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Assessing the Impact of
Transformational Leadership, Organizational Climate, and Personality on Individual
Innovativeness at Work

by

Khalid M. Iskandarani

Dissertation

Submitted to the College of Technology

Eastern Michigan University

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Concentration in Technology Management

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April 11, 2017

Ypsilanti, Michigan

Dedication

First and foremost, I thank God for blessing me with the health, strength, and perseverance to explore this subject and complete the research. I dedicate this work to the memory of my father, Mohammad Z. Iskandarani. His exceptional work ethic and commitment to his family shaped the man I am today. Last but not least, I dedicate this work to my mother, Asma D. Dudar. She inspired me to learn at a young age and for that and everything else that she did for me, I shall always be grateful.

Acknowledgment

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I also would like to acknowledge my family, friends, and co-workers for their support and interest in this research study.

Abstract

Innovation is critical for any organization's success in the twenty first century. Organizations are continuously seeking to create new products and services to differentiate themselves from their competition and to create a competitive advantage in the dynamic global business environment.

In order for this to occur, organizations need to encourage employee creativity. Furthermore, leaders in the organization also need to work with the employees to help guide and support them as they embark on the development of products and service.

This survey methodology study examined the organizational environment by assessing the impact that organizational climate has on promoting innovation. It also assessed the impact the transformational leader has on the employee by identifying changes and creating a vision to implement these changes. The study also investigated the effect of employee personality on individual innovativeness at work.

The results of the study suggest a positive and significant relationship between organizational climate, transformational leadership, and individual innovativeness at work. Employee openness and extraversion showed a positive and significant relationship to employee innovativeness, while the intuition personality type did not show a positive relationship. The extraversion personality trait also moderated the relationship between organizational climate, transformational leadership, and individual innovativeness at work. The results of the study confirm the role of the organization, leader, and employee in creating and implementing creative products and services in the work place.

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Chapter 1: Introduction

“Innovation, the process of bringing new products and services to market, is one of the most important issues in business research today” (Hauser, Tellis, & Griffin, 2006, p. 687). In today’s dynamic global business environment, innovation is critical to organization’s competitive advantage (Porter, 1998), and innovation is critical to organization’s long-term success and survival (Martin & Terblanche, 2003). Innovation involves a broad set of activities involving the creation and implementation of new concepts and new products to an organization (Becker & Whisler, 1967). The path to innovation through creativity has been identified in the research literature as an important factor in developing an organization’s competitive advantage (Woodman, Sawyer, & Griffin, 1993). Dynamic changes in the business environment, and especially those characterized by technological change, require business professionals to be creative and innovative in order to develop and implement new concepts and new products that will maximize organizational success (Tierney, Farmer, & Graen, 1999).

To meet the demands of today’s competitive business environment, organizational leaders are reinventing and rethinking the way they do business (Lawler & Worley, 2006). Central to this new thinking is innovativeness, “an organization’s overall innovative capability of introducing new products to the market, or opening up new markets, through combining strategic orientation with innovative behavior and process” (Wang & Ahmed, p. 304). Managing innovativeness can be a challenge for many organizational leaders because it is often characterized by researchers as unpredictable, non-linear and complex (Kahn, Barczak, Nicholas, Ledwith, & Perks, 2012). Central to managing and harnessing

innovativeness is striking a delicate balance between leveraging existing competencies, skills, and resources and pursuing newer and ground-breaking aspirations.

A growing number of studies have shown leaders who fail to balance competing priorities and devote organizational resources to innovation efforts put their organizations at risk of becoming obsolete (Alexiev, Jansen, Van den Bosch, & Volberda, 2010). Several leadership styles and transformational leadership specifically, a popular leadership style developed by Bass and Avolio (2000), been extensively utilized to deliver the desired organizational results. The popularity of this leadership style is partly due to the leaders' consideration of others and charismatic qualities. However, research on the impact of the transformational leadership required to manage such complexities and the impact on individual innovativeness at work is limited.

There is also evidence in the research that indicates that organizational climate, i.e., the shared perceptions of the policies and practices that are supported and rewarded in the organization (Schneider & Reichers, 1983), is used by employees to drive the motives and meanings of organizational events (Kuenzi & Schminke, 2009). Research suggests organizational climate affects outcomes at the individual and group levels (Lindell & Brandt, 2000). For example, employees' interpretation of organizational climate has been shown to impact individual performance (McKay, Avery, & Morris, 2008) and work group innovation (Anderson & West, 1998). Even though organizational climate has been determined to affect outcomes at the individual level, there is limited research that links organizational climate to individual innovativeness at work. This highlights a gap in the literature addressed by the current study.

Differences in the personality traits of individuals in the workplace can also impact individual innovativeness at work. For example, personality traits have been shown to be related to workplace behaviors, attitudes, and performance (Matzler, Renzl, Mooradian, Von Krogh, & Mueller, 2011). Personality, also linked to commitment (Kumar & Bakhshi, 2010) and performance motivations (Judge, Heller, & Mount, 2002). Chamorro-Premuzic and Furnham (2003) found both intelligence and personality comprise salient individual differences affecting performance.

Research on the factors that affect innovation, such as the effect of certain personality dimensions (e.g., neuroticism) on innovation, has yielded inconsistent results (Yesil & Sozbilir, 2013). West and Farr (1989) point out that little attention has been given to individual innovation in the organization. Based on this evidence, there is an important opportunity to investigate the impact of transformational leadership, organizational climate, and personality on individual innovativeness at work.

Statement of the Problem

Transformational leadership, organizational climate, and employee personality can have a critical impact on individual innovativeness in the organization. By definition, transformational leaders strive to transform the organization via higher levels of follower performance. They accomplish this objective by prioritizing follower needs and influencing intellectual and creative stimulation among individuals. Similarly, employees can be influenced by an organizational climate that supports (or discourages) individual innovativeness. Additionally, the personality of each employee may play a role in influencing both individual innovativeness in the organization, and the impact of

transformational leadership and organizational climate on individual innovativeness. Thus, a need exists for a research model that integrates transformational leadership, organizational climate, personality, and individual innovativeness at work. Figure 1 shows the research model for this study. As shown, transformational leadership (as measured by idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) and organizational climate (as measured by innovation and flexibility) are independent variables conceptualized to impact individual innovativeness at work (dependent variable). The model also considers extraversion, openness, and intuition personality as impacting innovativeness, and moderating the transformational leadership-innovativeness relationship and the organizational climate-innovativeness relationship.

Hypotheses

The purpose of this study was to investigate the impact of transformational leadership, organizational climate, and personality on individual innovativeness at work. The study also investigated personality as a moderator of the relationships between transformational leadership and innovativeness, and between organizational climate and innovativeness. To this end, the following 11 hypotheses were tested:

Hypothesis 1. Transformational leadership is positively related to individual innovativeness at work.

Hypothesis 2. Organizational climate is positively related to individual innovativeness at work.

Hypothesis 3. Extraversion personality trait is positively related to individual innovativeness at work.

Hypothesis 4. Openness personality trait is positively related to individual innovativeness at work.

Hypothesis 5. Intuition personality type is positively related to individual innovativeness at work.

Hypothesis 6. Extraversion personality trait moderates the relationship between transformational leadership and individual innovativeness at work.

Hypothesis 7. Openness personality trait moderates the relationship between transformational leadership and individual innovativeness at work.

Hypothesis 8. Intuition personality type moderates the relationship between transformational leadership and individual innovativeness at work.

Hypothesis 9. Extraversion personality trait moderates the relationship between organizational climate and individual innovativeness at work.

Hypothesis 10. Openness personality trait moderates the relationship between organizational climate and individual innovativeness at work.

Hypothesis 11. Intuition personality type moderates the relationship between organizational climate and individual innovativeness at work.

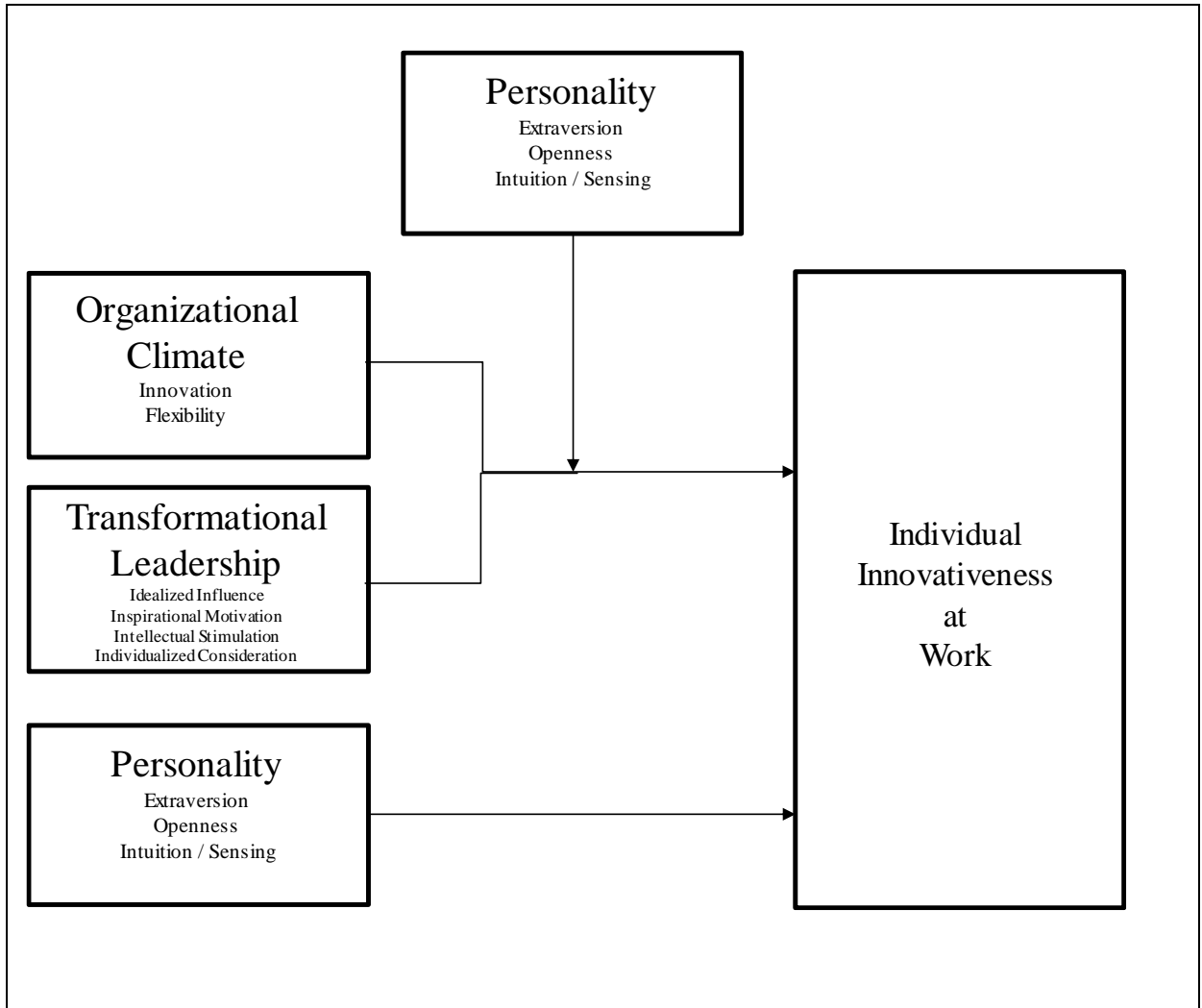


Figure 1. Research Model: Impact of Transformational Leadership, Organizational Climate, and Personality on Individual Innovativeness at Work.

Chapter 2: Literature Review

Introduction

This study investigated the impact of transformational leadership, personality and organizational climate on individual innovativeness at work. This chapter presents a review of the literature regarding these constructs beginning first with a review of the relevant literature concerning the study dependent variable, individual innovativeness at work. Next, relevant literature is reviewed concerning the first study independent variable, transformational leadership. Next, relevant literature is reviewed concerning the second study independent variable, organizational climate. The chapter concludes with a review of the relevant literature concerning the third study independent variable/moderating variable, personality.

Individual Innovativeness at Work

As Porter (1998) noted, innovation can improve product quality and business operations and is critical to the development of the organization's competitive advantages. The organizations that are focused on innovation are always seeking superior approaches to achieve their strategies while utilizing advanced technologies. In order for an organization to realize such innovations, the organization must use its employees creativity in solving problems to maintain a competitive advantage (Woodman, Sawyer & Griffin, 1993). Subsequently, innovations are critical to the organization's long term success and survival (Martin and Terblanche, 2003). The individual plays a key role in the development of innovation and generating high performance in the organization (Janssen, Van De Vliert, and West, 2004). Creativity is considered "the seed of all innovation" (Sarooghi, Libaers, and Burkemper, 2015, p. 715). The individual's creativity or ability to generate ideas precedes

and forms the foundation for innovation (Heye, 2006). Furthermore, the higher the ability of the individual to generate ideas, the more likely they are to generate their own innovation (Woodman et al, 1993).

Research on innovation and its related construct creativity is discussed in the subsequent sections. As will be seen in the following discussion, innovation is a multidisciplinary construct that spans numerous intellectual domains that is being studied in variety of contexts and settings (Robertson, 1967).

Definitions of innovation. The study of innovation is multidisciplinary and covers many settings and intellectual domains, appears to be particularly prominent in the organizational arena. West and Farr (1990) point to a number of definitions of the organizational innovation construct. The definitions of innovation share some common elements. These common elements include the implementation of ideas, the novelty of ideas, and the intentional benefits that is realized from these ideas.

The implementation of the ideas distinguishes innovation from creativity, which will be discussed later. The novelty or “newness” of the idea can be both absolute and incremental in nature. Therefore, innovation is driven by a genuine organizational need and the benefits realized from it are dependent on a focused change effort. By integrating the different elements of the existing definitions, West and Farr (1990) proposed a definition of organizational innovation: “Innovation is the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit role performance, the group, or the wider society” (p. 16). This definition is now widely accepted in innovation research (Anderson, De Dreu, & Nijstad, 2004) and will therefore guide this study.

In the preceding paragraph, both innovation and creativity were mentioned. The two constructs are often used interchangeably in innovation research, which leads to methodological confusion and faulty claims of empirical findings' generalizability (Anderson et al., 2004). Therefore, it is important to explain the difference between these constructs by reviewing the research that has been influential in both domains. Researchers describe creativity as the beginning or the first step in innovation (Amabile, 1997). West and Farr (1990) distinguished innovation from creativity by referring to creativity as the "ideation component of innovation" and to innovation "as encompassing both the proposal and application of the new ideas" (p.10).

Creativity is "the starting point for any innovation" and innovation is "the hard work that follows idea conceptions and usually involves the labor of many people with varied, yet complementary, skills" (Rosenfeld & Servo, 1990, p.252). Researchers have argued that creativity is an individual attribute necessary to create knowledge and ideas. Innovation requires both a new idea and its implementation (Ford, 1996).

Organizational innovation is further a complex construct. This complex nature has led researchers to differentiate between the different types of innovation. Among the variety of innovation typologies, the administrative and technical innovation typology was proposed by Damanpour (1987). Administrative innovation consists of rules, procedures, roles, and structures that are related to the exchange of communication among employees. This innovation typology is related to management practices, not to work activities. Technical innovation on the other hand institutes a change in services or products. It often occurs from use of a novel tool, technique, or system (Damanpour, 1987). These innovations have a direct relationship with the primary work activities (Daft, 1978).

