0.244***
Psych. Climate for Innovation (PCI)				-0.055	-0.050	.166***	.225***	.349***	-0.304***
Proactive Personality (PP)				.182***	.104***	0.044	-0.003	-0.004	.127***
Cognitive Learning Strategies (CLS)				.226***	0.057	-0.076**	.136***	.116**	-0.061
Behavioral Learning Strategies (BLS)				.119***	0.061	-0.039	0.039	-0.057	0.022
CLS X LMX				-0.047	-0.027	0.019	-0.083*	-0.073*	0.056
Idea Generation (IG)					.440***	.146***	0.018	-0.107**	0.057
IG X LMX					0.000	0.026	0.015	0.029	-0.031
Idea Promotion (IP)						.483***	-0.041	-0.011	0.078
Idea Implementation							.097**	.217***	-0.092*

*p<.10 **p<.05 ***p<.01

System Weighted R-Square = 0.347

Figure 3

Model 2 – Seemingly Unrelated Regression – CLS X LMX Interaction



*p<.10, **p<.05, ***p<.01

Model 3, depicted in Table 6 and Figure 4, included all of the direct, indirect, and interaction hypotheses presented in Model 1, except the interaction of cognitive learning strategies and LMX in the prediction of idea generation. All of the hypotheses which were supported in Model 1 were also supported in Model 2, and most of the hypotheses for which no support was found in Model 1 were also not supported in Model 2. The only exception to the consistency of the results between Models 1 and 2 was the interaction between BLS and LMX in the prediction of idea generation, which was found to be marginally significant (Standardized Estimate = -0.053, $p < .10$). However, as this interaction did not break the $p < .05$ barrier and the standardized estimate was not in the expected direction, this finding does not support Hypothesis 8b.

Table 6

Model 3 - Seemingly Unrelated Regression - BLS X LMX Interaction

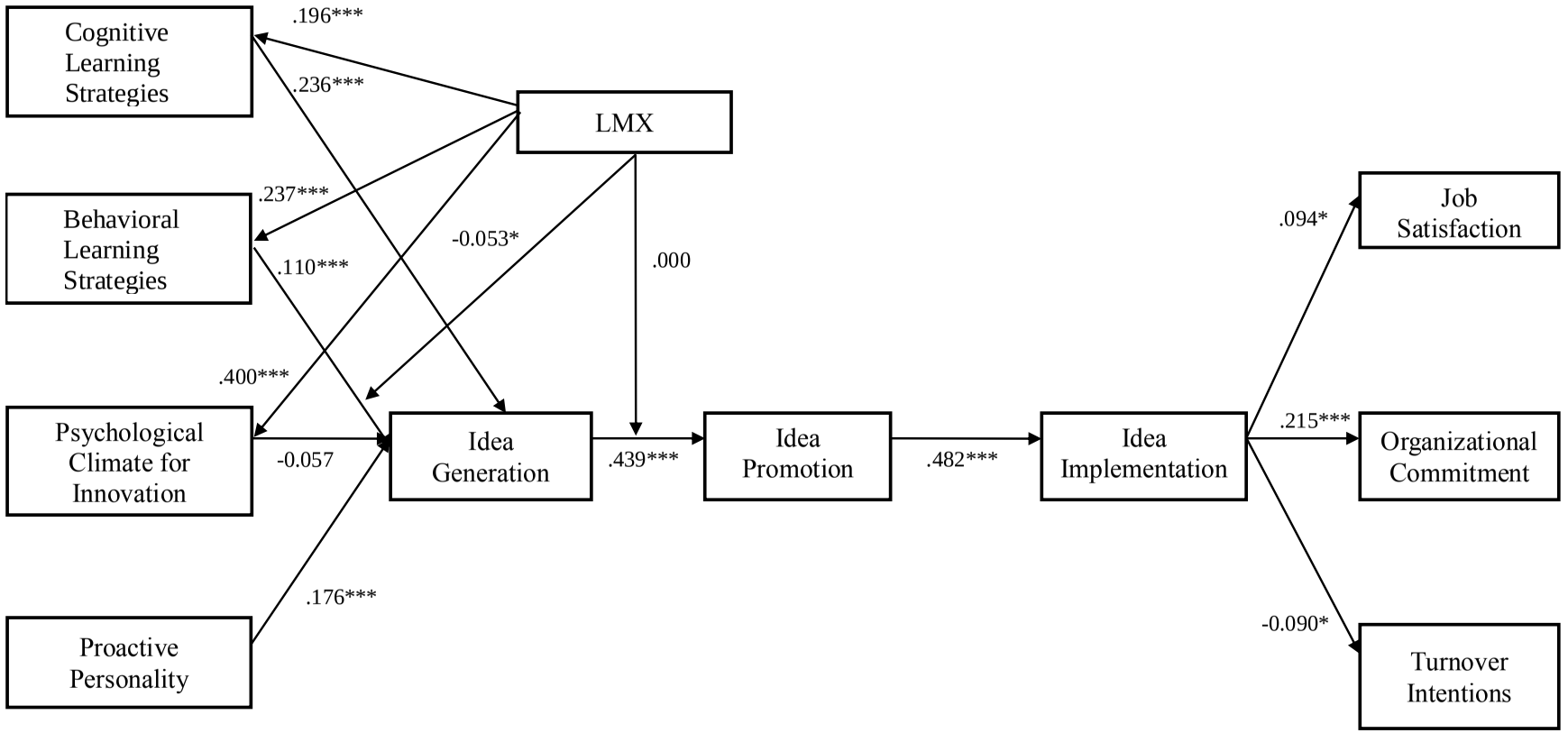
Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	.241***	.163***	-0.002	.280***	0.214***	0.042	-0.017	-0.053	0.039
Job Control (JC)	.201***	.162***	.303***	.114***	.083**	.232***	.146***	.131***	-0.122***
Leader Member Exchange (LMX)	.196***	.237***	.400***	0.057	.071**	-0.010	.225***	.177***	-0.243***
Psych. Climate for Innovation (PCI)				-0.057	-0.051	.168***	.224***	.344***	-0.301***
Proactive Personality (PP)				.176***	.101***	0.047	-0.012	-0.008	.132***
Cognitive Learning Strategies (CLS)				.236***	0.063	-0.077**	.154***	.126***	-0.071
Behavioral Learning Strategies (BLS)				.110**	0.057	-0.039	0.024	-0.064	0.029
BLS X LMX				-0.053*	-0.027	0.010	-0.092**	-0.015	0.037
Idea Generation (IG)					.439***	.147***	0.018	-0.109**	0.058
IG X LMX					0.000	0.045	0.020	0.008	-0.019
Idea Promotion (IP)						.482***	-0.040	-0.008	0.077
Idea Implementation							.094*	.215***	-0.090*

*p<.10 **p<.05 ***p<.01

System Weighted R-Square = 0.347

Figure 4

Model 3 – Seemingly Unrelated Regression – BLS X LMX Interaction



*p<.10, **p<.05, ***p<.01

Model 4 (see Figure 5) constrained all of the non-hypothesized paths in the model to zero such that only the direct, indirect, and interactive hypothesized paths were allowed to be estimated. In contrast, Model 1 allowed all direct and indirect relationships to be estimated, which essentially treated each antecedent to the final dependent variables as control variables. However, according to the hypothesized model, the only variables that should be controlled for are the ones that were conceptualized as such, which in this case were problem solving demand and job control in the prediction of cognitive and behavioral learning strategies. Model 4 maintained an R-squared of 0.297, and the relationships for this model are presented in Table 7.

As depicted in Table 7, LMX was significantly related to cognitive learning strategies (Standardized Estimate = .179, p <.01) and behavioral learning strategies (Standardized Estimate = .234, p <.01), even when controlling for problem solving demand and job control. This supported Hypotheses 7a and 7b. LMX was also significantly related to psychological climate for innovation (Standardized Estimate = .342, p <.01), which supported Hypothesis 6.

Idea generation was entered in the fourth equation to analyze the hypothesized direct effects and interactions. Similar to Model 3, in Model 4 the direct relationship between LMX and idea generation was also estimated in order to partial LMX's possible main effect on idea generation from the LMX by Learning Strategies interaction terms, even though this direct relationship was not hypothesized. Neither LMX, nor psychological climate for innovation, were significantly related to idea generation. Thus, Hypothesis 5 again received no support. However, proactive personality was significantly related to idea generation (Standardized Estimate = .199, p <.01), which supported Hypothesis 3.

Cognitive learning strategies was significantly related to idea generation (Standardized Estimate = .421, p <.01), which supported Hypothesis 4a. Behavioral learning strategies was

also significantly related to idea generation (Standardized Estimate = .131, p <.01), which supported Hypothesis 4b. The interactions of CLS and LMX, as well as BLS and LMX, in the prediction of idea generation were not found to be significant. Thus, Hypothesis 8a and 8b were not supported.

The equation for idea promotion included the hypothesized direct relationship of idea generation, the hypothesized interaction of idea generation and LMX, and the direct relationship of LMX to idea promotion, which was not hypothesized, but once again was modeled to partial this potential main effect from the interaction term. The direct relationship between LMX and idea promotion was significant (Standardized Estimate = .116, p <.01). The direct relationship between idea generation and idea promotion was also significant (Standardized Estimate = .696, p <.01), which supported Hypothesis 1. The interaction between idea generation and LMX in the prediction of idea promotion was not found to be significant. Thus, Hypothesis 9 was not supported. However, idea promotion was found to be strongly related to idea implementation (Standardized Estimate = .708, p <.01), which supported Hypothesis 2.

The final dependent variables in the model (i.e., job satisfaction, organizational commitment, and turnover intentions) were tested to see if the innovation process had an influence on employees' relationship with the firm. The results indicated that idea implementation was positively related to job satisfaction (Standardized Estimate = .377, p <.01), which supported Hypothesis 10. Idea implementation was also positively related to organizational commitment (Standardized Estimate = .408, p <.01), which supported Hypothesis 11. Idea implementation was also negatively related to turnover intentions (Standardized Estimate = -0.208, p <.01), which supported Hypothesis 12.

Table 7

Model 4 - Seemingly Unrelated Regression - Hypothesized Paths

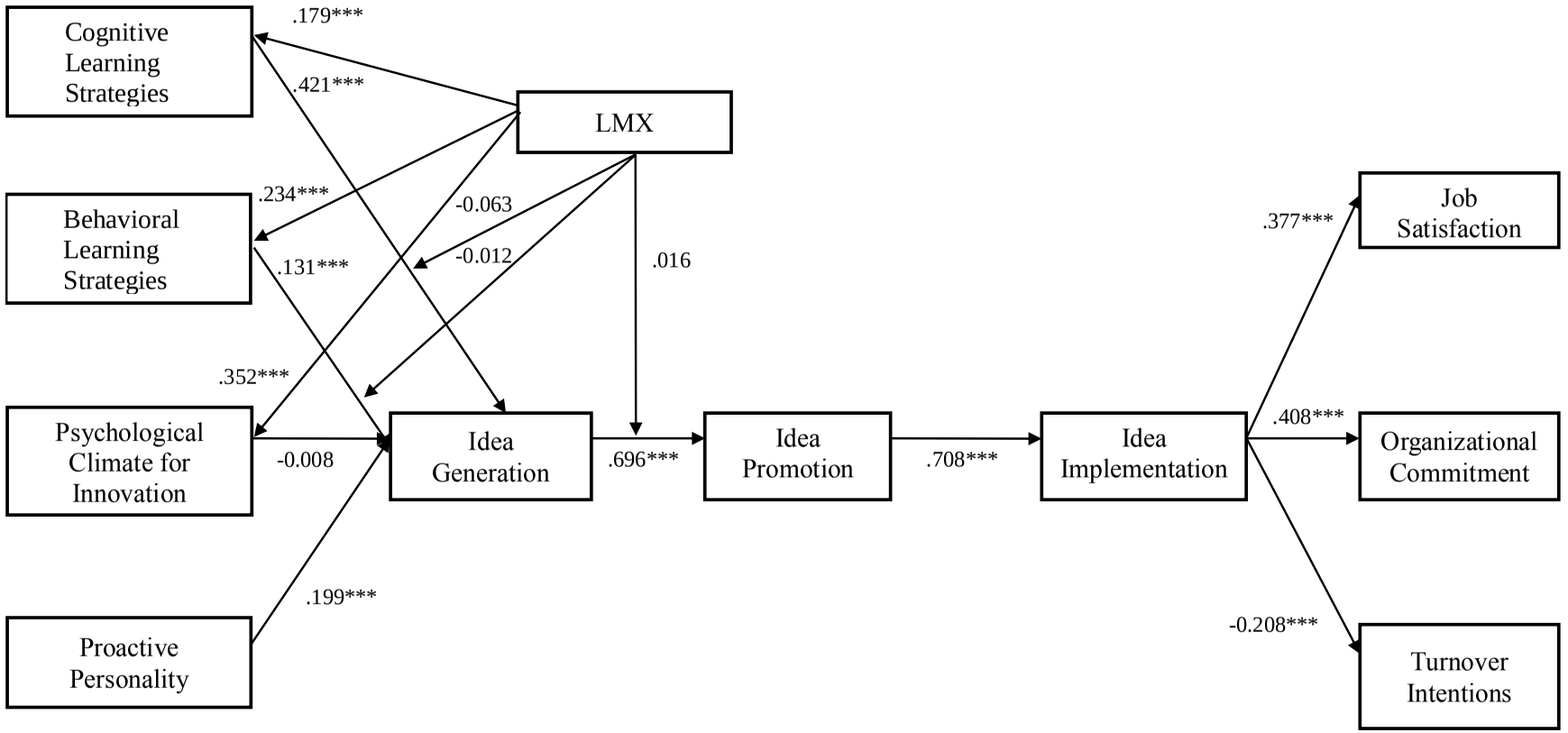
Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	.252***	0.159***	-	-	-	-	-	-	-
Job Control (JC)	.211***	.157***	-	-	-	-	-	-	-
Leader Member Exchange (LMX)	.179***	.234***	.352***	0.048	0.116***	-	-	-	-
Psych. Climate for Innovation (PCI)				-0.008	-	-	-	-	-
Proactive Personality (PP)				.199***	-	-	-	-	-
Cognitive Learning Strategies (CLS)				.421***	-	-	-	-	-
Behavioral Learning Strategies (BLS)				.131***	-	-	-	-	-
CLS X LMX				-0.063	-	-	-	-	-
BLS X LMX				-0.012	-	-	-	-	-
Idea Generation (IG)					.696***	-	-	-	-
IG X LMX					-0.016	-	-	-	-
Idea Promotion (IP)						.708***	-	-	-
Idea Implementation							.377***	.408***	-0.208***

*p<.10, **p<.05, ***p<.01, (-) = not hypothesized

System Weighted R-Square = 0.297

Figure 5

Model 4 – Seemingly Unrelated Regression – Hypothesized Paths



*p<.10, **p<.05, ***p<.01

Similar to Models 2 and 3, two SUR analyses were run subsequent to Model 4 due to the high correlation and multicollinearity between CLS and BLS. These analyses tested the interaction of CLS and LMX, as well as the interaction of BLS and LMX, in the prediction of idea generation in separate models, rather than in simultaneous tests as conducted in Model 4. Model 5, depicted in Table 8 and Figure 6, included all of the direct and interaction hypotheses presented in Model 4, except the interaction of behavioral learning strategies and LMX in the prediction of idea generation. All of the hypotheses for which support was found in Model 4 were also supported in Model 5, and all of the hypotheses for which no support was found in Model 4 were also not supported in Model 5. However, the interaction of CLS and LMX in the prediction of idea generation was significant (Standardized Estimate = -0.072, $p < .05$) when the interaction between BLS and LMX was removed from the equation. However, this interaction relationship was not in the expected direction. This finding indicated that increases in LMX actually attenuated the positive relationship between cognitive learning strategies and idea generation, which was the opposite of what was predicted. Therefore, this finding, although interesting, did not support Hypothesis 8a.

Table 8

Model 5 - Seemingly Unrelated Regression - Hypothesized Paths - CLS X LMX Interaction

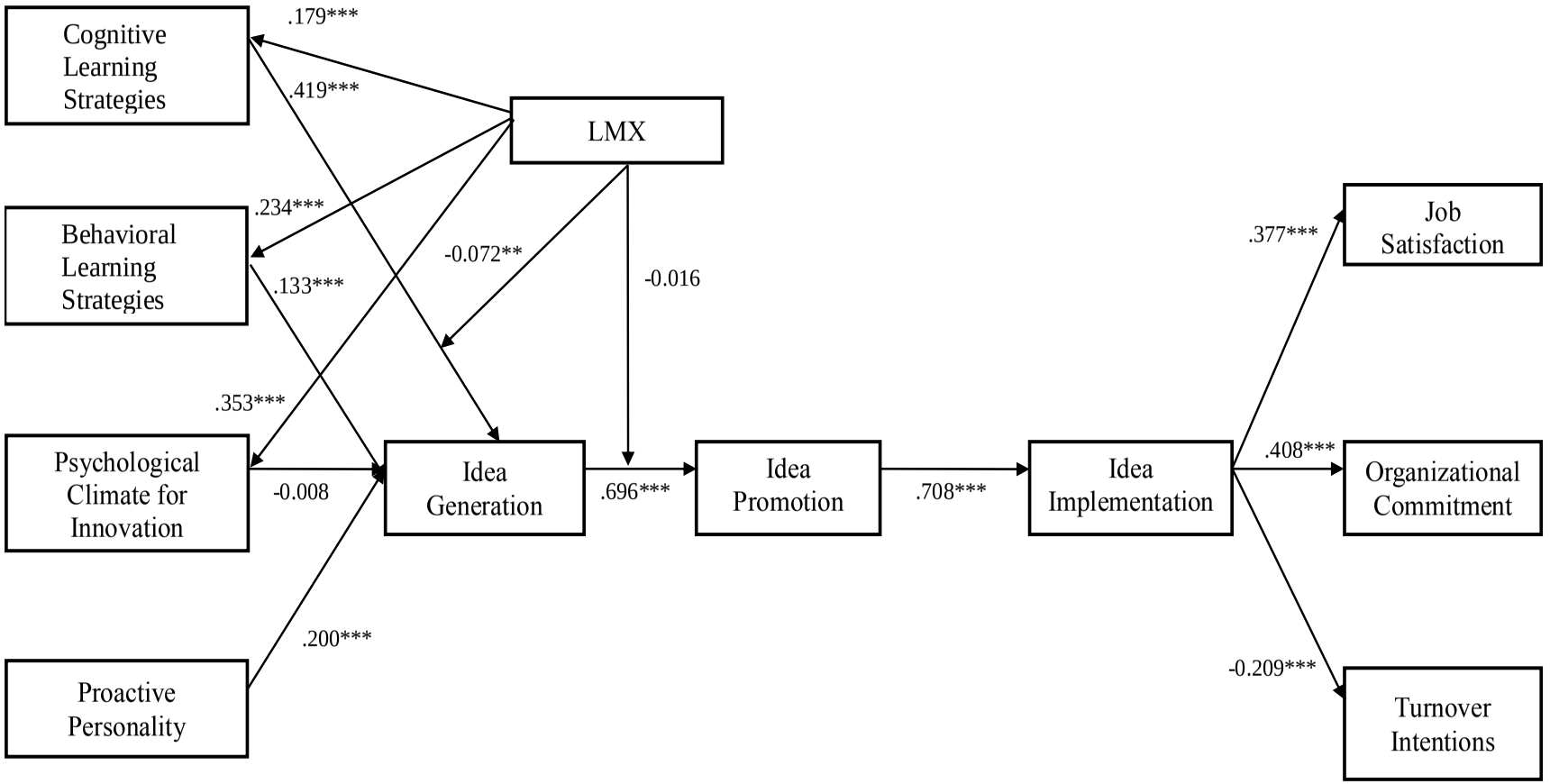
Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	.252***	.159***	-	-	-	-	-	-	-
Job Control (JC)	.211***	.157***	-	-	-	-	-	-	-
Leader Member Exchange (LMX)	.179***	.234***	.353***	0.047	0.116***	-	-	-	-
Psych. Climate for Innovation (PCI)				-0.008	-	-	-	-	-
Proactive Personality (PP)				.200***	-	-	-	-	-
Cognitive Learning Strategies (CLS)				.419***	-	-	-	-	-
Behavioral Learning Strategies (BLS)				.133***	-	-	-	-	-
CLS X LMX				-0.072**	-	-	-	-	-
Idea Generation (IG)					.696***	-	-	-	-
IG X LMX					-0.016	-	-	-	-
Idea Promotion (IP)						.708***	-	-	-
Idea Implementation							.377***	.408***	-0.209***