Another innovation typology was proposed by Robertson (1967). He makes a distinction between continuous and discontinuous organizational innovations, proposing the following classification: continuous innovations, dynamically continuous innovations, and discontinuous innovations. Continuous innovations produce the least disruption in the established pattern and involve minor alterations in existing products or services. Dynamically continuous innovations have more disrupting effects than continuous innovations but do not completely alter the existing modalities. Discontinuous innovations involve a production of a new product or service or a complete change in the established pattern of behavior. Similar to Robertson, Dundon (2002) identifies a typology that classifies innovation into three classes. These classes are efficiency innovation, evolutionary innovation, and revolutionary innovation. Efficiency innovation focuses on new ideas for improving what is already in existence. Evolutionary innovation focuses on identifying ideas that represent something new and better. Revolutionary innovation focuses on radically new ideas.

As discussed in this section, several typologies are identified in the research literature in the research of innovation. These typologies aim to describe the nature and the process of the different innovations (Daft, 1978). Subsequently the study of the innovation process identifies the key elements that the researcher should focus on in their investigation. For the purpose of this study, a general and all-encompassing perspective of innovation is utilized to assess the impact of individual and organizational antecedents.

Innovation theory. Although most scholars agree on the importance of innovation to organizations, there is much controversy in the literature of innovation and, to date, no dominant theoretical perspective has emerged to integrate the multiple streams of innovation

research (Greve, 2003). Despite the publication of more than 2,400 studies on the topic of innovation, findings frequently have been either inconclusive or contradictory (Goktan, 2005). Unlike other evolving fields of organizational inquiry, innovation research demonstrates few common theoretical underpinnings to guide its development. For instance, factors found to be important for innovation in one study are found to be considerably less important or even negatively related in other studies (Bigoness & Perreault, 1981).

The literature on organizational innovation research is divided into three domains that correspond to three levels of analysis, individual, group, and organizational (West & Altink, 1996). The review of the research indicates that a strong relationship between creativity and innovation exists especially at the individual level (Saroghi et al., 2015). Within each domain, researchers explore the different antecedents of innovation, which most commonly are examined in isolation and only rarely represent testable theoretical models (West & Farr, 1990). According to West and Farr (1990), individual innovation is a function of two central axioms of human behavior; motivation to explore and manipulate one's environment and psychological safety. Psychological safety is defined as individuals' perceptions about the consequences of risk taking in their work environment.

These two conditions are postulated to weigh heavily on individuals' propensity to engage in innovative behavior that leads to creation and implementation of novel and unique ideas (West & Altink, 1996). In their review of innovation research, Anderson et al. (2004) define a number of individual level factors that facilitate innovation, including: personality traits, motivation, cognitive ability, and job characteristics. Individual innovation involves a process, which begins with problem recognition and idea generation. Innovation may or may not involve creativity, which has novelty of ideas as a pre-requisite. Novelty of ideas is a

problematic notion. Even in R&D organizations, which are charged with the production of novel ideas, a substantial amount of innovation activity is concerned with only incremental changes to what has gone before. As a result, it becomes very difficult to determine what is novel. The innovation literature also suggests that innovations are not characterized by discrete, sequential stages (Schroeder, Van de Ven, Scudder, & Polley, 1989). Innovations, in reality, are characterized by discontinuous activities, surprises, setbacks, continuous learning, and multiple feedback loops. Given the discontinuity inherent in any one innovation and participation in multiple innovations, individuals are likely to be involved in a diverse group of innovation behaviors at any one time.

Group innovation, on the other hand, is likely to transpire in teams that are trained and developed to understand each other's abilities and skills (West & Altink, 1996). Furthermore, group innovation is enhanced when a team has clear objectives and when team members have participated in setting them. Finally, the different dimensions of team climate (e.g., participation, support for innovation) are likely to influence the degree and effectiveness of group innovation.

Organizational level innovation is the function of organizational structure and climate (West & Altink, 1996). Innovation is most likely to occur in organizations with high levels of decentralization, open communication lines, and low levels of bureaucracy, qualities which characterize "organic organizations" (Burns & Stalker, 1961). With similarity to group innovation, organizational innovation is greatly facilitated by organizational climates that support and reward innovation and provide adequate resources for its diffusion (Anderson & West, 1998).

In an attempt to provide a conceptual link between the different levels of analysis, Woodman, Sawyer, and Griffin (1993) developed a theoretical framework for understanding and studying organizational creativity. As mentioned previously, although creativity and innovation constitute related yet independent constructs, their conceptual similarity lends itself to an exploration of theories that consider either construct. This approach is in line with recommendations posited by Kletke, MacKay, Barr, and Jones (2001), who view organizational innovation as a function of institutionalized organizational creativity, which in turn represents institutionalized individual creativity. Institutionalized individual creativity constitutes an integration of employees' novel ways of thinking and ideation activities into mainstream organizational processes and procedures. Institutionalized organizational creativity identifies creativity as one of the core organizational values that influence a company's organizational strategy and market orientation. Woodman et al. (1993), like West and Altink's (1996) discussion of innovation, focused on explaining three forms of creativity: individual, group, and organizational all having different antecedents and outcomes.

Individual creativity was described as a function of employees' personality, motivation, and knowledge and skills. The authors suggest that employees high in intuition, autonomy and self-confidence are more likely to engage in generation and implementation of innovative ideas. In addition, intrinsic motivation and high levels of cognitive ability were pegged as antecedents of innovative behavior. The determinants of group creativity most often takes the form of group processes, such as team decision-making, innovative problem-solving style and exchange of social information. Finally, the conditions for organizational creativity consist of suitable structural characteristics (e.g., decentralization, slack resources)

and work environments characterized by high levels of autonomy, flexibility, and information flow.

A similar theoretical framework is provided by Cummings and Oldham (1997), who outlined the organizational conditions responsible for the growth and maintenance of innovation. With similarity to Woodman et al. (1993), the researchers point to employee personality and problem-solving style as antecedents of creative behavior. Even more so, however, Cummings and Oldham emphasize the importance of the work context in the nurturing of the employee potential and achieving highest levels of creative performance. The authors highlight three characteristics of the work context responsible for increased innovation: job complexity, supportive supervision, and stimulating coworkers.

Another prominent theory of creativity is the componential model proposed by Amabile (1996). According to this theory, creativity is the function of three components: expertise, creative-thinking skills, and motivation. Expertise is comprised of competencies and talents applicable to an individual's immediate work domain. Creative-thinking skills take the form of personality characteristics, cognitive styles, and work habits that enhance creativity. The importance of cognitive style on creative behavior has been further explored by Kirton (2003), who classified individuals as either adaptive or innovative style thinkers. People with adaptive styles are usually conformists who prefer incremental changes in their immediate setting. In contrast, innovative thinkers are rule-breakers that welcome radical and often threatening changes. Finally, motivation refers to task motivation, either intrinsic or extrinsic, with numerous research pointing to a positive relationship between intrinsic motivation and creativity (Ruscio, Whitney, & Amabile, 1998).

Innovation antecedents. As rationalized by the theoretical approaches to studying organizational innovation can be dictated by several factors, ranging from distinct personality traits to complex structural systems. Kimberly and Evanisko (1981) tested a number of individual, organizational, and contextual factors responsible for administrative and technological innovations in a hospital setting. The individual variables in this scenario were the characteristics of organizational leaders, namely their tenure in the organization, educational background, and level of organizational involvement. The organizational factors were structural dimensions such as centralization, specialization, size, functional differentiation (i.e., number of functional subunits), and external integration (i.e., incorporation of external innovation messages into the firm). The contextual characteristics responsible for innovation were industry competition and age of the hospital. Although some of these factors may appear specific to the sample and setting, collectively they represent a network of both internal and external conditions that drives innovation. Furthermore, in their study the authors recognized the importance of work environment in facilitation of innovation, an effect that is worth further exploration.

Utilizing the theoretical framework developed by Woodman et al. (1993), Cummings and Oldham (1997) examined the influence of individual personality traits and problem solving patterns on innovation. The researchers found that employees with creative personalities (e.g., those scoring high on personality attributes such as openness to experience; a trait characteristic of people fond of new experiences and situations) reported engaging in more innovative activities than their counterparts. A similar pattern of results emerged with respect to individuals with high levels of constructive problem solving skills and self-efficacy.

Furthermore, a number of studies found that different forms of leadership can affect innovation. Scott and Bruce (1994) examined the effects of behaviors referenced within the LMX (leader-member exchange) framework on innovation and found a positive relationship between the two constructs. Howell and Avolio (1993) assessed the impact of transformational leadership and the moderating effect of climate for innovation on business unit performance. They demonstrated that the relationship between transformational leadership and business unit performance was moderated by support for innovation. The findings of the study suggest transformational leaders perform better in environments that are described by followers as innovative. Jansen et al. (2009) believed that in dynamic environments, transformational leaders are effective in providing comfort and reducing anxiety amongst followers, while generating more ideas for incremental improvements. They also believed that there is a collective need to deal with external problems, and here, transformational leaders may stimulate radical thinking and innovation. Thus, Jansen et al.'s (2009) study provided a starting point for asking how and why transformational leaders may be better suited to influence innovation behaviors and how it interacts with contextual, or individual, level factors to foster those activities. Similarly, Jung et al. (2003) found a significant correlation between transformational leadership and organizational-level innovation. The relationship was moderated by managerial support for innovation (bearing the label of innovative climate) and employee empowerment.

In light of growing interest in organizational climate research, many researchers have explored the role of work environment on innovation. In an early study linking climate and innovation, Abbey and Dickson (1983) found that an R&D work environment (i.e., an environment characterized by high levels of employee autonomy, flexibility, and slack

resources) had a substantial impact on innovation. Subsequent investigations revealed similar results, with climate for innovation displaying significant positive relationships with innovation (Anderson & West, 1998).

The influence of organizational climate on both creativity and innovative performance has been empirically investigated. For example, Siegel and Kaemmerer (1978) reported that highly innovative school systems were distinguished from traditional school systems by an organizational climate which supported creativity and tolerated differences among members; Abbey and Dickson (1983) and Paolillo and Brown (1978) reported that climate differentiated high-performing units from low-performing R&D units; and in a case study, Ekvall and Tangeberg-Anderson (1986) found climate related to the creative output of a newspaper office.

Innovation in today's dynamic and competitive business environment is critical to the survival of any organization. There is a vast body of literature on the topic of innovation and it is apparent that there are several topics of debate in the body of literature. These topics of debate are reconsidered here as they relate to this research study. The first topic of debate is the consensus on the definition of innovation. The second topic of debate is the difference between creativity and innovation. A third topic of debate is related to the novelty or uniqueness of the ideas generated in the first stage of the innovation process. In this study, the West and Farr (1990) definition of innovation is adopted. Similarly, their interpretation of creativity as the ideation or first stage of innovation, is accepted as the difference between creativity and innovation. Finally, innovation is considered from both the perspectives of novel or incremental ideas.

Transformational Leadership

In the first comprehensive conceptualization of transformational leadership, Burns (1978) made a distinction between transactional leaders, who primarily use exchange relationships, and transformational leaders, who have a vision and are able to inspire others. Subsequent research by Bass on transformational leadership played a significant role in the advancement and evolution of the theory (Bass, 1985). Bass (1985) argues that a leader can be both transformational and transactional at the same time. Bass (1999) suggested that the best leaders use a combination of the transformational and transactional styles of leadership.

Transactional leadership is based on a mutually beneficial exchange relationship between leader and follower, where the leader clearly communicates what is expected of followers and what rewards they will receive for meeting those expectations. Transactional leadership is characterized by three dimensions: contingent reward, management by exception—active, and management by exception—passive. Contingent reward refers to the extent to which leaders have constructive exchanges with their employees. Management by exception refers to the extent to which leaders take corrective steps based on the state of the leader-follower transactions. Howell and Avolio (1993) explain that the primary difference between management by exception—active and management by exception—passive is the timing of leadership intervention. Passive leaders do not take corrective action until after a problem has occurred, while active leaders take a proactive approach by monitoring follower actions, anticipating problematic issues, and taking action before issues cause serious problems.

In contrast, transformational leaders move beyond exchange relationships and inspire individuals to perform beyond expectations, often achieving more than they believed was

possible (Bass, 1999). Transformational leaders motivate in this way by transforming the attitudes, beliefs, values, and needs of their followers, as compared to transactional leaders who primarily rely on a strategy of gaining compliance (Bass, 1985). It is generally accepted that the transformational style of leadership is more effective than a simple reliance on constructive exchanges (transactional style), and such exchanges are considered more effective than corrective transactions or a laissez-faire style of leadership (Bass 1999). Burns (1978) believed that transformational leaders not only recognize followers' needs, but also attempt to engage them on a deeper level by looking to satisfy their higher needs, in terms of Maslow's (1954) hierarchy.

Transformational leaders support the individual development of followers by encouraging them to look for opportunities where they can take on additional responsibility (Howell & Avolio, 1993). They also state that transformational leaders focus attention on developing and achieving longer term goals. Thus, they create an appealing overall vision and motivate followers to pursue goals that support the vision (Conger, Kanungo, & Menon, 2001).

Transformational leaders attempt to elevate the degree to which followers are aware and accepting of important goals. Bass's (1985) theory of transformational leadership involves four sub-dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. The dimensions will be discussed separately to help understand the dimensions and the potential implications to individual innovativeness at work.

Idealized influence. The idealized influence dimension refers to a charismatic leader's ability to develop a vision and to influence others to accept and share that vision

(Jung & Avolio, 2000). The charisma associated with the behaviors of transformational leaders ultimately leads employees to identify with their leaders, which, in turn, helps the leaders rally support for their vision. Transformational leaders' ability to appeal to others' personal beliefs and interests on an emotional level helps them convince others to buy into their vision (Jung & Avolio, 2000). Idealized influence also occurs when leaders earn the respect and trust of their followers by doing the "right thing" (Bass, 1999). They demonstrate conviction and commitment for the shared vision by taking stands and advocating for the group. As a result, the leaders become role models and are admired and respected by their followers (Arnold, Turner, Barling, Kelloway, & McKee, 2007). Although some researchers focus more on the vision aspect of this dimension (Rafferty & Griffin, 2004), as opposed to the broader notion of charisma, most researchers seem to agree that idealized influence incorporates vision and charisma, and the notion of being a role model.

Inspirational motivation. Bass (1985) refers to the third dimension of transformational leadership as inspirational motivation. It describes a leader's ability to articulate a vision in a way that is appealing to followers (Piccolo & Colquitt, 2006). Transformational leaders demonstrate confidence and optimism when communicating a vision, which builds enthusiasm among followers (Yammarino & Dubinsky, 1994). Inspirational motivation refers to a leader's ability to motivate employees around a compelling vision by displaying enthusiasm for the vision and demonstrating optimism about goal attainment. In addition, inspirational leaders establish and convey high expectations that challenge and inspire employees to achieve more than they thought was possible (Bass, 1999).

Intellectual stimulation. Intellectual stimulation refers to a leader's ability to stimulate followers' intellectual capabilities by questioning assumptions, taking calculated risks, and seeking the input of followers. Avolio and Bass (2002) explain that transformational leaders tend to challenge assumptions and approach old problems and situations in new ways, which in turn, can stimulate follower's efforts to be creative and innovative; the leader's personal approach to problems is observed by others and is contagious. In addition, Arnold et al. (2007) point out that transformational leaders directly encourage followers to challenge accepted methods and answer their own questions when carrying out their own work. Furthermore, leaders create a supportive environment, where mistakes are not publicly criticized; thus, employees feel it is safe to try new approaches. Creativity is openly encouraged. Such leaders solicit their follower's opinions, ideas, and creative solutions to problems.