*p<.10, **p<.05, ***p<.01, (-) = not hypothesized

System Weighted R-Square = 0.297

Figure 6

Model 5 – Seemingly Unrelated Regression – Hypothesized Paths - CLS X LMX Interaction



*p<.10, **p<.05, ***p<.01

Model 6, depicted in Table 9 and Figure 7, included all of the direct and interaction hypotheses depicted in Model 4, except the interaction of cognitive learning strategies and LMX in the prediction of idea generation. All of the hypotheses which were supported in Model 4 were also supported in Model 6, and all of the hypotheses for which no support was found in Model 4 were also not supported in Model 6. However, the interaction between BLS and LMX in the prediction of idea generation was marginally significant (Standardized Estimate = -0.058, $p <$ .10). Although this interaction was interesting, it too was not in the expected direction. This finding indicated that increases in LMX actually attenuated the positive relationship between behavioral learning strategies and idea generation, which was the opposite of what was predicted. Therefore, this finding, as it did not break the $p <.05$ barrier, and the standardized estimate was not in the expected direction, did not support Hypothesis 8b.

Table 9

Model 6 - Seemingly Unrelated Regression - Hypothesized Paths - BLS X LMX Interaction

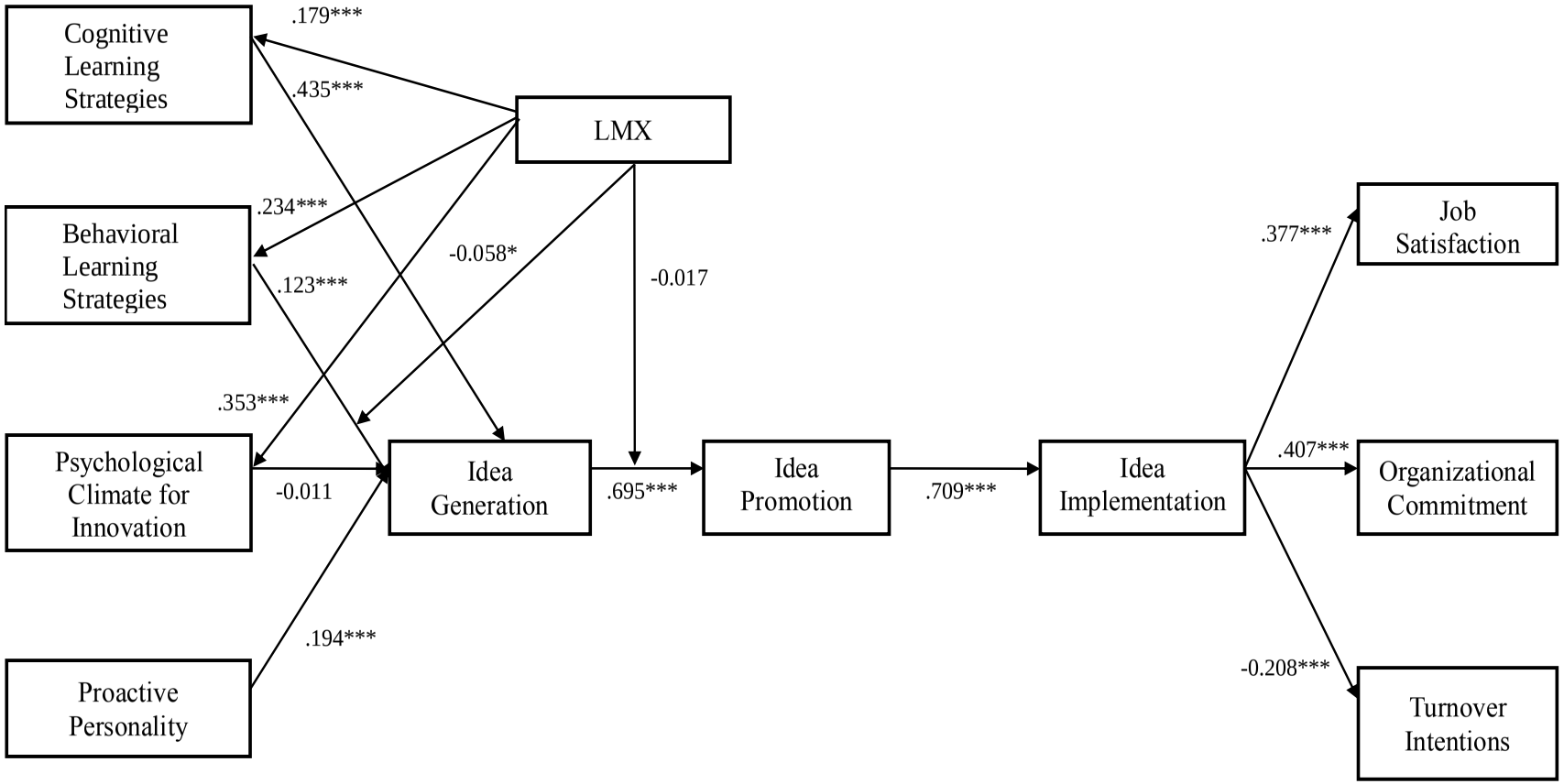
Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	.253***	.160***	-	-	-	-	-	-	-
Job Control (JC)	.211***	.158***	-	-	-	-	-	-	-
Leader Member Exchange (LMX)	.179***	.234***	.353***	0.045	0.116***	-	-	-	-
Psych. Climate for Innovation (PCI)				-0.011	-	-	-	-	-
Proactive Personality (PP)				.194***	-	-	-	-	-
Cognitive Learning Strategies (CLS)				.435***	-	-	-	-	-
Behavioral Learning Strategies (BLS)				.123***	-	-	-	-	-
BLS X LMX				-0.058*	-	-	-	-	-
Idea Generation (IG)					.695***	-	-	-	-
IG X LMX					-0.017	-	-	-	-
Idea Promotion (IP)						.709***	-	-	-
Idea Implementation							.377***	.407***	-0.208***

*p<.10, **p<.05, ***p<.01, (-) = not hypothesized

System Weighted R-Square = 0.297

Figure 7

Model 6 – Seemingly Unrelated Regression – Hypothesized Paths - BLS X LMX Interaction



*p<.10, **p<.05, ***p<.01

Structural Equation Model

In addition to the SUR analyses, structural equation modeling (SEM) was used to analyze all of the hypothesized relationships simultaneously, and extract the relative impact of each variable on the entire hypothesized model (Bollen, 1989). The statistical software package AMOS was used to analyze the structural equation model. Besides the final dependent variables in the model (i.e., job satisfaction, organizational commitment, and turnover intentions) all variables were mean-centered to facilitate interpretation of the results and alleviate potential collinearity problems among the variables when testing for interaction effects (Kraemer & Blasey, 2004).

In the SEM model, the exogeneous variables were allowed to covary and the endogenous variables' disturbance terms were allowed to covary as well to control for possible endogeneity, which made this analysis very similar to the previous SUR analyses. The disturbance terms' variances were all fixed to 1 in the model. In the first SEM model (i.e., Model 7 depicted in Table 10 and Figure 8), all direct paths and interactions were tested. LMX was significantly related to cognitive learning strategies (Standardized Estimate = 0.201, $p < .01$), and behavioral learning strategies (Standardized Estimate = 0.234, $p < .01$), even when controlling for problem solving demand and job control. This finding supported Hypotheses 7a and 7b. LMX was also positively related to psychological climate for innovation (Standardized Estimate = 0.487, $p < .01$), which supported Hypothesis 6.

Hypotheses 4a and 4b were supported as a positive direct relationship was found between cognitive learning strategies and idea generation (Standardized Estimate = 0.111, $p < .01$), as well as between behavioral learning strategies and idea generation (Standardized Estimate = 0.295, $p < .01$). A positive direct relationship was also found between proactive personality and idea

generation (Standardized Estimate = 0.265, $p < .01$), which supported Hypothesis 3. However, Hypothesis 5 was not supported as there was no significant direct relationship found between psychological climate for innovation and idea generation. Hypotheses 8a and 8b also received no support as the hypothesized interaction between cognitive learning strategies and LMX, and between behavioral learning strategies and LMX, in the prediction of idea generation were not significant.

A positive direct relationship was found between idea generation and idea promotion (Standardized Estimate = 0.914, $p < .01$), which supported Hypothesis 1. The interaction between idea generation and LMX in the prediction of idea promotion was not significant, thus providing no support for Hypothesis 9. Idea promotion was positively related to idea implementation (Standardized Estimate = 0.794, $p < .01$), supporting Hypothesis 2. Idea implementation was positively related to job satisfaction (Standardized Estimate = 0.337, $p < .01$) and organizational commitment (Standardized Estimate = 0.383, $p < .01$), and negatively related to turnover intentions (Standardized Estimate = -0.191, $p < .01$). These findings support Hypotheses 10, 11, and 12 respectively.

Table 10

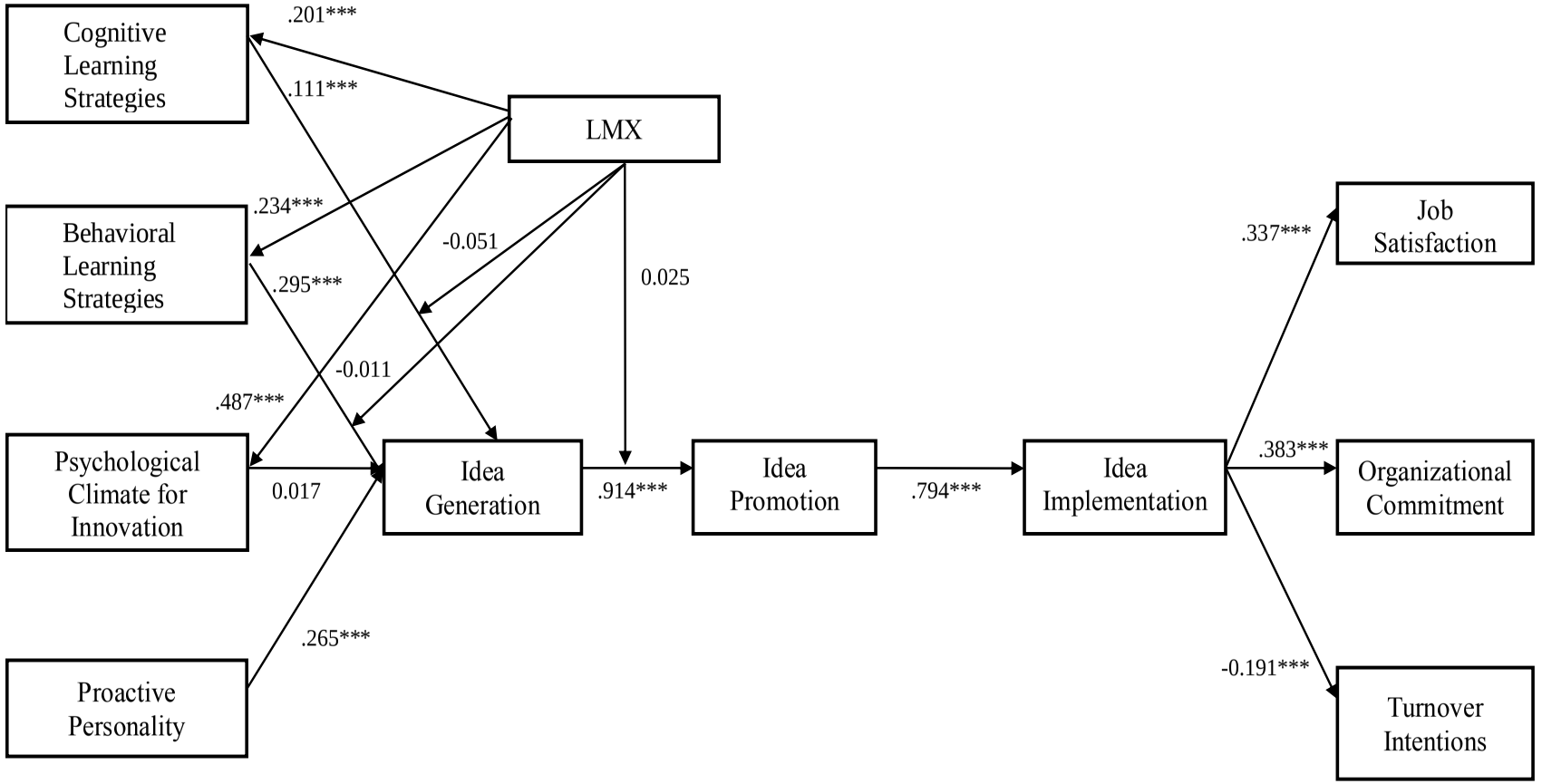
Model 7 - Structural Equation Modeling - All hypothesized paths

Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	0.231***	0.171***							
Job Control (JC)	0.201***	0.156***							
Leader Member Exchange (LMX)	0.201***	0.234***	0.487***	0.016	0.055*				
Psych. Climate for Innovation (PCI)				0.017					
Proactive Personality (PP)				0.265***					
Cognitive Learning Strategies (CLS)				0.111***					
Behavioral Learning Strategies (BLS)				0.295***					
CLS X LMX				-0.051					
BLS X LMX				-0.011					
Idea Generation (IG)					0.914***				
IG X LMX					0.025				
Idea Promotion (IP)						0.794***			
Idea Implementation							0.337***	0.383***	-0.191***

*p<.10, **p<.05, ***p<.01

Figure 8

Model 7 – Structural Equation Modeling – All Hypothesized Paths



*p<.10, **p<.05, ***p<.01

Due to the aforementioned multicollinearity issues with cognitive learning strategies and behavioral learning strategies, two subsequent SEM tests were run to analyze the interaction hypotheses which were not supported in the SEM model which tested all interactions simultaneously. Model 8, presented in Table 11 and Figure 10, included all of the hypothesized paths that were in Model 7, except the interaction of behavioral learning strategies and LMX in the prediction of idea generation. All of the hypotheses which were supported in Model 7 were also supported in Model 8, and all of the hypotheses for which no support was found in Model 7 were also not supported in Model 8. However, the interaction between cognitive learning strategies and LMX in the prediction of idea generation became significant (Standardized Estimate = -0.060, $p < .01$), but not in the hypothesized direction.

The plot for this interaction is shown in Figure 9 and was generated with Bing's (1999) program for graphing interactions between continuous and quantitative variables. As shown in Figure 9, cognitive learning strategies and idea generation are positively correlated, and LMX does moderate this relationship. However, contrary to expectations, increases in LMX actually attenuated the positive relationship between cognitive learning strategies and idea generation. Therefore, Hypothesis 8a was not supported as the moderation that was found was not in the hypothesized direction.

Table 11

Model 8 - Structural Equation Modeling - CLS X LMX

Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	0.238***	0.163***							
Job Control (JC)	0.199***	0.162***							
Leader Member Exchange (LMX)	0.198***	0.237***	0.487***	0.015	0.055*				
Psych. Climate for Innovation (PCI)				0.017					
Proactive Personality (PP)				0.264***					
Cognitive Learning Strategies (CLS)				0.297***					
Behavioral Learning Strategies (BLS)				0.112***					
CLS X LMX				-0.060***					
Idea Generation (IG)					0.915***				
IG X LMX					0.026				
Idea Promotion (IP)						0.794***			
Idea Implementation							0.337***	0.383***	-0.191***