Individualized consideration. Bass (1985) stated that leaders engage in "individualized consideration" when they display a developmental orientation towards employees. Individualized consideration refers to a leader who demonstrates individualized attention towards their followers by identifying and responding to their needs. Based on an individual's needs, a transformational leader distributes special attention regarding growth and achievement (Avolio & Bass, 2002). Transformational leaders acknowledge and demonstrate acceptance of employees' individual differences, in terms of needs and personal goals. Considerate leaders promote two-way communication through active listening (Bass, 1999). The considerate leader develops employees by delegating tasks and then monitoring the situation in an unobtrusive manner, serving in a coaching role if guidance or support is needed. More recent discussions about individualized consideration have concentrated on the

notion of supportive leadership (Avolio & Bass, 1995), as compared to the broader concept of individualized attention. Supportive leaders demonstrate concern for their followers (Rafferty & Griffin, 2004). Regardless of which elements are emphasized, it is clear to most researchers that the overall effect of individualized consideration, as well as the other dimensions of transformational leadership, is the empowerment of individuals (Bass, 1985). All researchers would probably also agree that individualized consideration involves efforts to treat each employee as a valuable employee and show appreciation of their efforts and achievements (Arnold et al., 2007).

Transformational leadership, creativity, and innovation. In today's competitive business environment, leaders are relied on to communicate the organization's vision and goals to their subordinates and to instill in them a sense of belonging, commitment, inspiration, and stimulation. A common goal of most organizations is the development of innovative products and services that creates a competitive advantage for the organization. Simply put, the transformational leader takes on the responsibility of ensuring that the organization, teams, and individuals are motivated to create and innovate. Empirical research has focused on the relationship of leadership as it relates to organizational and team innovation (Eisenbeiss et al., 2008; Keller, 2006; Bass & Riggio, 2006; Sosik et al., 1998). Recently, several studies considered the relationship between the transformational leader and individual innovation which are reviewed in this section.

Wang and Rode (2010) examined the employee identification with the transformational leader, innovative climate, and employee creativity in a sample of 212 employees and their immediate supervisors from 55 organizations. The results from the study indicated that transformational leadership was not significantly related with employee

creativity. There was also no two-way interaction between transformational leadership and identification with leader or the two-way interaction between transformational leadership and innovative climate. The three-way interaction of transformational leadership, employee identification with leader, and innovative climate were associated with employee creativity.

Cheung and Wong (2010) examined the moderating role played by leaders' task and relations support in the relationship between transformational leadership and followers' level of creativity. They studied a sample of 182 supervisor-subordinate dyads that were randomly selected from a restaurant, hotel, retail store, bank, and travel agent from Hong Kong. They found that there is positive relationship between transformational leadership and followers' creativity. This relationship was stronger when there is a high degree of leaders' task and relations support.

Eisenbeiss and Boerner (2011) analyzed the employees' dependency on the leader as a relevant negative side effect in the relationship between transformational leadership and followers' creativity and developed an integrative framework on parallel positive and negative effects of transformational leadership. The results from a study of 416 R&D employees showed that transformational leadership promotes followers' creativity but at the same time increases followers' dependency which in turn reduces their creativity. This negative indirect effect attenuates the positive influence of transformational leadership on followers' creativity.

Henker, Sonnentag, and Unger (2015) investigated in a longitudinal study of 279 employees, the mediating effect of promotion focus on the relationship between transformational leadership and employee creativity. They also investigated if the creative process engagement mediates the relationship between promotion focus and employee

creativity. The results of the study indicated that promotion focus mediated the relationship between transformational leadership and employee creativity. The study results also indicated that the creative process engagement partially mediated the relationship between promotion focus and employee creativity.

Mittal and Dhar (2015) evaluated the effect of transformational leadership on employee creativity in small, and medium-sized IT companies. They also evaluated if creative self-efficacy (CSE) is a mediator and, knowledge sharing is a moderator through which a transformational leader influences the creativity of the employees. The data in the study collected from 348 manager-employee dyads. The results of the study revealed that transformational leadership is positively correlated with employee creativity. Also, the results indicated that CSE mediates the relation between transformational leadership and employee creativity. In addition, knowledge sharing acts as a moderator for CSE and employee creativity.

Li, Mitchell, and Boyle (2016) investigated the relationship between transformational leadership on both group and individual innovation. Data collected from 195 members of 56 teams. The results of the study predicted a contrasting effect in which group-focused transformational leader behavior has a positive impact on team innovation but a negative impact on individual innovation.

Tung (2016) in a study of 427 employees from 50 electronics companies in China, investigated the impact of transformational, ambidextrous, and transactional leadership and their relationship on employee creativity. The study also investigated if employee psychological empowerment and promotion focus are mediate the effect between

transformational leadership, ambidextrous leadership, transactional leadership and employee creativity. The research findings indicate that transformational and ambidextrous leadership styles unlike transactional leadership have a significant effect on employee creativity. In addition, the study found that employee psychological empowerment and promotion focus has a significant mediating effect for transformational leadership, ambidextrous leadership, transactional leadership and employee creativity.

Cekmecelioglu and Ozbag (2016) analyzed the relationship between transformational leadership and individual creativity in a sample of 275 respondents. Results indicated a direct and positive link between intellectual stimulation and individual creativity. The results also indicate a positive link among inspirational motivation, idealized influence and individual creativity.

Khalili (2016) in a study of 1,172 employees working in Iran assessed the association between transformational leadership and employees' creativity and innovation. The study also explored the moderating role of employees' perceptions of a supportive climate for innovation. The results of this study revealed positive and significant relationships between transformational leadership and employees' creativity and innovation. Also, the findings indicated that the employees' perceptions of a supportive climate for innovation moderated the transformational leadership and employees' creativity and transformational leadership and employees' innovation relationships.

The aforementioned studies indicate that transformational leadership in general has a positive effect on the individual employee creativity and innovation. Some of the studies have demonstrated contradictory (Eisenbeiss, 2011; Li, 2016) results. This contradiction was attributed to the potential dependence of the individual employee on the transformational

leader, which results in a negative effect on the employee's creativity. This contradiction can also be related to contextual factors that warrant further investigation in future research.

Organizational Climate

The organizational climate concept has its roots in Lewin's work on experimentally created social climates more than half a century ago (Dennison, 1996). Lewin's research indicated that employees were "equally productive under democratic and authoritarian leadership styles, but that they worked much more harmoniously and were more satisfied under a democratic leader" (Schneider, Brief, & Guzzo, 1996, p. 9). The concept of climate was further explored in two books published in 1968 by Tagiuri and Litwin, and Litwin and Stringer.

Tagiuri and Litwin (1968) in their book developed a definition for the organizational climate concept and explored its nature. They also presented a variety of approaches to studying organizational climate. They defined organizational climate as "a relatively enduring quality of the internal environment of an organization that (a) is experienced by its members, (b) influences their behavior, and (c) can be described in terms of the values of a particular set of characteristics (or attributes) of the organization" (p. 27).

Litwin and Stringer (1968), in their study of organizational climate and motivation, examined the consequences of organizational climate for individual motivation. They defined organizational climate as "a set of measurable properties of the work environment, perceived directly, or indirectly by the people who live and work in the environment and assume to influence their motivation and behavior" (p. 1). They believed that organizational climate provided a way of describing the effects of organizations and organizational life on the motivation of individuals.

There are several studies on organizational climates given its importance in analyzing and understanding organizational behavior and the attitudes of individuals in organizations (Gilmer, 1961; Hellriegel & Slocum, 1974; Schneider, 1975, 1990, 2000; Joyce & Slocum, 1979; James, 1982). Gilmer (1961) stated that organizations differ not only in physical structure but also in the attitudes and behavior they provoke in people. The differences in the attitudes of individuals are related to psychological structures". Some people like where they work and sometimes for the same environmental reasons that lead others to express dislike. Individual personalities and job requirements interact to produce a climate that can be significant to both the individual and to the organization" (p. 57). He defines organizational climate as those characteristics that distinguish the organization from other organizations and that influence the behavior of individuals in the organization.

Hellriegel and Slocum (1974) reviewed the measures, research, and contingencies of organizational climate. Based on their review, they presented a definition of climate which represents an adaptation of concepts developed by other researchers. According to the authors, organizational climate refers to "a set of attributes which can be perceived about a particular organization and/or its subsystems, and that may be induced from the way that organization and/or its subsystems deal with their members and environment" (p. 256).

Similarly, Schneider (1975) described his concept of climate "falls in the domain of cognitive theory wherein man is conceptualized as a thinking creature who organizes his world meaningfully and behaves on the basis of the order he perceives and creates" (p. 476). He proposed the following definition of organizational climate: "Climate perceptions are psychologically meaningful molar descriptions that people can agree characterize a system's practices and procedures. By its practices and procedures a system may create many

climates. People perceive climates because the molar perceptions function as frames of reference for the attainment of some congruity between behavior and system's practices and procedures. However, if the climate is one which rewards and supports the display of individual differences, people in the same system will not behave similarly. Further, because satisfaction is a personal evaluation of a system's practices and procedures, people in the system will tend to agree less on their satisfaction than on their descriptions of the system's climate” (pp. 474-475).

Joyce and Slocum (1979) stated that the climates individuals practice in organizations are real and influence behavior of individuals. For them, there are various ways of defining climates:

1. simply pointing to the phenomena we wish to define,
2. describing the essential features,
3. showing climate's relation to other individual and organizational variables.

Climate is a summary perception of the organizational environment. These perceptions are descriptive (non-evaluative) and multidimensional. One of the issues that has been discussed in organizational climate research is the unit of analysis. Organizational climate is reached by aggregating individual scores to the appropriate level of analysis (Glick, 1985). At the individual level, which is referred to as “psychological climate”, these perceptions represent how work environments are cognitively evaluated and represented in terms of their meaning to and significance for individual employees in organizations (James & Jones, 1974). The reasoning behind aggregating individual data to organizational level (or department level) is the assumption that organizational elements can be characterized by a climate and that climate can be significantly different between units and can have significant

conformities within a unit (James, 1982). The perceptual agreement between individuals reflects a shared psychological meaning, which allows the individual perceptions to be aggregated and treated as a higher-level construct. Most of the climate research is now focused on aggregate measures such as organizational climate rather than on psychological climate (Schneider, Smith, & Goldstein, 2000).

Another issue in climate research is the use of a general measure of organizational climate. Schneider (1975, 1990, and 2000) avoids using the general multidimensional measure of organizational climate and argues for using a domain-specific measure that is tied to something of interest. Schneider suggests that the dimensions of organizational climate will differ depending on the purpose of the investigation and the research interest. In addition, Schneider suggests that general measures of organizational climate will contain dimensions that are not relevant for each specific study. An example of this approach is the climate for innovation measure (Anderson & West, 1998). The approach that is selected would depend on the interest of the investigation. A global approach provides an overall snapshot of the organization while the domain-specific measure provides specific climate information that is sought by the researcher (Ashkanasy, Wilderom, & Peterson, 2000).

The research utilizing a general organizational climate measures has investigated the impact on organizational outcomes. Examples of these studies include individual job performance (Brown & Leigh, 1996) and organizational performance (Patterson et al., 2004). As a general construct, organizational climate has been related to several important work outcomes. Brown and Leigh (1996) concluded that perceptions of a motivating and involving organizational climate were positively related to supervisory ratings of performance. Day and

Bedeian (1991) showed that employees performed better (as rated by their supervisors) in organizational climates they perceived as structured and supportive of risk.

Domain-specific climate has also been linked to organizational outcomes. Using the service climate model, Schneider and his colleagues demonstrated that service climate is related to customer perceptions of service quality (Schneider, 1980). Similarly, the Research in the area of innovation suggests that group climate factors influence levels of innovative behavior in management teams (West & Anderson, 1996).

Organizational Climate, Creativity, and Innovation

The influence of global organizational climate on both creativity and innovative performance has been empirically investigated. For example, Siegel and Kaemmerer (1978) reported that highly innovative school systems were distinguished from traditional school systems by an organizational climate that supported creativity and tolerated differences among members; Abbey and Dickson (1983) and Paolillo and Brown (1978) reported that climate differentiated high-performing units from low-performing R&D units. Tesluk, Farr, and Klein (1997) reviewed the literature on the influences of organizational climate on individual creativity. They posit that the structures, practices, and policies guide and shape individual creativity by creating a climate that communicates both the organization's goals regarding creativity and the means to achieve those goals. The authors state that climate is ultimately a manifestation of culture, the long-term success of efforts to develop organizational conditions that support creativity and innovation requires the use of strategies that influence the organizational climate.

More recently, research studies have utilized domain-specific climate measures to assess the impact on innovation in the organization. For example, Montes, Moreno, and

Fernandez (2004) investigated the relationship between organizational climate of support, cohesion, and intrinsic recognition on perceptions of support for innovation. This type of labor contracts the employees have was investigated to see if it moderated the relationship. The study reflected 312 responses from employees in a Spanish financial company. The results of the study indicated that an organizational climate reflects support, cohesion, and intrinsic recognitions favors perceptions of support for innovation. The study results also indicate that the type of labor contract influences the employees' perception of support for innovation in the organization. Intrinsic recognition was the only factor that impacts the temporary employees' perception of support for innovation and creates motivation for them to invest time and effort in innovation.

King, Chermont, West, Dawson, and Hebl (2007) examined the climate for innovation as a method by which negative organizational consequences of demanding work may be reduced. Utilizing the job demands–resource model (Karasek, 1979) and a sample of 22,696 respondents from 131 healthcare organizations, the study predicted that an organizational climate for innovation reduced the negative effects of work demands on organizational performance.

Wang and Rode (2010) examined the relationships among transformational leadership, employee identification with leader, innovative climate, and employee creativity. The sample utilized in this study was 212 employees and their immediate supervisors from 55 organizations. The results of the study indicated that transformational leadership was not significantly related with employee creativity, nor was the two-way interaction of transformational leadership and identification with leader. Similarly, employee creativity was not significantly related to the two-way interaction of transformational leadership and

innovative climate. Three-way interaction of transformational leadership, employee identification with leader, and innovative climate was associated with employee creativity.

Lin and Liu (2012) utilized survey data of 398 employees from different companies of Taiwan to explore the effect of organizational creativity climate on perceived innovation. They also examined the mediating effect of employees' work motivation. The statistical analysis of the data indicated that 27% variance of perceived innovation could potentially be explained by creativity climate. Also, work motivation mediated the relationship between the creativity climate and perceived innovation.

Wojtczuk-Turek and Turek (2015) researched the relationship between perceived social-organizational climate (PSOC), organizational citizenship behaviors (OCB) of other employees and innovative workplace behaviors (IWB) initiated and performed by employees. The mediating role of person-organization fit (P-O Fit) was tested within the relationship of PSOC, OCB, and IWB. The study was conducted on a sample of 246 employees from 76 companies operating in Poland. The research confirmed a significant statistical relationship between IWB and the PSOC, OCB and P-O Fit.

Feife and Zhang (2015) examined the influence of job stressors and organizational innovation climate on employees' innovative behavior. Data were collected from 282 employees in four cities in China. Results indicated that the nature of stressors matters in predicting employees' idea generation. Specifically, stressors that employees tend to appraise as challenges were positively related to idea generation, whereas stressors that employees tend to appraise as hindrances were negatively related to idea generation. As high hindrance stressors increase, the beneficial effect of organizational innovation climate on innovative behavior became weaker for idea implementation and totally disappeared for idea generation.

Gundry, Munoz-Fernandez, Ofstein, and Ortega-Egea (2016) investigated the influence of components of organizational climate on innovation in organizations. Specific aspects of climate are measured utilizing a sample of 249 managers in organizations across industries in Spain and the United States, including respondents' perceptions of collaborative communication, trust, and commitment along with the organization's orientation to innovation. Supported by an orientation to innovation, these variables are associated with innovation outcomes in the organization. Orientation to innovation was found to partially mediate the relationship between organizational commitment and both administrative and technical innovation.

Kang, Matusic, Kim, and Phillips (2016) examined the mechanisms that link organizational innovative climate and employee innovative behavior, and the moderating effects of organizational proactive and risk-taking climates on these relationships. Utilizing responses from 105 managers and 39 CEOs, the authors found that innovative climate was positively related to employee innovative behavior indirectly through employee passion for inventing. In addition, the relationship between innovative climate and passion for inventing became stronger as proactive climate increased, and the relationship between passion for inventing and employee innovative behavior became stronger as risk-taking climate increased.