*p<.10, **p<.05, ***p<.01

Figure 9

Interaction Between CLS and LMX in the Prediction of Idea Generation

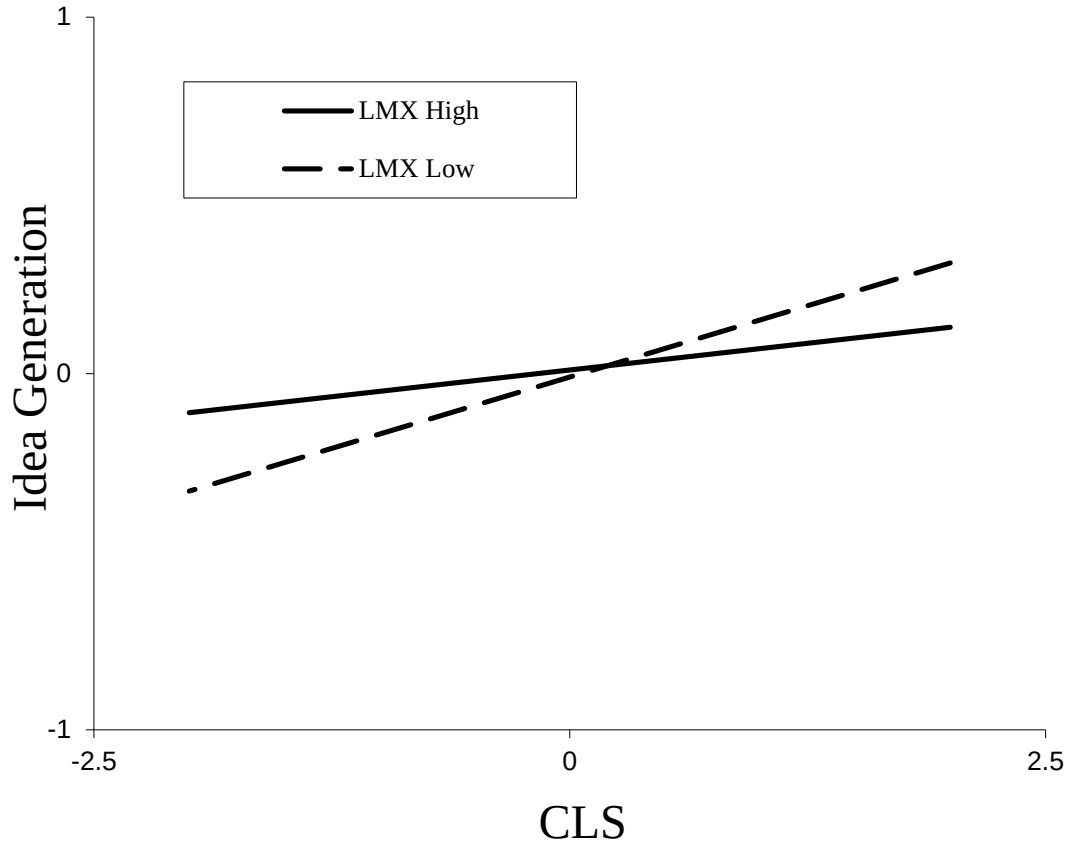
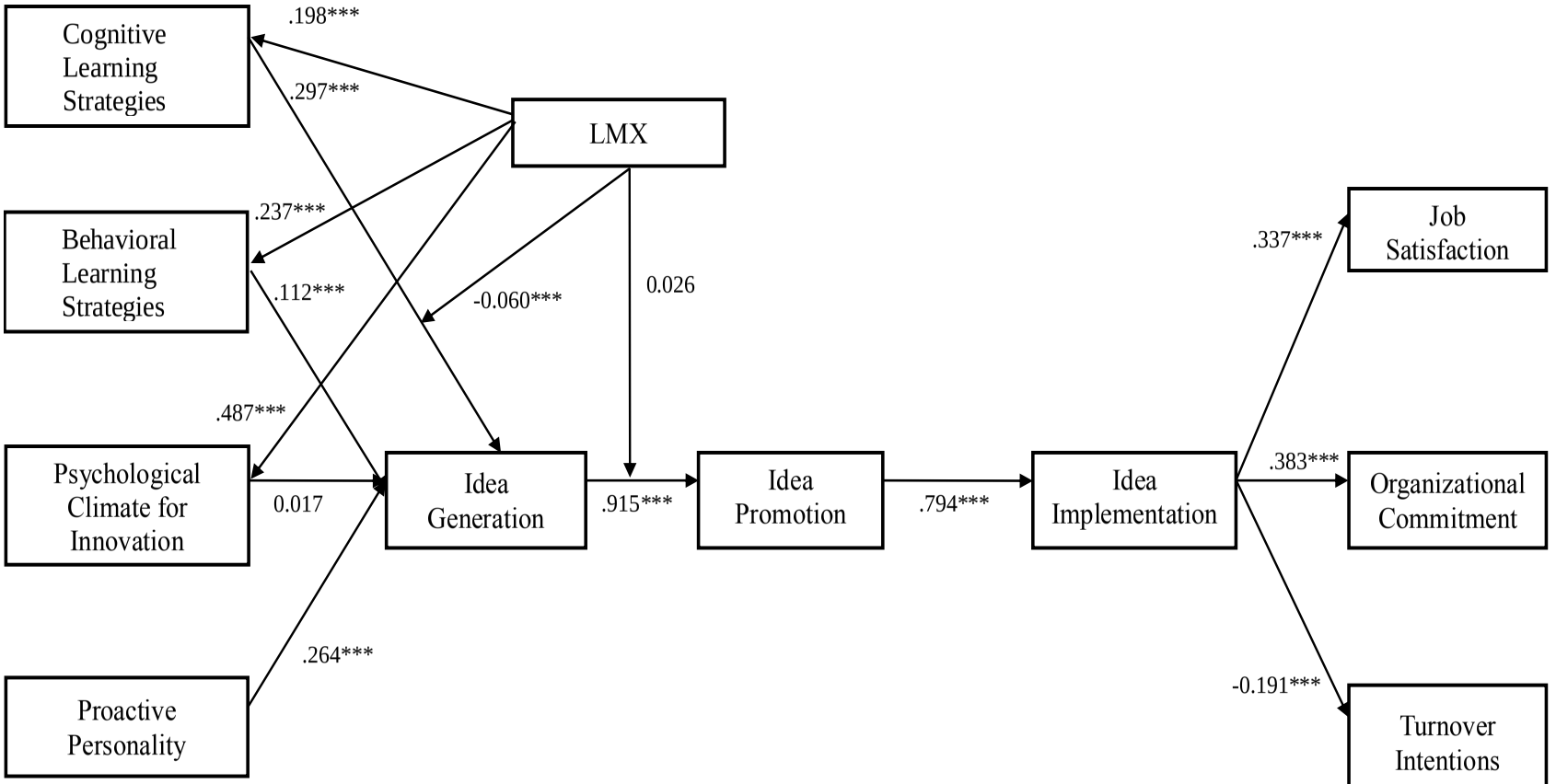


Figure 10

Model 8 – Structural Equation Modeling – CLS X LMX



*p<.10, **p<.05, ***p<.01

Model 9, depicted in Table 12 and Figure 12, included all of the hypothesized paths that were in Model 7 except the interaction of cognitive learning strategies and LMX in the prediction of idea generation. All of the hypotheses for which support was found in Model 7 were also supported in Model 9, and all of the hypotheses for which no support was found in Model 7 were also not supported in Model 9. However, the interaction between behavioral learning strategies and LMX in the prediction of idea generation was significant (Standardized Estimate = -0.046, $p < .01$). Once again, contrary to expectations, increases in LMX actually attenuated the positive relationship between behavioral learning strategies and idea generation. Therefore, Hypothesis 8b was not supported as moderation was found, but not in the expected direction. The plot for this interaction was generated with Bing's (1999) program for graphing interactions between continuous and quantitative variables, and is presented in Figure 11.

Table 12

Model 9 - Structural Equation Modeling - BLS X LMX

Predictor	CLS	BLS	PCI	IG	IP	II	JS	OC	TI
Problem Solving Demand (PSD)	0.241***	0.165***							
Job Control (JC)	0.201***	0.159***							
Leader Member Exchange (LMX)	0.196***	0.236***	0.487***	0.014	0.055*				
Psych. Climate for Innovation (PCI)				0.016					
Proactive Personality (PP)				0.263***					
Cognitive Learning Strategies (CLS)				0.304***					
Behavioral Learning Strategies (BLS)				0.107***					
BLS X LMX				-0.046**					
Idea Generation (IG)					0.914***				
IG X LMX					0.027				
Idea Promotion (IP)						0.795***			
Idea Implementation							0.337***	0.383***	-0.191***