In summary, the research described in the aforementioned studies utilized several domain-specific organizational climate measures to assess the direct or mediating relationship with creativity and innovation. The domain specific organizational climate measures include organizational support climate, social organizational climate, climate for creativity, and innovation climate. The results from the research indicate that in general, the

organizational climate measures had a positive relationship on the perceptions of support for innovation and innovative work behavior by employees.

Personality

The American Psychological Association defines personality as individual differences in characteristic patterns of thinking, feeling, and behaving. Two of the most popular methods utilized in the assessment of personality are personality traits and personality types. The objective of the personality traits concept is to “classify, describe, and summarize a person's observable behaviors and internal experiences” (John, Hampson, and Goldberg, 1991, p. 348). The two primary personality traits models are Eysenck’s, Gigantic 3 and Costa and McCrae’s, Big 5. Results from the research on Eysenck’s Gigantic 3 factors and creativity appear to be mixed and inconclusive (Batey and Furnham, 2006). The five factor model (FFM), or as it is commonly referred to as the “Big Five” personality traits, have been accepted as a comprehensive taxonomy of personality traits (McCrae and Costa, 1991). The Big Five personality traits were first discovered by Raymond Cattell in 1945 who developed a set of descriptive terms of personality utilizing factor analysis (Goldberg, 1990). On the other hand, the personality type’s concept evaluates four personality preferences that everybody utilizes (Furnham & Springfield, 1993). The personality types were first identified by Carl Jung (1921) and were popularized by the Myers-Briggs Type Indicator (MBTI), which is a widely accepted personality measure (Clawson, Kotter, Faux, & McArthur, 1992). Both the personality traits and personality type’s concepts are utilized in the research of individual creativity and innovation.

Big five personality traits. The development of the Big Five personality traits started with the work of Allport and Odbert (1936), who listed 18,000 such terms from the second

edition of Webster's Unabridged Dictionary of the English Language and classified 4,500 of these terms as stable traits.

The factor analysis studies by Cattell (1945) reduced the number of factors to about a dozen factors however orthogonal rotation methods have only produced five factors (Goldberg, 1990). The Big Five model "is the prevailing conceptualization of basic personality dimensions" (Strus, Ciecuch, & Rowinski, 2014). The five Big Five traits are extraversion, agreeableness, conscientiousness, neuroticism, and openness. Extraversion refers to sociable, fun-loving, affectionate, friendly, and talkative. Agreeableness refers to trust and Machiavellianism. Conscientiousness may mean either governed by conscience or careful and thorough. Neuroticism refers to worrying, insecure, self-conscious, and temperamental. Openness is best characterized by original imaginative, broad interests, and daring (McCrae & Costa, 1987).

There has been extensive debate over what the personality traits actually assess. For example, "Saucier and Goldberg (1996) state that they emphasize the phenotypical aspects of the Big Five traits, suggesting a corresponding emphasis on observable trait expressions (behaviors), whereas McCrae and Costa (1997a, 1999) emphasize the genotypical bases of the Big Five, suggesting a greater emphasis on covert trait expressions such as cognitions and affects" (Zillig, Hemenover, & Dienstbier, 2002, p. 848). Thus, the phenotypical school of thought emphasizes the observable traits as determined by the genetic makeup and environmental impact while the genotypical school of thought emphasizes the genetic makeup of an organism or group of organisms with reference to a single trait or set of traits. The study by Zillig et al. assessed four Big Five models. The models assessed are the NEO model, which refers to neuroticism, extraversion, and openness (Costa & McCrae, 1985,

1992b); Adjective Trait Descriptors (ATD), Goldberg, 1992; Revised Interpersonal Adjective Scales (IASR-B5), Trapnell & Wiggins, 1990; and the Big Five Inventory (BFI), John & Srivastava, 1999. The models were assessed for the affective, behavioral, and cognitive processes in each of the inventories. The authors of the study hypothesized and confirmed through ANOVA that all of the abovementioned Big Five constructs converge. The “Big Five has proved extremely useful in providing a common language for researchers and organizing personality research” (DeYoung, Quilty, & Peterson, 2007, p. 880).

Personality types. Another method for assessing personality is Jung’s typology model. The research to understand people’s personality preferences and strengths goes back to 1921 when the psychologist Carl Gustav Jung published his typology theory about humankind psychological types (Beebe, 2012). Basically, “Jung’s typology is simple, whereas four basic functions of consciousness (feeling thinking, and intuition sensing)” form polarities to each other (Razenberg, 2003, p.1). The polarity concept related to thinking-feeling dimensions is described by Sak (2004) as follows, “feeling types value harmony and human relationships in their judgment” making decisions considering society values, while thinking types “emphasize logic and uses impersonal feeling in decision making” (p.71). The other two basic functions, intuition-sensing, are also described: “sensing types usually rely most on the five senses while they perceive information, which makes them factual and observant”, contrary, “intuitive types look at things holistically and critically to get a sense of the whole over parts: hence, they are usually imaginative, speculative, and analytical, and they can be more creative” (p.71). From the organization and management standpoint, the four mental functions are described as two bipolar scales whereas “one scale relates to perception and information gathering (sensing and intuition); the other scale pertains to the

subsequent judging process of coming to conclusion (thinking and feeling)” (Jessup, 2002, p. 505).

Since Jung’s published theory, the personality studies matured as ground theory. After a series of developments, Isabel Briggs Myers’ mastered and created the typological personality table approach well-known as Myers-Briggs Type Indicator (MBTI) using 16 combinations between introversion, extroversion, sensing, intuition, judgment, perception, thinking and feeling, which define people’s preferences in a normal behavior setting (Schott, 1992). The methodology developed by Isabel Briggs Myer’s has been used to categorize people’s tendencies, guiding them to a better understanding of their natural preferences. As such, the MBTI has become one of the most popular methods used worldwide to assess personal tendencies, guide professional carriers, marriage, conflicts and social relation tendencies.

Nadel (2008), summarized the MBTI preferences of the U.S. population as follows:

1. Extroverted 75%
2. Sensing 75%
3. Thinking 60% for male, Feeling 60% for female
4. Judging 60%

(p. 6)

Studies have proven that MBTI is a reliable and valid approach to assess people’s tendencies and relationship personalities. In particular, Gardner (1996) suggested that MBTI instrument was sufficiently reliable and valid to assess relationship among managerial personalities. Per Hamm (1996), “research indicates that each person has certain preferences that seem to be both instinctive and more appealing” reinforcing Jung’ theory that “while

people use different styles, everyone tends to become more comfortable and more skilled in one area” (p. 3).

Big five personality traits and personality types. The Big Five personality traits and personality types in the form of MBTI in research and industry. John and Robins (1994) point out that the Big Five emphasizes trait differences rather than the individual and that the pattern and organization of traits is neglected. It is therefore beneficial for the researcher to understand the correlation between the two measures and ultimately how that correlation is related to creativity and innovation by the individual at work.

Several studies investigated the correlation between the Big Five personality traits and types. Furnham (1995) studied the relationship between the Big Five and MBTI. The study sample was comprised of 160 adults who completed both instruments. The results of the study indicated that agreeableness score was correlated only with the thinking-feeling dimension. Also, the conscientiousness score was correlated with both thinking-feeling and judging-perceiving dimension. The extraversion score was strongly correlated with the extraversion-introversion dimensions, while the neuroticism was not related to any MBTI subscale score. The openness dimension was correlated with all four especially sensing-intuitive.

MacDonald, Anderson, Tsagarakis, and Holland (1995) collected data from 209 undergraduate students in psychology utilizing the MBTI and Big Five scales. Correlations between scores on the scales of the MBTI and neuroticism, extraversion, and openness were found to be low to moderate.

Tobacyk, Livingston, and Robbins (2008) used the MBTI and the Big Five personality scales in a study of 57 Polish university students. The authors found correlation between MBTI Extraversion-Introversion with Big Five Extraversion, MBTI Sensing-Intuition and MBTI Judging-Perceiving with Big Five Openness, and MBTI Judging-Perceiving with Big Five Conscientiousness.

John and Robins (1994) state that “We are confident that, ultimately, trait research will be infused with dynamic and developmental ideas and move us closer to an integrative model of personality” (p. 141). Therefore, both the Big Five traits and personality types can enrich and complement the characterization of an individual’s personality. Based on the results of the above-mentioned studies, the Big Five openness scale was generally correlated with the MBTI sensing-intuition. Also the Big Five extraversion scale is correlated with the MBTI extraversion-introversion scale. Based on these limited research findings, a similar pattern of convergent relationships between the MBTI and Big Five scales exists.

Big five personality traits, creativity, and individual innovativeness. The Big Five model has been extensively used in creativity and innovation research “because it is, unquestionably, the most ubiquitous and widely accepted trait framework in the history of personality psychology”. Feist (1998) conducted a meta-analysis to investigate personality in scientific creativity. He found that in general, creative people are more open to new experiences, less conventional and less conscientious, more self-confident, self-accepting, driven, ambitious, dominant, hostile, and impulsive. Similarly, Reilly, Lynn, and Aronson (2002) reviewed the literature on development team performance and found that higher levels of openness appear to be related to better performance when the task involves creativity. Research on the other factors, emotional stability and extraversion, were not as conclusive.

Several studies investigated the relationship between creativity as measured by Divergent Thinking (DT) and the Big Five personality traits. DT is considered to be a creative act in contrast with “convergent thinking” as described by Guilford (1950). McCrae (1987) found that DT was consistently associated with self-ratings of openness to experience, but not with the other Big Five traits.

King, Walker, and Broyles (1996) assessed the relationship between creative ability, creative accomplishments, and the Big Five personality traits. They administered DT tests to 75 participants and asked them to list their creative accomplishments over the previous 2 years, and had them take the Big Five personality traits scale. The results of the study indicated that verbal creativity was significantly correlated with extraversion and openness. There were significant correlations between creative accomplishments, openness, and negative agreeableness. A regression with all five personality factors, using verbal DT scores and then creative accomplishments as the independent variables, revealed a significant prediction for openness alone.

Martindale and Dailey (1996) were not able to find correlation between openness scores and creativity as measured by DT tests or fantasy story writing. They did find correlations between DT performance and extraversion. Furnham and Bachtiar (2008) in a study of 176 individuals from a convenience sample found that Extraversion was significantly related to several measures of creativity. Multiple regression indicated that up to 47% of the variance in DT scores can be accounted for by the Big Five personality traits. Personality correlates to creativity vary as a function of the creativity measure.

Furnham, Crump, and Swami (2009) found in a study of 585 middle-to-senior managers of various multinational communication organizations in Britain that divergent

thinking DT significantly and positively correlated with the Big Five personality factors of openness to experience and extraversion. In addition a regression showed that DT was significantly predicted by openness, extraversion, and agreeableness.

Several other creativity scales were used to assess the correlation of the Big Five personality traits. Furnham (1999) administered the Barron-Welsh (Welsh & Barron, 1963) Art Scale and the neuroticism, extraversion, and openness of the Big Five. Participants provided three self-ratings of creativity (an estimate of the Barron-Welsh score, a rating of how creative they thought they were, and a rating of the frequency of creative hobbies). openness was a significant predictor of the participants' estimate of their Barron-Welsh score, the self-rating of how creative they thought they were, and the rating of creative hobbies.

George and Zhou (2001) investigated the roles of openness, conscientiousness and work environment on creative behavior. They demonstrated that the application of creative potential depends on several factors. They found that rated creative behavior was highest when individuals with high openness were set tasks that had unclear demands or unclear means of achieving ends and were given positive feedback. George and Zhou's analyses of the role of conscientiousness also yielded clear findings. They found that if individuals' supervisors monitored their work closely and their coworkers were unsupportive of creative endeavor, then high conscientiousness inhibited creative behavior.

Similarly, Kwang and Rodrigues (2002) found in a study of 164 teachers that adaptors were significantly more conscientious than innovators, while innovators were significantly more extraverted and open to experience than adaptors. The creative style (adaptor vs. innovator) was measured using the Kirton Adaption Innovation Inventory.

Williams (2004) studied the responses from a sample of 208 employees in nonacademic functions at a university in south-western USA. He found that supervisor's openness to experience is positively associated with employee's creative performance.

Prabhu, Sutton, and Saucer (2008) hypothesized a conceptual model and tested the mediating and moderating role of intrinsic and extrinsic motivation respectively in the relationship between openness to experience and creativity. This study, conducted in a university setting, found support for the potential mediating role of intrinsic motivation between creativity and openness to experience.

Sung and Choi (2009) found in a longitudinal study of 304 students at a North American business school that extraversion and openness to experience had a positive effect on creative performance. The creative performance scale was developed by the authors. The study also showed that the relationship between openness to experience and creative performance was stronger when there was an extrinsic motivator.

Furnham, Hughes, and Marshall (2012) studied the responses of 207 participants that completed the Biographical Inventory of Creative Behaviors (BICB) and personality measures assessing the Big Five personality traits (neuroticism, extraversion, openness-to-experience, agreeableness, and conscientiousness). Results revealed that extraversion and openness were positively correlated with creativity.

Hughes, Furnham, and Batey (2012) conducted a study on 220 participants to assess the structure and personality predictors of self-rated creativity. The participants completed a multidimensional measure of self-estimated creativity, one on self-rated personal characteristics and a Big Five personality measure. Factor analysis showed that the answers loaded on four factors which were identified as creativity, intelligence, angry-impulsive and

emotions. A structural equation model containing all four self-estimated factors indicated that openness predicted all factors and specifically self-estimated creativity. Openness was also the strongest predictor of self-estimated cognitive ability.

Jauk, Benedek, and Neubauer (2013) tested the effects of creative potential, intelligence, and openness to experience on everyday creative activities and actual creative achievement. Creative activities and achievement were measured using the Inventory of Creative Activities and Achievements (ICAA). They utilized a sample of 297 adults and conducted multiple regression analyses by means of structural equation modelling. The results of the study indicated that openness to experiences and two independent indicators of creative potential, ideational originality and ideational fluency, predict everyday creative activities. Creative activities, in turn, predicted actual creative achievement.

Madrid, Patterson, Birdi, Leiva, and Kausel (2014) developed and evaluated a multilevel model of individual innovation in which weekly moods represent a core construct between context, personality, and innovative work behavior. They collected information from 92 individuals of diverse occupations employed by 73 companies. Innovative work behavior is proposed as the outcome from weekly positive and high-activated mood. The results of the study indicated that openness to experience interacts with support for innovation leading to high-activated positive mood. Openness to experience also interacts with the high-activated positive mood feelings leading to greater levels of innovative work behavior.

Conor and Silvia (2015) studied how certain emotions may help or hinder creative pursuits and who behaves more creatively on a daily basis a 658 sample. Creativity was measured with a single item based on the definition of creativity. People higher in openness

reported the most creativity, which was more strongly yoked to their emotions: They were more creative on emotionally positive days and less creative on emotionally negative days.

Kandler et al. (2016) studied the relationship between perceived creativity, reflecting typical creative thinking and personality traits. Multiple-rater and multimethod data (self and peer reports, observer ratings, and test scores) from two German studies. Perceived creativity showed links to openness to experience and extraversion.

In summary, the abovementioned studies reflect the extensive research of personality factors correlations with scales that predict creativity. Several creativity scales such as Divergent Thinking, Barron-Welsh Art Scale, Kirton Adaption Innovation Inventory, or other scales measuring creative potential and innovative work behavior were utilized. There appears to be an obvious convergence in the research literature that openness and extraversion traits from the Big Five personality scale are positively correlated with creativity. The other personality traits of agreeableness, conscientiousness, and neuroticism show a less consistent correlation or no correlation at all to creativity (Hughes et. al, 2012).