*p<.10, **p<.05, ***p<.01

Figure 11

Interaction Between BLS and LMX in the Prediction of Idea Generation

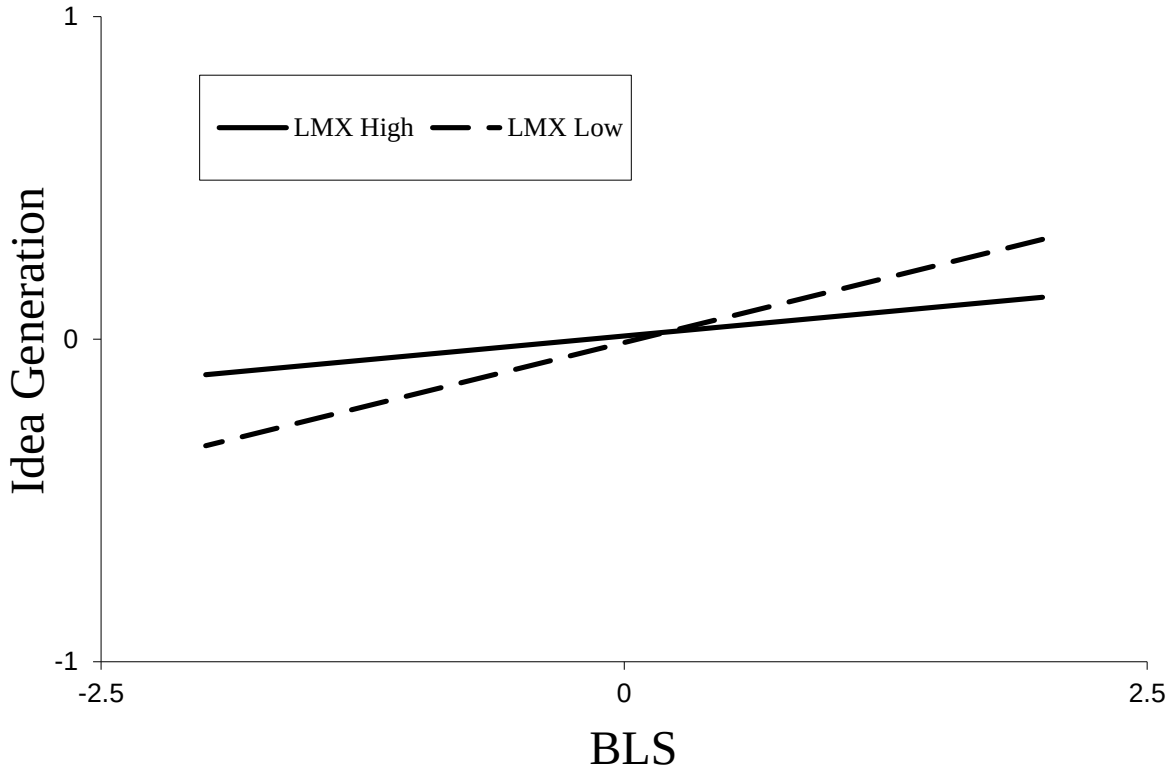
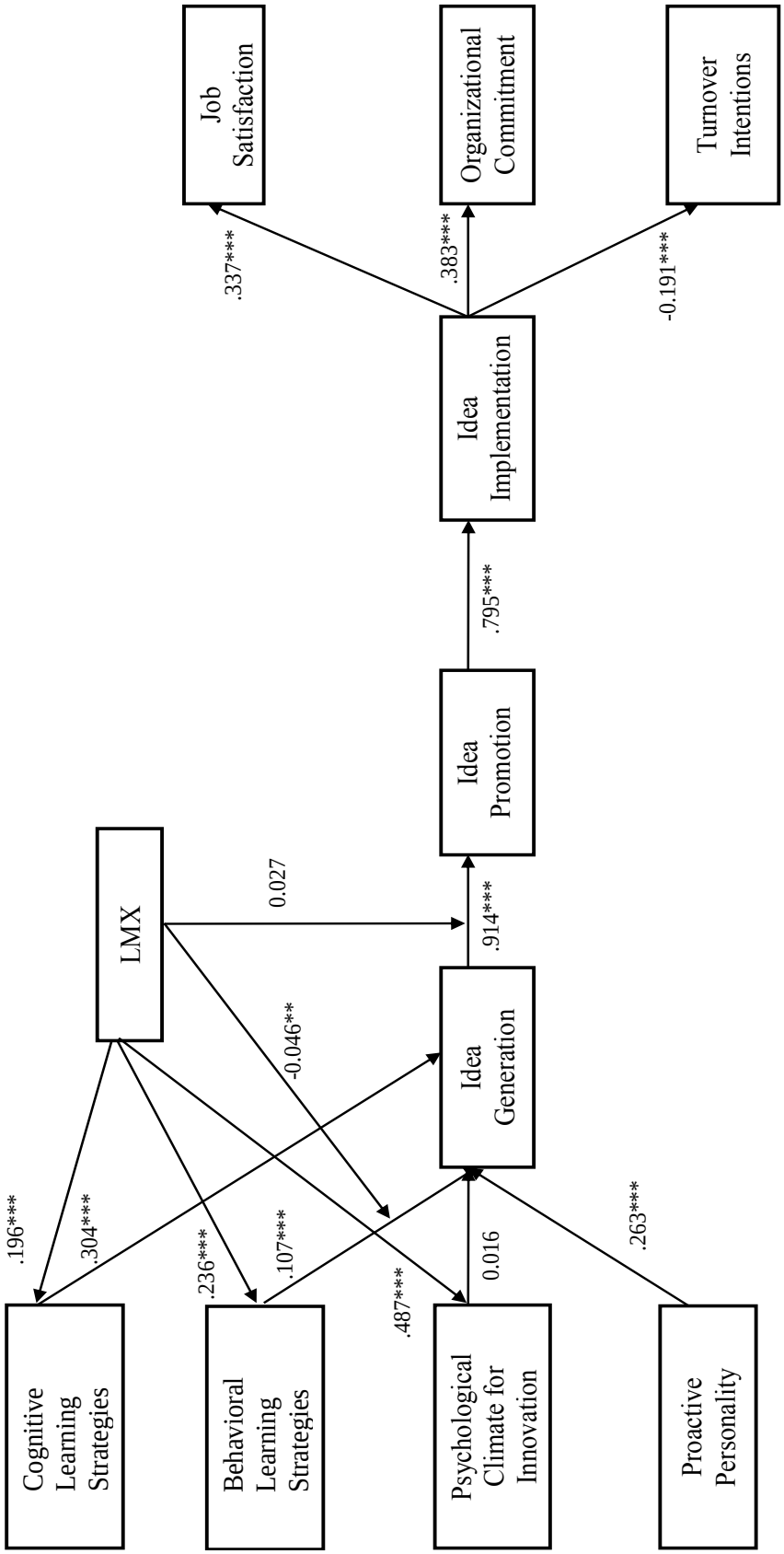


Figure 12

Model 9 – Structural Equation Modeling – BLS X LMX



*$p<.10$, **$p<.05$, ***$p<.01$

CHAPTER FIVE: DISCUSSION, IMPLICATIONS, LIMITATIONS, FUTURE RESEARCH, AND CONCLUSIONS

Discussion and Implications

This study sought to extend research innovation at the individual level by examining antecedents, moderators, and outcomes associated with the generation, promotion, and implementation of innovative ideas in the workplace. Empirical analyses from a sample of 667 working adults revealed that leader-member exchange is positively related to cognitive and behavioral learning strategies which are focused on generating innovative ideas. In addition to LMX, cognitive learning strategies, and behavioral learning strategies, proactive personality was positively related to the generation of innovative ideas, and the psychological climate for innovation is positively related to the implementation of those innovative ideas. Furthermore, a positive relationship was found between the successful implementation of an innovative idea and employees' relationship with the firm in regard to job satisfaction, organization commitment, and reduced turnover intentions.

Because several models were tested in the previous analyses, a summary of the hypothesized relationships is depicted in Table 13. Overall, strong support was found for all of the direct-relationship hypotheses except for the relationship between psychological climate for innovation and idea generation. No support was found for the interaction between idea generation and LMX in the prediction of idea promotion. Also, no support was found for the hypothesized interactions between the two learning strategies and LMX in the prediction of idea

generation, although they did interact in the prediction of idea generation but not in the expected direction.

Because cognitive learning strategies and behavioral learning strategies are correlated at 0.695, they are arguably two indicators of the same latent trait. This argument is strengthened by the interaction between LMX and both of the learning strategies variables, as LMX attenuates the positive relationship between the learning strategies variables and idea generation in a nearly identical manner. Therefore, although Holman et al. (2001, 2011) conceptualized cognitive learning strategies and behavioral learning strategies as separate variables, the results of the current analyses suggest that these variables are more accurately conceptualized as indicators of an underlying, single learning strategies construct. Future research could test this assertion more directly.

There are two primary unexpected findings that merit discussion, and are potentially related to one another. These unexpected findings include LMX attenuating the positive relationship between learning strategies and idea generation, as well as the absence of a significant relationship between psychological climate for innovation and idea generation. Taken separately, these findings seem unreasonable. However, taken together, these findings could be revealing a potential detriment of LMX based on similarity-attraction theory.

Similarity-attraction theory (Byrne, 1971) suggests that individuals have more positive interactions with others whom they perceive to be similar to themselves. This theory is the foundation of most LMX research, with leader-follower similarities conceptualized as antecedents to higher LMX quality. Applying similarity-attraction theory in the innovation context would indicate that innovative managers would be attracted to innovative subordinates. However, innovativeness is a competency which has very recently begun to be sought after in the

workplace. Therefore, it is unlikely that most experienced managers maintain this competency. As a result, in-group subordinates who follow non-innovative managers are not likely to be innovative, which would explain why LMX attenuates the positive relationship between learning strategies and idea generation. Furthermore, many managers prefer followers who submit to their authority, rather than innovate. Thus, subordinates who have high LMX are likely those who accept the non-innovative perspective of the leader, rather than trying to develop a unique innovative idea.

The absence of a significant relationship between a psychological climate for innovation and idea generation provides more credence to this interpretation because leaders have a strong influence on climate perceptions, as evidenced by the strong correlation between LMX and psychological climate for innovation found in the current study. If leaders favor those who mimic the leader, then followers are likely to exhibit behaviors which gain that favor even if the organizational climate supports actions which are incongruent to those exhibited by the leader. This is evidenced in the current study by the positive relationship psychological climate for innovation has with idea implementation, but not idea generation or idea promotion. This finding may suggest that even if followers know that the organization supports innovation, and this support facilitates the implementation of those ideas, followers may still not be likely to generate or promote innovative ideas unless the leader exhibits innovative behaviors. Therefore, it would be interesting for future research to determine if leader innovativeness has a significant influence on the extent to which followers generate and promote innovative ideas.

Evaluation of Models 1, 2, and 3, which tested all direct, indirect, and interactive relationships, suggests that the psychological climate for innovation has a strong influence on whether or not an idea is successfully implemented as there was a significant relationship

between psychological climate for innovation and idea implementation in each of these three models. This finding indicates that a psychological climate which supports innovation may not strongly influence an employee to generate innovative ideas, but that climate still has a strong influence on the innovation process. While the generation of innovative ideas is an important part of the process, an idea does not contribute value until it has been implemented. Therefore, although the psychological climate for innovation did not influence the innovation process in the hypothesized manner, it is still important for ultimate idea implementation.

Furthermore, significant relationships were found between psychological climate for innovation and each of the final dependent variables (i.e., job satisfaction, organizational commitment, and turnover intentions) in Models 1, 2, and 3. An examination of extant literature supports this finding as meta-analytic results indicate that the workplace climate has a significant impact on individual-level outcomes such as organizational commitment, job satisfaction, job performance, attitudes, motivation, psychological well-being, and withdrawal (Carr, Schmidt, Ford, and DeShon, 2003; Clarke, 2010). Therefore, a supportive climate for innovation may not only be important for facilitating the innovation process in terms of idea implementation, but also in strengthening employees' relationship with the firm beyond the successful implementation if an innovative idea.

It is also worth noting that job control and LMX were positively related to each of the affective outcome variables measured in the model. While not hypothesized in this study, it appears that individuals who have more control over their jobs and have quality relationships with their leaders are more satisfied with their jobs, more committed to the organization, and less likely to turnover. Job control and LMX are also positively related to various stages of the innovation process. Coupling this information with the positive relationship between proactive

personality and the innovation process indicates that hiring the right employees, designing jobs to facilitate innovation, and forming quality relationships between leaders and subordinates will facilitate innovation in the workplace and strengthen employees' relationship with the firm.

Overall, the findings of this research are very important for research and practice in several ways. From a research perspective this study applies a unifying theoretical framework upon which future studies of individual innovation can build. Social cognitive theory incorporates personal, situational, and relational factors which facilitate an agentic process of action. Applying this conceptual framework to the innovation process strengthens our understanding of the factors that lead to successful idea generation, promotion, and implementation, as well as how this process influences employees' relationship with the firm.

From a practitioner's perspective, these findings are important to facilitating employee innovation, as well as attracting, selecting, and retaining employees with valuable competencies. Based on these findings, a quality relationship with one's leader is positively related to employees' development, promotion, and implementation of innovative ideas. While a safe psychological climate for innovation may not cause employees to generate or promote more innovative ideas, it certainly aids in the implementation of the idea, which is where the idea actually creates value for the employee and the organization. These findings also underscore the importance of employee selection if an organization desires to be innovative as proactive personality was robustly and consistently related to the innovation process in terms of driving increased idea generation. Furthermore, organizations may also see financial benefits from promoting employee innovation, as these findings suggest that as organizations seek to facilitate the innovation process employees are more likely to be satisfied in their jobs, committed to the organization, and less likely to voluntarily turnover.

Table 13

Hypothesized Relationships

Hypothesis				*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*	*Model 9*
1	Idea Generation	→	Idea Promotion	S	S	S	S	S	S	S	S	S
2	Idea Promotion	→	Idea Implementation	S	S	S	S	S	S	S	S	S
3	Proactive Personality	→	Idea Generation	S	S	S	S	S	S	S	S	S
4a	Cognitive Learning Strategies	→	Idea Generation	S	S	S	S	S	S	S	S	S
4b	Behavioral Learning Strategies	→	Idea Generation	S	S	S	S	S	S	S	S	S
5	Psychological Climate for Innovation	→	Idea Generation	NS	NS	NS	NS	NS	NS	NS	NS	NS
6	LMX	→	Psychological Climate for Innovation	S	S	S	S	S	S	S	S	S
7a	LMX	→	Cognitive Learning Strategies	S	S	S	S	S	S	S	S	S
7b	LMX	→	Behavioral Learning Strategies	S	S	S	S	S	S	S	S	S
8a	CLS X LMX	→	Idea Generation	NS	NS	NT	NS	NS	NT	NS	NS	NT
8b	BLS X LMX	→	Idea Generation	NS	NT	NS	NS	NT	NS	NS	NT	NS
9	IG X LMX	→	Idea Promotion	NS	NS	NS	NS	NS	NS	NS	NS	NS
10	Idea Implementation	→	Job Satisfaction	MS	S	MS	S	S	S	S	S	S
11	Idea Implementation	→	Organizational Commitment	S	S	S	S	S	S	S	S	S
12	Idea Implementation	→	Turnover Intentions	MS	MS	MS	S	S	S	S	S	S

(S) = supported, (NS) = not supported, (MS) = marginal support, (NT) = not tested

Limitations and Future Research

One limitation of this study was the use of a cross-sectional design with self-report measures which introduces the possibility for common method bias to influence the results. Past research has used a common method factor to remove common method variance from true score variance and covariance, thereby giving a more accurate representation of the relationships among constructs. However, more recent research has found that using a common methods factor does not accomplish the goal for which it was created (Richardson, Simmering, & Sturman, 2009). Therefore, future research could include a marker variable, which is a variable that should not theoretically be correlated with any of the other variables in the model. The marker variable is correlated to each variable in a similar fashion as the common methods factor, and any variance it shares with other variables indicates the possible presence of common methods bias.

Also, multiple methods could be used to collect data on the variables in future research. For instance, self-report could be used to measure individual differences in the innovation process while an objective measure of idea promotion could also be collected, such as with a tracking system for the promotion of innovative ideas (e.g., a non-anonymous suggestion box). Future research could also gather data in multiple waves to generate a longitudinal design that maintains the appropriate temporal relationship among antecedents and consequences while removing certain possible method bias weaknesses of the cross-sectional design (e.g., possibilities of self-generated validity; Feldman & Lynch, 1988).

Future research should also examine these relationships within a singular organizational setting to attenuate subject selection biases that follow from the use of the peer-nomination method of data collection. Although the peer-nomination method provides valuable advantages by generating a very diverse sample, and this method fit with this study's conceptual framework

and phenomenon of interest, this method has received criticism in regard to the researcher's ability to verify the eligibility of potential respondents, controlling the types of responses received, and monitoring data quality (Biernacki & Waldorf, 1981). This study reduced the detriment posed by these issues by contacting each respondent to verify his or her identity and eliminating respondents who completed the survey in an unreasonably short or long time frame (i.e., less than 7 minutes or greater than 3 hours). However, to completely eliminate these concerns, future research should test the hypothesized relationships within a singular organizational setting.

Another limitation of this study was the absence of classification of innovations. While this study defined innovations as the intentional development and application of ideas, procedures, processes, or products new to the workplace which are designed and used to benefit the individual, the organization, and ultimately society (Somech & Drach, 2011; West & Wallace, 1991), the type of innovations were not specified. This was done intentionally as innovation type was not crucial to the research questions addressed in this study, but by not specifying a type of innovation, this study could not determine if these effects vary across forms of innovation. As identified in its definition, innovations can be accomplished in regard to procedures, processes, or products, and can be for the benefit of the individual, organization, or the general society. Therefore, future research should investigate if the results found in this study are generalizable across different types of innovations, such as information technology innovations versus advertising innovations versus innovations in manufacturing processes, etc.

One interesting and non-hypothesized finding that may be worthy of further investigation was the positive relationship found between proactive personality and turnover intentions. Proactive personality is typically measured in regard to positive organizational outcomes such as

job performance (Thompson, 2005), career success (Erdogan & Bauer, 2005; Fuller & Marler, 2009), individual development (Major, Turner, & Fletcher, 2006), entrepreneurial intentions (Crant, 1996), job satisfaction, organizational commitment (Chan, 2006), and voice behavior (Fuller & Marler, 2009). However, it could be that proactive personality is related to some of these outcomes because proactive individuals are more likely to leave their current organization if they are not experiencing these outcomes with their current employer. Thus, persons with proactive personalities may select themselves into organizational settings in which they are more likely to be productive, satisfied, heard, etc. Thus, an outcome that would negatively influence the firm's performance (i.e., turnover of quality employees) could be caused by the proclivity of proactive personalities to be dissatisfied in comparison to others, and thus have higher turnover intentions in general until they find a compatible employer. Thus, the temporal relationship between proactive personality and these organizational outcomes are worthy of future study along with possible self-selection biases of proactive personalities into compatible organizational settings.

This study did not test the potential moderating impact of psychological climate for innovation on the innovation process. However, Somech and Drach (2011) recently found that idea generation interacted with the team's climate for innovation before leading to idea implementation. Due to the lack of a relationship found between psychological climate for innovation and idea generation, one could speculate that the climate of the organization serves as a moderator in the innovation process rather than an antecedent. Future research should examine this possibility.

Recent research has revealed the negative impact that self-efficacy can have in the workplace. For instance, Schmidt and DeShon (2010) found that self-efficacy was negatively

related to job performance when performance ambiguity was high, and positively related to job performance when ambiguity was low. In other words, if an individual is confident in his or her ability to perform a task, but the task is very ambiguous, the individual's confidence is based on false assumptions. As a result, the individual's performance will be lower under ambiguous situations with high self-efficacy because he or she performs the task incorrectly, rather than asking questions or verifying assumptions about the task first to eliminate the ambiguity.

The potential negative impact of self-efficacy was first conceptualized by Bandura & Locke (2003), and self-efficacy could impact innovation in a similar manner as it impacts performance under ambiguous situations. If individuals do not question their assumptions about a task or are confident that they know the best way to perform a task when the task is ambiguous, their self-efficacy could have a negative impact on innovation. Self-efficacy is also relevant to Bandura's (2001; 2012) conceptualization of social cognitive theory, so the construct of self-efficacy is relevant to the theoretical framework used here to investigate the innovation process. Thus, testing the impact of self-efficacy on the innovation process would be a valuable avenue for future research.

Wu, Parker, and de Jong, (2011) recently found that need for cognition was positively related to innovative behavior, even when proactive personality was controlled. While Wu et al. (2011) did not examine the relationship between need for cognition and the entire innovation process, it would be a very interesting avenue for future research. Consistent with the conceptualization in this study, need for cognition would be modeled as an antecedent to the innovation process and relationships between the construct and various parts of the innovation process could be tested. It would be interesting to see if proactive personality is more strongly related to idea promotion because it is a form of voice behavior, whereas need for cognition may

be more strongly related to idea generation because it fulfills the cognitive component of the innovation process.

Conclusions

This research extends our understanding by examining the antecedents and outcomes of the of the individual innovation process. Overall, the results indicated that quality relationships among leaders and subordinates is positively related to cognitive and behavioral learning strategies focused towards generating innovative ideas. Employees with proactive personalities are more likely to engage in the innovation process, and a sense of psychological safety in regard to the climate for innovation facilitates the implementation of innovative ideas. These results support innovation as a three-stage process consisting of idea generation leading to idea promotion and subsequent idea implementation. Finally, the results of this research indicated that the successful implementation of an innovative idea strongly influences employees' relationship with the firm. This research provides a unifying theoretical framework, namely social cognitive theory, to individual innovation and extends the phenomenological generalizability of social cognitive theory by applying it to the innovation process. I look forward to future research which extends this investigation of the innovation process by including other constructs (e.g., self-efficacy) and contextualizations (e.g., type of innovation).