Personality types, creativity, and individual innovativeness research. The majority of research of personality types utilizes MBTI, which popularized the use of personality types in organizations. For example, Furnham and Stringfield (1993) studied a sample of Chinese and European middle and senior managers to determine if the personality type using MBTI would be related to the actual ratings of their performance. The MBTI ratings were related to reliable, behavioral ratings of the manager's actual managerial practices (innovation, direction, support, decision making, planning, commitment, and participation) and departmental organizational climate (recognition, participation, unit-relations, standard maintenance, clarity, inter-unit communications, and inter-unit relations).

Whereas extroversion and introversion seemed important correlates of management practices and climate for the Chinese group, it was the thinking and feeling dimension for the European group. On the other hand, introversion had a strong negative effect on the correlate of climate in the Chinese and European groups.

Carland, Carland, and Higgs (1993) administered the MBTI and the Carland Entrepreneurship Index to a 147 management university students. The results of the study indicated that students that possess the intuitive and thinking personality types performed differently than the other personality type on the Entrepreneurship Index. The authors suggest that the study findings support the link between innovation and the intuitive and thinking personality types. They indicate that a combination of these personality types is indicative of entrepreneurial personalities. The authors, however, warn that this entrepreneurial inclination is not a substitute for education or the understanding of the weakness of the high profile for entrepreneurship. These weaknesses include the difficulty these individuals face in relating to others, staying focused on the task, and tendency to be arrogant. To address the education needs of the intuitive and thinking personality types, the authors suggest educational programs that accentuate their positives of their personalities and mitigate the negative aspects of their personalities.

Jacobson (1993) assessed the relationship between scores on the Kirton Adaption-Innovation Inventory and the MBTI was examined among 54 United States service-sector managers and compared to results found among 109 British management students with work experience. Managers in the service sector were more innovative than the population in general. Statistically significant positive correlations were found between Kirton's innovation style and the MBTI Intuitive and perceptive dimensions, thereby supporting the British

findings. A statistically significant positive correlation was also found between KAI and the MBTI extraversion and feeling dimensions, in contrast to the British findings.

Garfield, Taylor, Dennis, and Satzinger (2001) in their study of 219 undergraduate students assessed how differences in groupware-based creativity techniques affected the type of ideas generated by each individual. They found that the use of intuitive groupware-based creativity techniques increased the paradigm-modifying ideas compared with the use of analytical groupware-based creativity techniques.

Isaksen, Lauer, and Wilson (2003) investigated the relationship psychological type using the MBTI and cognitive style as measured by the Kirton Adaption–Innovation Inventory (KAI). The study sample was composed of 1,483 individuals from both education and business settings. The results of correlations between the MBTI and KAI measures showed a statistically significant relationship. Stronger relationships were found between the MBTI function scales of sensing intuitive and judging perceiving, which respectfully accounted for 30% and 19% of the variance with the KAI total score. The authors state that “Intuitives are more likely to provide an abundance of possibilities as well as prefer to be unconstrained by rules and authority. Those with a stronger preference for perceiving (rather than judging) are also more likely to score with an innovative preference” (p. 352).

Langan-Fox and Shirely (2003) studied responses on two different types of intuition measures to determine intuition from interests, personality, and experiences. Fifty-three first year psychology students completed the MBTI and the Accumulated Clues Task (ACT) to estimate their intuitive traits and ability. Participants also completed an intuitive interest’s measure and an intuitive experiences questionnaire. The two intuition measures were not related, suggesting that they may measure different dimensions of intuition or even different

constructs. In general, intuitive interests, personality, and experiences predicted scores on MBTI intuition but not ACT intuition. Scores on the MBTI Intuition were correlated with personality (openness and extraversion) and were predicted by interests in artistic, unconventional, adventure seeking, innovation, exploration, and discovery; scores on ACT intuition were predicted by an interest in adventure-seeking activities but were not predicted by personality, cognitive interest components, or the majority of behavioral interest components. High MBTI intuitive individuals reported that they had had premonitions about the future that had come true, and that they used intuition frequently when there was uncertainty and the facts were limited.

Cheng, Kim, and Hull (2010) studied the differences in creative styles and personality types between American and Taiwanese students and examined the relationships among various personality types and creative potential. Creative potential was measured by the Torrance Test of Creative Thinking (TTCT), and personality types were measured by the Keirsey Temperament Sorter II. A sample of 93 American and 76 Taiwanese college students specializing in teacher education participated in this study. The results indicated that Americans are more adaptively creative than Taiwanese, whereas there is no difference between the two groups in Innovative creative style. The results also indicated that there are significant relationships between adaptive creative style and intuition, between creative strengths and intuition, and between creative strengths and perceiving. It was concluded that there is a cultural difference in creative potential and personality types and that there are relationships between particular subscales of creativity and personality types.

Eubanks, Murphy, and Mumford (2010) hypothesized that intuition may be a critical component of creative thought. To test this hypothesis, a measure of individual differences in

intuition was developed. After completing this measure, 320 undergraduates were asked to work on a domain-relevant creative problem-solving task under conditions where positive and neutral affect were induced and they were exposed to 1 of 3 different types of training. It was found that intuitive people produced more creative problem solutions, but that positive affect and training offset the advantage intuitive people showed in creative problem-solving.

MacLellan (2011) explored personality type differences among high school band, string orchestra, and choir students according to ensemble membership. The study involved 355 high school students who had participated in their school's band, orchestra, or choir for one year or more. The author administered the MBTI to determine the personality type for each participant. Personality types were compared among the three ensembles as well as with published MBTI high school norms. Results indicated that personality type differences existed among the ensembles and that there were significant differences in the comparisons with MBTI norms. A significant personality type difference was found between orchestra and choir students along the extraversion-introversion dichotomy, indicating that choir students were more likely to be extraverted when compared to orchestra students. There were no significant differences among the ensembles on the sensing-intuition, thinking-feeling, or judging-perceiving scales. Compared to high school norms, the students in each ensemble were significantly more likely to be intuitive and feeling. The band students were significantly more likely to be perceiving, and the choir students were significantly more likely to be extraverted.

Chatterjee (2014) surveyed 84 companies to determine innovator or defender inclination. The results of the study indicated that companies identified as innovators have intuitive-feeling leaders and companies identified as defenders have sensing-thinking leaders,

two of the four personality types. It has also been found that innovators are higher in the degree of intellectual adjustment. Leaders in the innovators companies also exhibit intuitive-feeling personality style in the idea generation and so do concept creators.

Wang, Chen, Zhang, and Deng (2016) examined the mediating role of creative styles in the association between personality types and scholarly creativity in undergraduate students. A sample of 495 undergraduate students completed questionnaires on personality types, creative styles and scholarly creativity. Results indicated that the innovative creative style was positively associated with extroversion and perceiving personality types, and negatively associated with Feeling type. The innovative creative style, but not the adaptive creative style, was positively associated with scholarly creativity. Furthermore, extroversion and perceiving types were positively and indirectly associated with scholarly creativity completely through the mediator of innovative creative style, whereas the feeling type was negatively and indirectly associated with scholarly creativity partially through the mediator of innovative creative style. The findings from the study indicate that undergraduate students of different personality types tend to perform creative work in different creative styles which would be reflected in the level of scholarly creativity they could demonstrate.

Lee and Min (2016) using five divergent thinking indices of the Torrance Tests of Creative Thinking (TTCT) and the MBTI, examined the creative profiles of 236 professionals and the relationships between their creative characteristics and personality types. The divergent thinking indices utilized in this study were fluency, originality, elaboration, abstractness of titles, and resistance to premature closure. The results of the study indicated that distinctive creative profiles and personality characteristics depended on the professional domain. While adults in business, journalism, and law had strength in

fluency and a weakness in resistance to premature closure, professionals in medicine, research and education showed strength in originality and a weakness in abstractness of titles. Business professionals had lower levels of creativity than other professionals. The results also indicated that intuitive professionals had a higher creative potential than sensing professionals. One of the key findings of this study is that the professional domains were significant predictors of most of the tested creativity, even over and above the personality types. Overall, this study supported that creative potential, personality types, and domains are intertwined although further explorations are needed to identify causality among them.

Similar to the research on personality traits, the relationship between personality types and creativity and innovation was extensively researched. Some of the creativity and innovation scales used in this research include the Carland Entrepreneurship Index, Kirton Adaption-Innovation Inventory, Accumulated Clues Task (ACT), and the Torrance Test of Creative Thinking (TTCT). The research findings appear to indicate that there is a strong correlation between individual intuition and creativity. Extraversion also has been shown to be correlated to creativity.

Personality and leadership. Several studies over the last 25 years have evaluated the impact of the leader's personality on transformational leadership (Howell & Avolio, 1993; Judge & Bono, 2000; Bono & Judge, 2004; Smith & Canger, 2004; Hoog, Hartog, & Hoopman, 2005; Hirschfeld et al., 2008; and Bartone et al., 2009). As suggested by Hautala (2005), the leadership research is focused on the personality of the leader and not enough on the personality of the subordinates. It is therefore important to understand not only the leader's personality but also the subordinate's personality in order to predict the effectiveness of the transformational leader individual innovativeness outcomes in the organization.

Recently, several studies have evaluated the relationship between the employee's personality and transformational leadership. The findings from these studies are discussed in this section.

Hautala (2005) studied the responses from 167 subordinates that were asked to rate their leaders. The results of the study indicated that subordinates who identified themselves as extraverted and feeling rated their leaders higher on the transformational leadership scale than those subordinates that identified themselves as introverted and thinking.

Schyns and Sanders (2007) evaluated the extent to which the personality of followers impacts on the perception of leadership, especially on the perception of transformational leadership. They conducted studies on followers from three different companies and students from a Dutch university were questioned on their personality characteristics and their perception of leader. They found extraversion and neuroticism to be positively related to the perception of transformational leadership. Although they expected that strong followers with characteristics similar to those of transformational leaders would perceive more transformational leadership, the results were more supportive of Klein and House's (1995) proposition that weak followers are more likely to perceive transformational leadership. Followers' perceptions need to also be based on the context, rather than transferred directly to feedback to leaders or used as the basis for training leaders. In addition, it may help leaders to understand followers' reactions, knowing that their behavior is not perceived the same way by all of their followers. Depending on the context and goals of leadership, this may mean that leaders must adapt their behavior to their followers' personality.

Hetland, Sandal, and Johnsen (2008) conducted a study to assess the impact of the personality of subordinates on leadership. They surveyed a sample of 289 on their leadership style (transformational, transactional, and passive-avoidant). They also assessed the Big Five

personality traits of the subordinates. The results of the study indicated a relationship between transformational leadership and subordinates level of neuroticism and agreeableness.

Salter, Green, Ree, Carmody-Bubb, and Duncan (2009) researched the theoretical relationship between personality, implicit leadership, and leadership style. They utilized Big Five and Transformational Leadership scales on a sample consisting of 303 undergraduate and graduate students from three universities in southern Texas in 2006. Respondents who scored high in neuroticism rated the leader as less transformational than those who did not. Also, the rating reflecting of good leadership had a positive effect on the respondent's ratings of the leader as a transformational leader.

Felfe and Schyns (2010) conducted a field study to assess the impact of subordinates' personality on their perception of transformational leadership in the organization. The results of the study indicated that the subordinates' personality affects their perception of their leader's transformational leadership abilities. The researchers also determined that the perception of leaders' personality was related to the perception of leadership and commitment to the supervisor.

Bono, Hooper, and Yoon (2011) studied the role of rater personality in ratings of transformational and transactional leadership. The researchers found that rater personality (i.e., agreeableness, openness, extraversion, and conscientiousness) was positively associated with ratings of transformational leadership. These results suggest that that individual reports of leadership may are better at predicting leadership outcomes than aggregated group reports. That is especially significant when evaluating individual attitudes and behaviors.

Brandt and Laiho (2013) evaluated the relationship between leadership, personality, and gender. In a quantitative analysis involving 459 leaders (283 men and 176 women) and 378 subordinates working in various fields. Leaders rated their leadership behavior and subordinates also appraised them. The results of the study indicated differences in leadership behavior by gender. Females exhibited more enabling behavior, and men more challenging behavior. Further, gender and personality had an impact on leadership behavior, as viewed by both leaders and subordinates. For example, extraverted and intuitive male leaders along with those exhibiting the perceiving dimension regarded themselves as more challenging than their introverted, sensing and judging male counterparts, a view confirmed by subordinates in the case of perceiving male leaders.

Van der Kam, Van der Vegt, Janssen, and Stocker (2015) broke down leaders' self-perceptions of their transformational leadership behavior into three components: a target effect (i.e., how leaders are perceived by followers), a perceiver effect (i.e., how leaders perceive followers), and a self-enhancement effect (i.e., bias in how leaders perceive themselves). The relationships between these components and the quality of exchanges between leaders and followers (LMX) were then examined in a survey study of 60 leaders with 286 followers. The researchers found the target effect to be positively related to the quality of LMX, whereas the perceiver effect and self-enhancement effects were negatively associated with LMX. Follower extraversion intensified the positive role of the target effect and the negative role of the self-enhancement effect in the leader–follower exchanges.

Stelmokiene and Endriulaitiene (2015) identified a model of transformational leadership based on the perceptions of subordinates in Lithuanian organizations and found out the interactive predictive value of perceivers' personality traits and social identification.

The researchers collected data on transformational leadership, social identification, and NEO-FFI from 505 employees. The results of the study suggested that social identification and neuroticism are predictors of perceived transformational leadership and extraversion and agreeableness have links with social identification explains how subordinates perceive transformational leadership. More extraverted and agreeable subordinates tend to report higher levels of social identification with work-unit that together with less emotional stability are related to seeing leader as more transformational.

In summary, the research on the relationship between follower personality and the perception of the leader style is limited. Recent studies indicate conflicting findings between transformational leadership and follower personality. Some studies show that follower personalities that are characterized by the extraversion and neuroticism Big Five scales have a positive relationship with transformational leadership. Other studies do not find a positive relationship between neuroticism and transformational leadership. The research also indicates that context plays a role in the perception of the followers' leadership.

Chapter 3: Methodology

Introduction

In this chapter, the study research design is presented. The instruments used to measure the study variables, including the development of the individual innovativeness scale is described. Additionally, the data collection procedure, the human subject approval, population, sample size, and data analysis are described.

Research Design

This study used a cross-sectional, correlational design to test for the association between transformational leadership, personality, organizational climate, and individual innovativeness at work. The variables were measured through the use of four validated and reliable survey instruments. This study analyzed self-report survey data to examine the relationships among the study variables (see survey in Appendix A). The use of survey methodology was appropriate for this study because it allowed for a “systematic method for gathering information from a sample of entities from a larger population” (e.g., using a questionnaire comprised of a standardized set of questions) and a way in which to “construct quantitative descriptors of the attributes of the larger population” (Groves et al., 2009, p. 2, 217). Survey data were evaluated using descriptive statistics, correlation analysis, and linear regression.

Population, Sample, and Subjects

The survey respondents were selected for this study via non-probability convenience sampling. A convenience sample is members of the population who are chosen based on their relative ease of access. The convenience sample was employed by large and mid-size manufacturing organizations in mid-western states. The manufacturing organizations

represented in the sample were primarily from the automotive industry original equipment manufacturers and suppliers. The organizations have regional and global R&D and manufacturing operations. Both types of organizations were represented by R&D (design, engineering, development), manufacturing (engineering, production, and logistics), and business functions (purchasing, marketing, and sales). The study sample allowed the assessment of individual product and process innovation. The sample size of the study was 188 participants which generated 161 overall respondents. The response rate to the study was 85.6% and data collection was completed on December 6, 2016.

Measurement

Measurement scales utilized in this study are outlined in this section. The measurement scales measured the six study constructs: transformational leadership, organizational climate, extraversion personality trait, openness personality trait, intuition personality type, and individual innovativeness at work. Items for the measurement scales in addition to the demographic characteristics items are shown in Appendix A.