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LIST OF APPENDICES

APPENDIX A

SUMMARY OF HYPOTHESIZED RELATIONSHIPS

Hypothesis 1: Idea generation will be positively related to idea promotion.

Hypothesis 2: Idea promotion will be positively related to idea implementation.

Hypothesis 3: Proactive personality will be positively related to idea generation.

Hypothesis 4a: There will be a positive relationship between cognitive learning strategies and idea generation.

Hypothesis 4_b: There will be a positive relationship between behavioral learning strategies and idea generation.

Hypothesis 5: Psychological climate for innovation will be positively related to idea generation.

Hypothesis 6: Leader-member exchange will be positively related to psychological climate for innovation.

Hypothesis 7_a: Leader-member exchange will be positively related to cognitive learning strategies.

Hypothesis 7_b: Leader-member exchange will be positively related to behavioral learning strategies.

Hypothesis 8_a: LMX will moderate the positive relationship between cognitive learning strategies and idea generation such that decreased LMX quality will result in an attenuation of this positive relationship.

Hypothesis 8_b: LMX will moderate the positive relationship between behavioral learning strategies and idea generation such that decreased LMX quality will result in an attenuation of this positive relationship.

Hypothesis 9: LMX quality will moderate the positive relationship between idea generation and idea promotion such that decreases in LMX quality will

attenuate the positive relationship between idea generation and idea promotion, and increases in LMX quality will enhance the relationship between idea generation and idea promotion.

Hypothesis 10: Innovation implementation will be positively related to job satisfaction.

Hypothesis 11: Innovation implementation will be positively related to organizational commitment.

Hypothesis 12: Innovation implementation will be negatively related to turnover intentions.

APPENDIX B

LIST OF ITEMS IN MEASURES

Climate for Innovation

Support for Innovation

1. Creativity is encouraged here.
2. Our ability to function creatively is respected by the leadership.
3. Around here, people are allowed to try to solve the same problems in different ways.
4. The main function of members in this organization is to follow orders which come down through channels.*
5. Around here, a person can get in a lot of trouble by being different.*
6. This organization can be described as flexible and continually adapting to change.
7. A person can't do things that are too different around here without provoking anger.
8. The best way to get along in this organization is to think the way the rest of the group does.*
9. People around here are expected to deal with problems in the same way.*
10. This organization is open and responsive to change.
11. The people in charge around here usually get credit for others' ideas.*
12. In this organization, we tend to stick to tried and true ways.*
13. This place seems to be more concerned with the status quo than with change.*
14. The reward system here encourages innovation.
15. This organization publicly recognizes those who are innovative.
16. The reward system here benefits mainly those who don't rock the boat.*

* indicates reverse coding

Learning Strategies

Cognitive Learning Strategies

To what extent do you do the following?

1. I think about how my work fits into the ‘‘bigger picture’’ at my organization.
2. I try to think how the different parts of my organization fit together.
3. I try to think how my work relates to that of others at my organization.
4. I try to understand the implications of new information I receive my organization.
5. I try to develop an overall idea of how the different parts of my job fit together.
6. I work out which are the key points of my job and which are less important.
7. I generally try to understand how new information fits into how I do my job.
8. I think about new information and its implications for my job rather than merely concentrating on the facts we are given.

Behavioral Learning Strategies

To what extent do you do the following?

1. I try out new things by applying them in practice.
2. I do practical things to help myself to learn.
3. I ask others questions when I am uncertain about something.
4. I get someone to help me when I need assistance.
5. I ask others for more information when I need it.
6. When I am unsure about something I look it up.
7. I fill in the gaps in my knowledge by getting hold of appropriate material.

Proactive Personality

1. If I see something I don't like, I fix it.
2. No matter what the odds, if I believe in something I will make it happen.
3. I love being a champion for my ideas, even against others' opposition.
4. I am always looking for better ways to do things.
5. If I believe in an idea, no obstacle will prevent me from making it happen.
6. I excel at identifying opportunities.

Leader-Member Exchange

1. I can count on my supervisor to help me when I need it.
2. My supervisor is willing to use his/her authority to help me solve problems.
3. My supervisor and I work well together.
4. I give suggestions to my supervisor about improving the work.
5. My supervisor recognizes my potential.

Innovation Process

Please indicate the extent to which you have done this in your job within the last year:

Idea Generation

1. Thought of new ideas
2. Had ideas about how things might be improved
3. Found new ways of doing things

Idea promotion

4. Attempted to get support from others for your ideas
5. Tried to get approval for improvements you suggested
6. Got involved in persuading others to adopt your proposals for doing things differently

Idea implementation

7. Had your ideas implemented
8. Had your suggestions for improvements adopted
9. Had your proposals for doing things differently carried out

Job Control

To what extent:

1. Do you plan your own work?
2. Can you choose the methods to use in carrying out your work?
3. Can you decide how to go about getting your job done?

Problem Solving Demand

To what extent:

1. Are you required to deal with problems which are difficult to solve?
2. Do you have to solve problems which have no obvious correct answer?
3. Do you come across problems in your job that you have not met before?

Turnover Intentions

1. I frequently think of quitting my job.
2. I am planning to search for a new job during the next 12 months.

Job Satisfaction

1. Generally speaking, I am satisfied with my job.
2. I am generally satisfied with the kind of work I do in this job.
3. I feel a great sense of personal satisfaction when I do this job well.

Affective Commitment

1. I would be happy to spend the rest of my career with this organization.
2. I feel a strong sense of "belonging" to my organization.
3. I feel "emotionally attached" to this organization.
4. I feel like "part of the family" at my organization.
5. This organization has a great deal of personal meaning for me.

Demographics

1. What is your gender?
2. What is your age?
3. Which of the following best describes your race or ethnic group?
    a. White/Caucasian
    b. Black/African-American
    c. Latino/Latina/Hispanic
    d. Native American
    e. Asian/Native Hawaiian
    f. Multi-racial (more than one race)
    g. Other
4. What is the highest educational level you have completed?
    a. High School/GED
    b. Associate's Degree
    c. Technical Degree
    d. Bachelor's Degree
    e. Master's Degree
    f. Doctoral Degree
5. How long have you been in your present position at work? – Years? Months?
6. How long have you worked for your present employer? – Years? Months?
7. I am currently (check all that apply):
    a. Contract Employee
    b. Manager (I make important company decisions)
    c. Supervisor (I supervise employees)
    d. Employee (I do not supervise employees)
8. How many people report to you?

Please identify the industry in which you work:

APPENDIX C

Sample Characteristics: Sex, Race, and Education

Demographic Characteristic	% of Sample
Sex:	
Female	58.50%
Male	41.80%
Not Specified	0.30%
Race:	
White/Caucasian	82.01%
Black/African-American	13.04%
Latino/Latina/Hispanic	1.35%
Native American	0.15%
Asian/Native Hawaiian	1.50%
Multi-racial	0.75%
Other	0.90%
Not Specified	0.30%
Education:	
High School/GED	18.14%
Associates Degree	12.74%
Technical Degree	2.55%
Bachelors Degree	38.98%
Masters Degree	21.44%
Doctoral Degree	5.70%
Not Specified	0.45%

APPENDIX D

SUMMARY OF FIT STATISTICS

Confirmatory Factor Analysis Measurement Model Fit Statistics	
χ^2	4678.62
Df	2066
CFI	0.90
RMSR	0.05
RMSEA	0.04

VITA

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EDUCATION

M.B.A - The University of Tennessee at Martin, Suma Cum Laude, Martin, TN
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RESEARCH INTERESTS

Primary: Entrepreneurship
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JOURNAL PUBLICATIONS

Smothers, J. (2011). Assumption-Based Leadership: A Historical Post-Hoc Conceptualization of the Assumptions Underlying Leadership Styles. *Journal of Applied Management & Entrepreneurship, 16,* (3), 44-59.

Smothers, J., Bing, M.N., White, D., Trocchia, P., & Absher, K. (2011) From the Follower's Viewpoint: A Configurational Approach to the Ideal Academic Leader. *Journal of Leadership and Organizational Studies, 18,* (3), 293-307.

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Smothers, J., Absher, K., White, D. (2012) In the Eye of the Beholder: A Configurational Analysis of Followers' Conceptualizations of the Ideal Academic Department Leader at Private Universities. *Leadership (in press).*

PAPERS UNDER REVIEW

1. Bing, M.N., Davison, H.K., Smothers, J. (under review at *International Journal of Selection and Assessment*). Item-Level Frame-of-Reference Effects in Personality Testing: An Investigation of Incremental Validity in an Organizational Setting.

2. Smothers, J., Murphy, P., Novicevic, M., & Humphreys, J. (under review at *Journal of Management History*) Institutional Entrepreneurship as Emancipating Institutional Work: James Meredith and the Integrationist Movement at Ole Miss

CONFERENCE PARTICIPATION

1. Presentation - Smothers, J., White, D., Absher, K. (2009). How can private universities survive taxing economic times? Business school leadership is the key. Academy of Management, Chicago, IL.
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TEACHING EXPERIENCE

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HONORS AND AWARDS

2012: Invited panelist at the Innovation Workshop for the 2012 Ole Miss Entrepreneurship Business Plan Competition
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2008: Suma Cum Laude Honorable Mention
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SERVICE

- Reviewer for 2012 Academy of Management Conference - Business History Division (3 Reviews)
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WORK EXPERIENCE

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