Individual innovativeness at work. Individual innovativeness at work was measured in this study using 10 items scored along a 5-point Likert scale ranging from 1 = inaccurate to 5 = accurate. The scale included eight items based on the West and Farr (1990) innovation definition in which individuals generate new product and/or process ideas, generate product and/or process improvement ideas, implement ideas, and realize a benefit from the product/process ideas they generated. Each of the items represented a different facet of innovative behavior believed to be important to innovation in this environment. In addition to the eight items from West and Farr, two items were included to assess the overall rating of the creativity and innovativeness perception of the respondent. Cronbach's alpha was be

used to determine the internal consistency estimate of reliability of the full 10-item scale (see Table 1). As shown, the full scale measure of individual innovativeness at work was found to be reliable in the study sample ($\alpha = 0.908$). Exploratory factor analysis (EFA) was also utilized to explore if the 10 measured items were clustered into factors of innovativeness. Results of the EFA found two emergent factors: innovation implementation, and creativity and innovation perception. The EFA methodology is described in the next subsection.

Table 1. *Individual Innovativeness Scale Reliability*

Scale	Cronbach's Alpha	Number of items
Individual Innovativeness	0.908	10
Innovation Implementation	0.925	6
Creativity and Innovation Perception	0.799	4

Exploratory factor analysis. Latent factors may be extracted via two main techniques: principle component analysis (PCA) and factor analysis (FA). The PCA approach attempts to combine items into factors where in the FA approach the relationship is reversed. Another way to look at the difference between the two approaches is that in the FA approach, the underlying trait (or latent factor) is the independent variable (or cause) of the measured item(s), whereas in PCA, the measured item(s) is a component of the latent variable. The approaches make different assumptions about the relationship between items and factors. The PCA approach assumes that the factors are uncorrelated (or orthogonal). Factors of innovativeness are likely to be correlated, and thus FA appears to be a better approach to utilize in this EFA of individual innovativeness items. One of the most commonly used methods in FA is principal axis factoring (PAF). PAF was completed using SPSS software.

The first step in the EFA process identified the level of eigenvalues to extract. Eigenvalues measure the level of variance in all the items explained by the factor, with higher eigenvalues indicating higher shared variance by the set of items in the factor. Common practice involves using a criterion ≥ 1 for the eigenvalue (Yong & Pearce, 2013). Table 2 presents the eigenvalues of the EFA of the individual innovativeness at work measurement items. As shown, eigenvalues ≥ 1 were found for the one-factor and the two-factor solution. A Scree plot of the eigenvalues is shown in Appendix B.

The second step in the EFA process developed the factor loading matrix with rotation of the factors. The rotation operation results in increased loading of the items within the factor while lowering the correlation between the factors. The rotation operation is a transformation in matrix algebra that can be orthogonal or oblique. Orthogonal rotation assumes that the factors in the study are uncorrelated while the oblique rotation assumes the factors are correlated. A correlation between the factors was assumed in this study, and therefore, the oblique rotation method was selected for the EFA. Table 3 presents the factor loadings of the measured items onto the two factors. Common practice is to exclude items from a factor if their loading value is < 0.4 (Yong & Pearce, 2013). When items load onto a factor ≥ 0.4 , the item is assigned to the factor with the highest loading. Items for each factor are identified in bold font. As shown in Table 3, items 3-8 have their highest loadings on Factor 1, and Items 1, 2, 9, and 10 have their highest loadings on Factor 2.

Table 2. *Eigenvalues of the EFA of Individual Innovativeness Measurement Items*

Factor	Eigenvalue	% of Variance	Cumulative %
1	5.59	55.92	55.92
2	1.34	13.43	69.35
3	0.96	9.61	78.96
4	0.52	5.15	84.11
5	0.43	4.27	88.38
6	0.36	3.61	92.00
7	0.31	3.10	95.09
8	0.20	1.97	97.06
9	0.17	1.67	98.73
10	0.13	1.27	100.00

Table 3. *Factor Loadings of Items*

Items	Factor 1	Factor 2
Item 1	0.533	0.734
Item 2	0.580	0.768
Item 3	0.796	0.570
Item 4	0.855	0.483
Item 5	0.831	0.571
Item 6	0.792	0.515
Item 7	0.823	0.497
Item 8	0.832	0.552
Item 9	0.403	0.645
Item 10	0.362	0.687

Note. Extraction method: Principal Axis Factoring with oblique rotation.

The final step in the EFA was the development of qualitative themes to identify appropriate names for each factor. Several themes emerged from the analysis of the items in the scales. These themes were driven by the innovation definition developed by West and Farr (1990). The following scale items comprised each of the two factors:

Factor 1

1. I generate new process ideas (Item 3)
2. I generate and successfully implement new process ideas (Item 4)
3. I generate product or process improvement ideas (Item 5)
4. I generate and successfully implement product or process improvement ideas (Item 6)

5. A benefit is realized from the ideas that I generate (Item 7)
6. A benefit is realized from the ideas that I generate and implement (Item 8)

The items that loaded on Factor 1 reflected a theme associated with the generation and implementation of product or process ideas that benefit the organization. This factor was named “innovation implementation.” West (2002) defined this factor as the “Implementation of creative ideas” (p. 356).

Factor 2

1. I generate new product ideas (Item 1)
2. I generate and successfully implement new product ideas (Item 2)
3. I consider myself to be a creative individual (Item 9)
4. I consider myself to be an innovative individual (Item 10)

The items that loaded on Factor 2 reflected a theme associated with the perception of individual creativity and innovation. Factor 2 was therefore named “creativity and innovation perception.”

Transformational leadership. The first independent variable in this study, transformational leadership, was measured using Bass and Avolio’s (1999) 45-item Multifactor Leadership Questionnaire (MLQ) Form 5X. Each item on the MLQ is scored along a 5-point Likert scale: 1 = not at all, 2 = once in a while, 3 = sometimes, 4 = fairly often, 5 = frequently if not always. The MLQ has been extensively used in prior research and is considered to be a well validated measure of transformational leadership (Awamleh & Gardner, 1999). Its construct validity has been demonstrated using confirmatory factor analysis (Avolio, Bass, & Jung, 1999). The internal consistency was determined to be greater than 0.70 for all scales (0.73 to 0.93) (Avolio, Bass, & Jung, 1999). The MLQ

includes 20 items measuring four factors appropriate for investigating the impact of transformational leadership on individual innovativeness at work: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These factors are appropriate for this study given the individual employee needs to be influenced, motivated, intellectually stimulated, and given individualized consideration in order to generate innovativeness at work. To determine the reliability of each of the subscales measuring the four factors and the full scale measuring the composite transformational leadership construct in the current sample, Cronbach’s alpha index of internal consistency reliability (Cronbach, 1951) was calculated for the transformational leadership composite scale and each of the subscales (see Table 4). To maximize reliability of the four factors, one item was dropped from the idealized influence subscale (“My supervisor talks about their most important values and beliefs”) and one item was dropped from the individualized consideration subscale (“My supervisor considers me as having different needs, abilities, and aspirations from others.” Using a criterion alpha value of 0.7 or higher indicating acceptable internal consistency reliability (Santos, 1999), the transformational leadership composite scale and the four subscales were found to be reliable.

Using factor analysis, the items in the transformational leadership subscales were determined to load on the corresponding factor which is consistent with the findings of the confirmatory factor analysis of Avolio, Bass, and Jung (1999).

Table 4. Transformational Leadership Scale Reliability

Scale	Cronbach’s Alpha	Number of items
Transformational Leadership	0.942	18
Idealized Influence	0.862	7
Inspirational Motivation	0.844	4
Intellectual Stimulation	0.714	4
Individualized Consideration	0.702	3

Organizational climate. The second independent variable in this study, organizational climate, was measured by Patterson et al.'s (2005) Organizational Climate Measure (OCM). The OCM is a multidimensional assessment of employees' perceptions of their workplace environment organized into four quadrants representing four major schools of organizational psychology (Patterson et al., 2005): Human Relations (HR), Internal Processes, Open Systems, and Rational Goal. The HR quadrant has six subscales: Autonomy, Integration, Involvement, Supervisory Support, Training, and Welfare; the Internal Process quadrant has two subscales: Formalization and Tradition; the Open Systems quadrant has four subscales: Innovation, Flexibility, Outward Focus, and Reflexivity; and Rational Goal has six subscales: Clarity of Organizational Goals, Efficiency, Effort, Performance Feedback, Pressure to Produce, and Quality. The OCM has 17 scales, each with acceptable levels of validity and reliability. Each item on the OCM has four possible responses on a 4-point Likert scale: 1 = definitely false, 2 = mostly false, 3 = mostly true, and 4 = definitely true. The factor structure of the OCM is steady and has been found to generalize across several employee populations (Patterson et al., 2005). According to Schneider (1975, 1990, 2000), organizational climate should measure something of interest, and since this study was designed to assess the impact of organizational climate on individual innovativeness, the Open Systems quadrant subscales flexibility and innovation were appropriate. These two subscales are measured by seven items. Cronbach's alpha was calculated for the organizational climate composite scale and each of the two subscales in the current sample (see Table 5). To maximize reliability of the innovation subscale, one item was dropped from the innovation subscale ("I generated and successfully implemented product or process improvement ideas"). Using a criterion alpha value of 0.7 or higher

indicating acceptable internal consistency reliability (Santos, 1999), the organizational climate composite scale and the two subscales were found to be reliable.

Using factor analysis, the items in the organizational climate subscales were determined to load on the corresponding factor which is consistent with the findings of Patterson et al. (2005).

Table 5. *Organizational Climate Scale Reliability*

Scale	Cronbach's Alpha	Number of items
Organizational Climate	0.863	6
Innovation	0.724	3
Flexibility	0.784	3

Personality. The impact of personality on individual innovativeness at work was assessed by assessing three personality traits/types. Two personality traits were measured utilizing 20 items selected from the International Personality Item Pool Five-Factor Model (Goldberg, 1999), and one personality type was measured using 10 items from Keirsey and Bates (1978). Given the focus of this research study on investigating personality traits that influence individual innovativeness, two personality scales were selected to measure personality traits hypothesized as impacting individual innovativeness at work: extraversion and openness. Extraversion was selected due to its relation to positive emotion and enthusiasm qualities which are necessary for an individual to develop and sustain the implementation of ideas by in the organization. The 10-item extraversion scale has a reported reliability of 0.870. The openness scale was selected due to its relation to the qualities of imagination, intelligence, curiosity, and creativity. Openness qualities are necessary and must precede the creative aspect of idea generation involved in individual innovativeness. The 10-item openness scale has a reported reliability of 0.840. The extraversion and openness scales were scored along a five-point Likert-type scale ranging

from 1 = inaccurate to 5 = accurate, with higher scores representing more extraversion and openness.

The intuition personality type was also investigated in this study. Dollinger, Palaskonis, and Pearson (2004) found the intuition scale of the MBTI was correlated with the Creative Personality Scale, an abbreviated Creative Behavior Inventory (self-reported past accomplishments), and the Test of Creative Thinking-Drawing Production (creative product ratings using consensual assessment). Hence, there appears to be a correlation between intuition personality type and creativity. As noted in Chapter 2, creativity appears to be a critical element of the innovation process and represents the ideation phase of innovation. A convenient measure of intuition personality type is the 10-item measure of sensing/intuition from Keirse and Bates (1978). Each of these items represent a dichotomy selection of the sensing and intuitive functions. The items were modified to be anchored on a five-point Likert-type scale ranging from 1 = inaccurate to 5 = accurate, with higher scores more indicative of intuition personality type. Table 6 presents the Cronbach's Alpha values for the extraversion, openness, and intuition personality scales. As shown, all three scales were reliable in the study sample. Using factor analysis, the personality items were determined to load on the corresponding personality scale.

Table 6. *Personality Scale Reliability*

Scale	Cronbach's Alpha	Number of items
Extraversion Personality Trait	0.884	10
Openness Personality Trait	0.826	10
Intuition Personality Type	0.741	10

Data Collection

The survey was implemented through SurveyMonkey, a web-based survey application. Respondents were given a link to the SurveyMonkey site to complete the survey

online. The survey was completed within 10 to 20 minutes. Prior to completing the survey, participants provided their voluntary assent to participate. Participants were informed their participation in this study was completely voluntary, and they could freely leave the study at any time without penalty. Neither subjects' names nor email addresses were collected during this survey, making it impossible to link a survey to any specific participant. Collected data were saved on an encrypted password-protected file.

Human Subjects Approval

This study received human subject approval from the University Human Subject Review Committee on June 3, 2016. A paragraph informing subjects of their rights (see Appendix C) was included at the top of each survey.

Data Analysis

Study data were analyzed via descriptive statistics, correlation analysis, and linear regression. Analyses were carried out using SPSS statistical analysis software (version 22). Descriptive statistics were comprised of frequency analysis of categorical variables (chi-square test of equality of distribution), and mean and standard deviation of continuous variables across the categorical variables. The data set was checked for missing variables. Responses with missing variables were eliminated from the analysis as reflected in the number of cases analyzed and reported in the summary tables.

Correlation analysis was comprised of Spearman's rank-order correlation coefficient analyzed through bivariate correlation analysis to understand the interrelationships between the study variables. Spearman's rank-order correlation was selected because the survey data were ordinal. To test the moderating influence of personality via correlation analysis, the moderating variables were split into "low" and "high" groups using a score threshold of less

than or equal to 30 (for “low”), and a score greater than 30 (for “high”). Linear regression analysis was also used to test the moderating influence of personality by including a predictor x personality interaction term in the regression analysis. Significant interaction terms were followed up with a factorial plot to assist with interpretation.

Data Analysis Assumptions

As noted, the ordinal level of measurement of the study survey data required the calculation of Spearman’s rho for the bivariate correlations. The data are also assumed to be valid in terms of participant honesty with their self-report despite any potential participant bias from participants who did not want to show their organizations in a negative way. The study also assumed that transformational leadership was a recognized leadership style in the study participants’ organizations.

Descriptive Statistics

Results of descriptive statistics are presented in Tables 7 to 11. As shown in Table 7, the sample (N = 161) was significantly distributed across all eight demographic characteristics. For example, the study sample contained significantly more males (n = 95, 59.0%) than females (n = 63, 39.1%). More than half of the sample was 18 to 30 years of age (n = 85, 54.8%), Caucasian/white (n = 89, 55.3%), with a Bachelor’s or graduate degree (n = 85, 52.8%), and working in administration, finance, HR, IT, marketing, purchasing/supply chain, or sales (n = 87, 54.0%) with 0 to 5 years professional experience (n = 91, 56.5%) as a first line employee (n = 99, 61.5%).

Table 7. *Frequency Analysis of Demographic Characteristics*

N=161

Demographic	n	%	Demographic	n	%
Gender			Experience		
Male	95	59.0	0-5 years	91	56.5
Female	63	39.1	6-10 years	20	12.4
No Response	3	1.9	11-15 years	10	6.2
Age			16-20 years	11	6.8
18-20	11	6.8	21-25 years	9	5.6
21-30	74	46.0	26-30 years	10	6.2
31-40	27	16.8	> 30 years	10	6.2
41-50	27	16.8	Education		
51-60	8	5.0	High School	5	3.1
61-70	1	0.6	Some College	33	20.5
No Response	13	8.1	Associate's Degree	33	20.5
Ethnicity			Bachelor's Degree	45	28.0
Caucasian/White	89	55.3	Master's Degree	35	21.7
Hispanic/Latinos	12	7.5	Doctoral Degree	5	3.1
Black/African-American	26	16.2	No Response	5	3.1
Asian/Pacific Islander	29	18.0	Job Level		
No Response	5	3.1	First Line Employee	99	61.5
Profession			Supervisor	21	13.0
Technical	34	21.1	Manager	23	14.3
Business	87	54.0	Director	7	4.4
Manufacturing	19	11.8	No Response	11	6.8
Professional Services/Consultant	13	8.1			
No Response	8	5.0			

Note. Profession was measured in terms of the following four profession groups: Technical (product/development engineer, designer, project manager, scientist), Business (Administration, finance, HR, IT, marketing, purchasing/supply chain, sales), Manufacturing (Process engineer, production, quality, maintenance, logistics), and Professional Services/Consultant.

As shown in Table 8, mean and standard deviation (SD) scores for the individual innovativeness at work composite (IAW), the innovation implementation factor (INI), and the creativity and innovation perception factor (CIP) in the total sample were 3.74 (0.77), 3.80 (0.87), and 3.65 (0.85), respectively. Differences in mean IAW, INI and CIP scores were found within age (higher scores as age increases) and experience (higher scores as years of professional experience increases). Also, differences in mean IAW and INI scores were found within education (higher scores with increasing education) and job level (mean for first line employees = 3.54 to 3.56, and mean for supervisors, managers, and directors = 3.96 to

4.26). For CIP, differences in mean scores were observed only within ethnicity (mean for Whites, Hispanics and Asians = 3.50 to 3.71, and mean for Blacks = 4.13).

Table 8 Descriptive Statistics of Individual Innovativeness at Work

Demographic Characteristic		IAW		INI		CIP	
		M	SD	M	SD	M	SD
	Total Sample (N = 161)	3.74	0.77	3.80	0.87	3.65	0.85
Gender	Male	3.73	0.79	3.77	0.87	3.67	0.85
	Female	3.75	0.75	3.84	0.87	3.63	0.84
Age	18-20	3.65	0.65	3.70	0.64	3.58	0.78
	21-30	3.59	0.82	3.56	0.93	3.63	0.81
	31-40	3.82	0.82	3.91	0.84	3.69	1.05
	41-50	3.98	0.58	4.27	0.63	3.53	0.82
	51-60	4.23	0.61	4.33	0.76	4.08	0.80
Education	High School	3.00	0.99	2.71	1.22	3.44	0.88
	Some College	3.43	0.82	3.49	0.92	3.33	0.88
	Associate's Degree	3.83	0.82	3.85	0.87	3.80	0.93
	Bachelor's Degree	3.90	0.58	3.96	0.72	3.81	0.62
	Master's Degree	3.80	0.75	3.91	0.81	3.62	0.91
Ethnicity	Doctoral Degree	4.23	0.51	4.46	0.66	3.88	0.75
	Caucasian/White	3.70	0.86	3.81	0.96	3.53	0.92
	Hispanic/Latinos	3.78	0.57	3.97	0.85	3.50	0.78
	Black/African-American	4.07	0.62	4.02	0.66	4.13	0.70
Experience	Asian/Pacific Islander	3.61	0.60	3.54	0.66	3.71	0.62
	0-5 years	3.61	0.77	3.59	0.86	3.63	0.81
	6-10 years	3.61	0.94	3.63	0.99	3.58	0.95
	11-15 years	4.04	0.57	4.18	0.47	3.83	0.94
	16-20 years	4.01	0.66	4.27	0.42	3.63	1.17
	21-25 years	4.13	0.39	4.67	0.47	3.32	0.69
	26-30 years	4.07	0.71	4.24	0.69	3.81	0.85
	> 30 years	4.01	0.85	4.07	0.98	3.93	0.89
Profession	Technical	3.77	0.74	3.70	0.80	3.87	0.75
	Business	3.72	0.73	3.82	0.87	3.56	0.82
	Manufacturing	3.93	0.61	4.05	0.73	3.73	0.69
	Prof. Services/Consult	3.85	1.06	3.79	1.08	3.93	1.11
Job Level	First Line Employee	3.54	0.76	3.56	0.88	3.50	0.83
	Supervisor	4.16	0.56	4.26	0.53	4.00	0.77
	Manager	4.07	0.72	4.24	0.82	3.82	0.89
	Director	3.96	0.84	4.10	0.83	3.75	0.89

Note. Mean (M) and standard deviation (SD) of individual innovativeness at work (IAW), innovation implementation (INI) and creativity and innovation perception (CIP) across demographic characteristics.

As shown in Table 9, mean and SD scores for the transformation leadership composite (TL), the idealized influence factor (II), the inspirational motivation factor (IM), the intellectual stimulation factor (IS), and the individualized consideration (IC) factor in the total sample were 3.36 (0.83), 3.38 (0.87), 3.46 (0.95), 3.21 (0.85), and 3.38 (0.99), respectively. Differences in mean TL, II and IC scores were found within experience. In general TL scores appear to follow two modes, with mean scores increasing from 0-5 years of professional experience (mean = 3.27 to 3.30) to 11 to 15 years of professional experience (mean = 3.85 to 4.20 or mode 1), and also increase from 16 to 20 years of experience (mean = 3.00 to 3.26) to 21 to 25 years of experience (mean = 4.13 to 4.14 or mode 2). Mean scores for TL and its factors do not appear to be different within any other demographic characteristic.

Table 9 *Descriptive Statistics of Transformational Leadership*

Demographic Characteristic		TL		II		IM		IS		IC	
		M	SD	M	SD	M	SD	M	SD	M	SD
	Total Sample (N = 161)	3.36	0.83	3.38	0.87	3.46	0.95	3.21	0.85	3.38	0.99
Gender	Male	3.27	0.79	3.28	0.85	3.38	0.96	3.15	0.84	3.27	0.88
	Female	3.48	0.86	3.51	0.91	3.57	0.93	3.30	0.86	3.53	1.12
Age	18-20	3.39	0.82	3.47	0.73	3.50	0.90	3.20	0.90	3.30	1.01
	21-30	3.17	0.87	3.23	0.90	3.25	0.96	3.01	0.88	3.16	1.06
	31-40	3.66	0.70	3.69	0.81	3.68	0.87	3.45	0.77	3.83	0.74
	41-50	3.64	0.74	3.57	0.85	3.89	0.85	3.51	0.64	3.60	0.93
	51-60	2.83	0.70	2.88	1.06	2.83	0.94	2.67	0.58	3.00	0.76
Education	High School	2.82	0.98	2.93	0.92	2.69	1.42	2.56	0.77	3.08	1.10
	Some College	3.25	0.78	3.33	0.72	3.31	0.99	3.03	0.90	3.29	1.01
	Associate's Degree	3.26	0.98	3.25	1.02	3.36	1.06	3.20	1.00	3.24	1.08
	Bachelor's Degree	3.46	0.79	3.44	0.92	3.53	0.82	3.32	0.75	3.58	0.96
	Master's Degree	3.55	0.70	3.58	0.80	3.72	0.84	3.43	0.70	3.42	0.91
	Doctoral Degree	3.25	0.80	3.25	0.83	3.63	1.11	2.81	0.97	3.42	0.57
Ethnicity	Caucasian/White	3.37	0.80	3.38	0.80	3.48	0.97	3.20	0.84	3.41	0.96
	Hispanic/Latinos	3.54	0.94	3.65	0.99	3.52	1.05	3.34	0.91	3.56	1.11
	Black/African-American	3.21	0.89	3.12	0.99	3.33	0.93	3.21	0.86	3.29	1.06
	Asian/Pacific Islander	3.41	0.83	3.51	0.92	3.48	0.90	3.21	0.88	3.33	0.96
Experience	0-5 years	3.28	0.82	3.30	0.85	3.38	0.95	3.16	0.86	3.27	0.98
	6-10 years	3.47	1.01	3.55	1.05	3.55	1.10	3.22	1.02	3.49	1.18
	11-15 years	3.85	0.52	3.86	0.73	3.88	0.69	3.56	0.72	4.20	0.48
	16-20 years	3.26	0.42	3.28	0.41	3.56	0.72	3.13	0.50	3.00	0.73
	21-25 years	4.13	0.61	4.14	0.56	4.29	0.77	3.93	0.57	4.14	0.86
	26-30 years	3.24	0.84	3.22	0.96	3.34	0.85	3.17	0.85	3.19	1.06
	> 30 years	2.79	0.74	2.78	1.01	2.75	0.97	2.64	0.63	3.10	0.74
Profession	Technical	3.42	0.78	3.42	0.86	3.58	0.89	3.23	0.79	3.44	0.95
	Business	3.28	0.79	3.29	0.84	3.35	0.89	3.15	0.83	3.31	1.00
	Manufacturing	3.69	0.79	3.67	0.96	3.80	0.95	3.69	0.75	3.60	0.78
	Prof. Services/Consult.	3.39	0.89	3.56	0.74	3.56	1.21	2.86	0.90	3.52	1.08
Job Level	First Line Employee	3.34	0.71	3.34	0.75	3.47	0.86	3.18	0.75	3.39	0.90
	Supervisor	3.49	0.95	3.64	0.94	3.52	1.14	3.25	1.03	3.40	1.16
	Manager	3.40	1.06	3.40	1.23	3.42	1.07	3.34	0.97	3.44	1.11
	Director	3.13	0.72	3.12	0.70	3.26	0.88	3.01	0.68	3.10	0.98

Note. Mean (M) and standard deviation (SD) of transformational leadership composite (TL), idealized influence (II), inspirational motivation (IM), intellectual stimulation (IS), and individualized consideration (IC) across demographic characteristics.

As shown in Table 10, mean and SD scores for the organizational climate composite (OC), the innovation factor (INO), and the flexibility factor (FLX), in the total sample were 2.79 (0.61), 2.86 (0.61), and 2.73 (0.69), respectively. Differences do not appear between the mean OC, INO or FLX scores across the demographic characteristics.

As shown in Table 11, mean and SD scores for the extraversion personality trait (EXTRA), the openness personality trait (OPEN), and the intuition personality type (INT), in the total sample were 3.42 (0.82), 3.80 (0.60), and 3.28 (0.58), respectively. Differences exist in the mean OPEN and INT scores within ethnicity, and found significant differences in OPEN within job level. Specifically, within ethnicity, Whites, Hispanics and Asians had higher OPEN means (3.70 to 3.97) than Blacks (3.49). In contrast, Whites, Hispanics and Asians had lower INT means (3.18 to 3.36) than Blacks (3.68). Within job level, first line employees had higher OPEN (4.12) than supervisors, managers, or directors (3.78 to 3.91).

Table 10 *Descriptive Statistics of Organizational Climate*

Demographic Characteristic		OC		INO		FLX	
		M	SD	M	SD	M	SD
	Total Sample (N = 161)	2.79	0.61	2.86	0.61	2.73	0.69
Gender	Male	2.79	0.61	2.83	0.62	2.75	0.67
	Female	2.80	0.63	2.90	0.60	2.70	0.72
Age	18-20	2.73	0.78	2.73	0.80	2.73	0.80
	21-30	2.85	0.63	2.88	0.65	2.81	0.68
	31-40	2.73	0.62	2.89	0.53	2.59	0.80
	41-50	2.80	0.44	2.88	0.44	2.73	0.52
	51-60	2.52	0.56	2.67	0.61	2.38	0.59
Education	High School	2.13	0.32	2.25	0.50	2.00	0.27
	Some College	2.81	0.61	2.81	0.62	2.80	0.68
	Associate's Degree	2.81	0.66	2.85	0.66	2.78	0.72
	Bachelor's Degree	2.78	0.58	2.81	0.56	2.75	0.65
	Master's Degree	2.81	0.65	2.97	0.61	2.67	0.75
	Doctoral Degree	2.97	0.55	3.20	0.65	2.73	0.64
Ethnicity	Caucasian/White	2.73	0.64	2.80	0.67	2.66	0.69
	Hispanic/Latinos	2.74	0.66	2.86	0.59	2.61	0.76
	Black/African-American	2.79	0.57	2.87	0.45	2.72	0.71
	Asian/Pacific Islander	2.99	0.57	3.00	0.59	2.98	0.62
Experience	0-5 years	2.85	0.62	2.89	0.64	2.81	0.66
	6-10 years	2.67	0.65	2.78	0.58	2.55	0.83
	11-15 years	2.68	0.63	2.83	0.53	2.53	0.79
	16-20 years	2.77	0.30	2.80	0.28	2.73	0.38
	21-25 years	2.89	0.51	3.07	0.43	2.70	0.65
	26-30 years	2.85	0.54	2.89	0.60	2.81	0.56
	> 30 years	2.52	0.86	2.57	0.86	2.47	0.92
Profession	Technical	2.79	0.69	2.82	0.65	2.76	0.78
	Business	2.79	0.59	2.85	0.59	2.74	0.68
	Manufacturing	2.77	0.46	2.86	0.49	2.69	0.49
	Prof Services/Consult	2.82	0.62	3.04	0.62	2.62	0.68
Job Level	First Line Employee	2.85	0.59	2.92	0.57	2.77	0.67
	Supervisor	2.65	0.63	2.75	0.66	2.56	0.66
	Manager	2.74	0.56	2.68	0.51	2.79	0.71
	Director	2.52	0.72	2.57	0.71	2.48	0.77

Note. Mean (M) and standard deviation (SD) of organizational climate (OC), innovation (INO) and flexibility (FLX) across demographic characteristics.

Table 11 *Descriptive Statistics of Personality*

Demographic Characteristic		EXTRA		OPEN		INT	
		M	SD	M	SD	M	SD
	Total Sample (N = 161)	3.42	0.82	3.80	0.60	3.28	0.58
Gender	Male	3.41	0.89	3.82	0.57	3.18	0.57
	Female	3.08	0.87	3.89	0.61	3.39	0.92
Age	18-20	3.36	0.76	3.68	0.62	3.35	0.51
	21-30	3.69	0.95	3.96	0.54	3.14	0.52
	31-40	3.39	0.75	3.88	0.57	3.13	0.67
	41-50	3.14	1.04	3.77	0.56	3.26	0.56
	51-60	3.03	1.48	3.98	0.78	2.75	0.65
Education	High School	3.44	0.73	3.74	0.50	3.18	0.63
	Some College	3.52	0.90	3.99	0.57	3.33	0.50
	Associate's Degree	3.44	0.81	3.72	0.65	3.30	0.49
	Bachelor's Degree	3.37	0.73	3.65	0.56	3.43	0.69
	Master's Degree	3.06	1.20	4.26	0.73	3.06	0.25
	Doctoral Degree	3.45	0.85	3.85	0.55	3.16	0.56
Ethnicity	Caucasian/White	3.67	0.73	3.89	0.31	3.18	0.71
	Hispanic/Latinos	3.50	0.93	3.97	0.75	3.32	0.54
	Black/African-American	3.18	0.66	3.49	0.63	3.68	0.44
	Asian/Pacific Islander	3.29	0.78	3.70	0.60	3.36	0.54
Experience	0-5 years	3.57	0.92	3.95	0.64	3.26	0.54
	6-10 years	4.09	0.77	4.18	0.54	3.12	0.58
	11-15 years	3.54	0.80	3.91	0.38	3.06	0.84
	16-20 years	3.34	0.71	3.84	0.48	3.09	0.77
	21-25 years	3.47	0.79	3.80	0.76	3.17	0.52
	26-30 years	3.49	1.08	3.79	0.73	3.30	0.57
	> 30 years	3.25	0.73	3.81	0.69	3.30	0.58
Profession	Technical	3.40	0.83	3.76	0.59	3.25	0.54
	Business	3.61	0.84	3.70	0.53	3.53	0.60
	Manufacturing	3.79	0.98	4.19	0.46	3.04	0.76
	Prof Services/Consult	3.34	0.85	3.67	0.56	3.25	0.55
Job Level	First Line Employee	3.66	0.82	4.12	0.50	3.16	0.63
	Supervisor	3.36	0.76	3.91	0.72	3.53	0.57
	Manager	3.89	0.37	3.90	0.51	3.01	0.54
	Director	3.42	0.78	3.78	0.63	3.35	0.58

Note. Mean (M) and standard deviation (SD) of extraversion personality trait (EXTRA), openness personality trait (OPEN) and intuition personality type (INT) across demographic characteristics.

Chapter 4: Results

This chapter presents the results of the research and supporting data analysis.

Inferential statistics tested the study hypotheses via correlation analysis (using Spearman's rho correlation coefficient) and linear regression analysis (with tests of independent variable x moderating interaction terms when testing for moderating effects of personality). Factorial plots were created for any significant interaction terms to assist with interpretation.

Hypothesis 1

Transformational leadership is positively related to individual innovativeness at work.

Tables 12 and 13 present the results of correlation analysis and linear regression analysis, respectively, used to test Hypothesis 1. As shown in Table 12, in support of Hypothesis 1 transformational leadership (TL) was found to be significantly positively correlated with individual innovativeness at work (IAW) ($r = 0.328, p < 0.01$). TL was also significantly positively correlated with the innovation implementation (INI) factor of IAW ($r = 0.402, p < 0.01$) but not with the creativity and innovation perception (CIP) factor of IAW ($r = 0.139, p > 0.05$). Additionally, IAW was significantly correlated with the four factors of TL, idealized influence (II), inspirational motivation (IM), intellectual stimulation (IS), and individualized consideration (IC). Table 13 expands on the results of the correlation analysis and presents results of a linear regression with IAW regressed on TL, and IAW regressed on the four factors of TL: II, IM, IS, and IC. Results found a one-unit increase in TL is estimated to increase IAW by a score of 0.308 ($Z = 4.07, p < 0.001$); TL is estimated to account for 10.9% of the variance in IAW. In the multiple regression analysis, the IC factor of TL was found to significantly predict IAW (Beta = 0.372, $Z = 3.26, p = 0.001$). These

results suggest Hypothesis 1 is supported and TL in the workplace has a positive impact on innovativeness via individualized consideration.

Table 12. *Intercorrelations between Transformational Leadership and Individual Innovativeness at Work*

N = 136

	IAW	INI	CIP	TL	II	IM	IS
INI	0.901**						
CIP	0.843**	0.558**					
TL	0.328**	0.402**	0.139				
II	0.293**	0.348**	0.125	0.930**			
IM	0.262**	0.370**	0.069	0.886**	0.733**		
IS	0.266**	0.351**	0.088	0.875**	0.734**	0.759**	
IC	0.384**	0.411**	0.239**	0.880**	0.792**	0.741**	0.702**

Note. * $p < 0.05$, ** $p < 0.01$ Spearman's rho correlation coefficient. IAW = individual innovativeness at work, INI = innovation implementation, CIP = creativity and innovation perception, TL = transformational leadership composite, II = idealized influence, IM = inspirational motivation, IS = intellectual stimulation, and IC = individualized consideration.

Table 13. *Regression of Innovativeness at Work on Transformational Leadership*

Term	Beta	SE	Z	p	VIF
Constant	2.698	0.261	10.32	<0.001	
TL	0.308	0.076	4.07	<0.001	
<i>R-square</i>	10.9%				
Constant	2.788	0.259	10.75	<0.001	
II	-0.148	0.133	-1.11	0.269	3.61
IM	0.098	0.118	0.83	0.410	3.32
IS	-0.047	0.131	-0.36	0.720	3.26
IC	0.372	0.114	3.26	0.001	3.34
<i>R-square</i>	16.44%				

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta, VIF = variance inflation factor of the predictor.

Hypothesis 2

Organizational climate is positively related to individual innovativeness at work.

Tables 14 and 15 present the results of correlation analysis and linear regression analysis, respectively, used to test Hypothesis 2. As shown in Table 14, in support of Hypothesis 2, organizational climate (OC) was found to be significantly positively correlated with IAW ($r = 0.234, p < 0.01$). OC was also significantly positively correlated with the INI factor of IAW ($r = 0.212, p < 0.05$) and the CIP factor of IAW ($r = 0.216, p < 0.05$). Additionally, IAW was significantly correlated with the two factors of OC, innovation (INO), and flexibility (FLX). Table 15 expands on the results of the correlation analysis and presents results of a linear regression with IAW regressed on OC, and IAW regressed on the two factors of OC: INO and FLX. Results found a one-unit increase in OC is estimated to increase IAW by a score of 0.294 ($Z = 2.82, p = 0.006$); OC is estimated to account for 5.5% of the variance in IAW. In the multiple regression analysis, the INO factor of OC was found to significantly predict IAW (Beta = 0.337, $Z = 2.05, p = 0.042$). These results suggest Hypothesis 2 is supported and OC in the workplace has a positive impact on innovativeness via innovation.

Table 14. *Intercorrelations Between Organizational Climate and Individual Innovativeness at Work*

N = 137

	IAW	INI	CIP	OC	INO
INI	0.901**				
CIP	0.843**	0.558**			
OC	0.234**	0.212*	0.216*		
INO	0.240**	0.217*	0.217*	0.919**	
FLX	0.219**	0.209*	0.197*	0.934**	0.736**

Note. * $p < 0.05$, ** $p < 0.01$ Spearman's rho correlation coefficient. IAW = individual innovativeness at work, INI = innovation implementation, CIP = creativity and innovation perception, OC = organizational climate composite, INO = innovation, and FLX = flexibility.

Table 15. *Regression of Innovativeness on Organizational Climate*

Term	Beta	SE	Z	p	VIF
Constant	2.916	0.298	9.77	<0.001	
OC	0.294	0.104	2.82	0.006	
<i>R-square</i>	5.5%				
Constant	2.829	0.307	9.23	<0.001	
INO	0.337	0.165	2.05	0.042	2.51
FLX	-0.021	0.147	-0.14	0.888	2.51
<i>R-square</i>	6.5%				

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta, VIF = variance inflation factor of the predictor.

Hypotheses 3, 4, and 5

Extraversion personality trait, openness personality trait, and intuition personality are positively related to individual innovativeness at work.

Tables 16 and 17 present the results of correlation analysis and linear regression analysis, respectively, used to test Hypotheses 3, 4, and 5. As shown in Table 16, in support of Hypothesis 3, extraversion personality trait (EXTRA) was found to be significantly correlated with IAW ($r = 0.305, p < 0.01$). EXTRA was also significantly positively correlated with the INI factor of IAW ($r = 0.230, p < 0.01$) and the CIP factor of IAW ($r = 0.299, p < 0.01$). In support of Hypothesis 4, openness personality trait (OPEN) was found to be significantly positively correlated with IAW ($r = 0.528, p < 0.01$) and its two factors, INI ($r = 0.471, p < 0.01$) and CIP ($r = 0.488, p < 0.01$). In contrast, Hypothesis 5 was not supported by the results of the correlation analysis because intuition personality type (INT) was not significantly correlated with IAW or any of its two factors ($p > 0.05$). Table 17 expands on the results of the correlation analysis and presents results of a linear regression with IAW regressed on EXTRA, IAW regressed on OPEN, and IAW regressed on INT. Results found a one-unit increase in EXTRA and OPEN are estimated to increase IAW by a score of 0.209 ($Z = 2.68, p = 0.008$) and 0.596 ($Z = 6.08, p < 0.001$), respectively. Regression analyses suggest EXTRA and OPEN account for 5% and 21.3% of the variance in IAW, respectively. Linear regression did not estimate a significant change in the IAW score by INT ($Z = 1.02, p = 0.310$). These results suggest Hypothesis 3 and Hypothesis 4 are supported but Hypothesis 5 is not supported. Thus, extraversion and openness personality traits have a positive impact on individual innovativeness at work.

Table 16. *Intercorrelations between Personality and Individual Innovativeness at Work*

N = 130

	IAW	INI	CIP	EXTRA	OPEN
INI	0.901**				
CIP	0.843**	0.558**			
EXTRA	0.305**	0.230**	0.299**		
OPEN	0.528**	0.471**	0.488**	0.297**	
INT	-0.113	-0.098	-0.106	-0.170*	-0.323

Note. * $p < 0.05$, ** $p < 0.01$ Spearman's rho correlation coefficient. IAW = individual innovativeness at work, INI = innovation implementation, CIP = creativity and innovation perception, EXTRA = extraversion personality trait, OPEN = openness personality trait, and INT = intuition personality type.

Table 17. *Regression of Individual Innovativeness at Work on Personality*

Term	Beta	SE	Z	p
Constant	3.028	0.272	11.13	<0.001
EXTRA	0.209	0.078	2.68	0.008
<i>R-square</i>	5.00%			
Constant	1.478	0.376	3.93	<0.001
OPEN	0.596	0.098	6.08	<0.001
<i>R-square</i>	21.27%			
Constant	4.116	0.379	10.87	<0.001
INT	-0.116	0.114	-1.02	0.310
<i>R-square</i>	0.76%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta.

Hypothesis 6

Extraversion personality trait moderates the relationship between transformational leadership and individual innovativeness at work.

Table 18 presents the results of multiple linear regression used to test Hypothesis 6. Specifically, IAW was regressed on TL, EXTRA and a TL x EXTRA interaction term. Results found the TL x EXTRA interaction term was significant (Beta = 0.187, $Z = 1.98$, $p = 0.049$). To assist with interpretation of the significant interaction term, a factorial plot was created of the slope of the TL-IAW relationship when EXTRA was low, and a plot was created of the slope of the TL-IAW relationship when EXTRA was high (see Figure 2). As shown in the figure, when EXTRA was low (solid blue line), TL does not appear to have an impact on IAW. In contrast, when EXTRA was high (dashed red line), TL appears to have a strong positive impact in IAW.

Table 18. *Regression of Individual Innovativeness at Work on Transformational Leadership - Moderation by Extraversion Personality Trait*

Term	Beta	SE	Z	p
Constant	4.200	1.180	3.57	<0.001
TL	-0.345	0.339	-1.02	0.309
EXTRA	-0.425	0.329	-1.29	0.199
TL x EXTRA	0.187	0.095	1.98	0.049
<i>R-square</i>	18.44%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. TL = transformational leadership composite, EXTRA = extraversion personality trait.

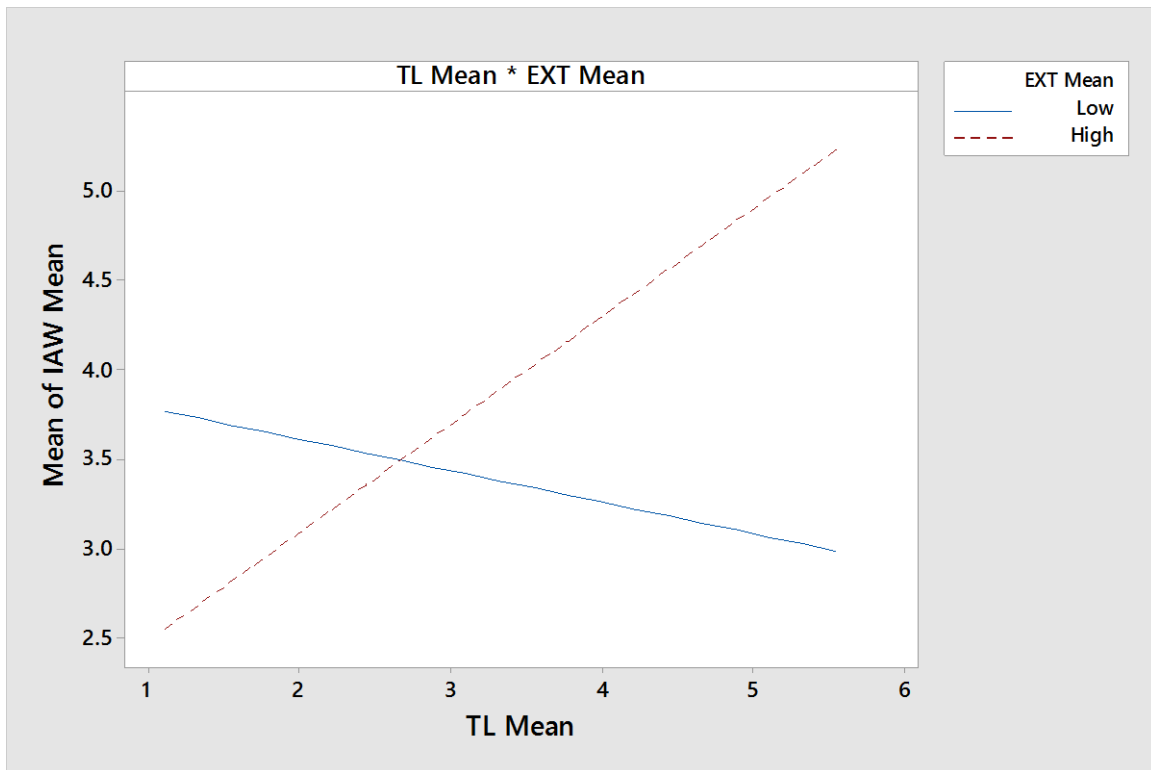


Figure 2. Factorial plot of extraversion personality trait moderating the relationship between transformational leadership and individual innovativeness at work.

Hypothesis 7

Openness personality trait moderates the relationship between transformational leadership and individual innovativeness at work.

Table 19 presents the results of multiple linear regression used to test Hypothesis 7. Specifically, IAW was regressed on TL, OPEN and a TL x OPEN interaction term. Results found the TL x OPEN interaction term was not significant (Beta = 0.062, $Z = 0.57$, $p = 0.569$). These results do not support Hypothesis 7 and suggest the relationship between transformational leadership styles and individual innovativeness at work is not moderated by openness personality trait.

Table 19. *Regression of Innovativeness at Work on Transformational Leadership - Moderation by Openness Personality Trait*

Term	Beta	SE	Z	p
Constant	1.620	1.460	1.11	0.268
TL	0.002	0.444	0.01	0.996
OPEN	0.343	0.364	0.94	0.348
TL x OPEN	0.062	0.109	0.57	0.569
<i>R-square</i>	28.65%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. TL = transformational leadership composite, OPEN = openness personality trait.

Hypothesis 8

Intuition personality type moderates the relationship between transformational leadership and individual innovativeness at work.

Table 20 presents the results of multiple linear regression used to test Hypothesis 8. Specifically, IAW was regressed on TL, INT and a TL x INT interaction term. Results found the TL x INT interaction term was not significant (Beta = 0.020, $Z = 0.15$, $p = 0.879$). These results do not support Hypothesis 8 and suggest the relationship between transformational leadership styles and individual innovativeness at work is not moderated by intuition personality type.

Table 20. *Regression of Innovativeness on Transformational Leadership – Moderation by Intuition Personality Type*

Term	Beta	SE	Z	p
Constant	3.410	1.520	2.24	0.026
TL	0.241	0.429	0.56	0.576
INT	-0.215	0.454	-0.47	0.637
TL x INT	0.020	0.128	0.15	0.879
<i>R-square</i>	12.05%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. TL = transformational leadership composite, INT = intuition personality type.

Hypothesis 9

Extraversion personality trait moderates the relationship between organizational climate and individual innovativeness at work.

Table 21 presents the results of multiple linear regression used to test Hypothesis 9. Specifically, IAW was regressed on OC, EXTRA and an OC x EXTRA interaction term. Results found the OC x EXTRA interaction term was significant (Beta = 0.291, $Z = 2.33$, $p = 0.021$). To assist with interpretation of the significant interaction term, a factorial plot was created of the slope of the OC-IAW relationship when EXTRA was low vs. high (see Figure 3). As shown in the figure, when EXTRA was low (solid blue line), OC appears to have a negative impact on IAW. In contrast, when EXTRA was high (dashed red line), OC appears to have a strong positive impact in IAW.

Table 21. *Regression of Individual Innovativeness at Work on Organizational Climate - Moderation by Extraversion Personality Trait*

Term	Beta	SE	Z	p
Constant	5.110	1.240	4.11	<0.001
OC	-0.732	0.441	-1.66	0.099
EXTRA	-0.619	0.355	-1.75	0.083
OC x EXTRA	0.291	0.125	2.33	0.021
<i>R-square</i>	12.05%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. OC = organizational climate composite, EXTRA = extraversion personality trait.

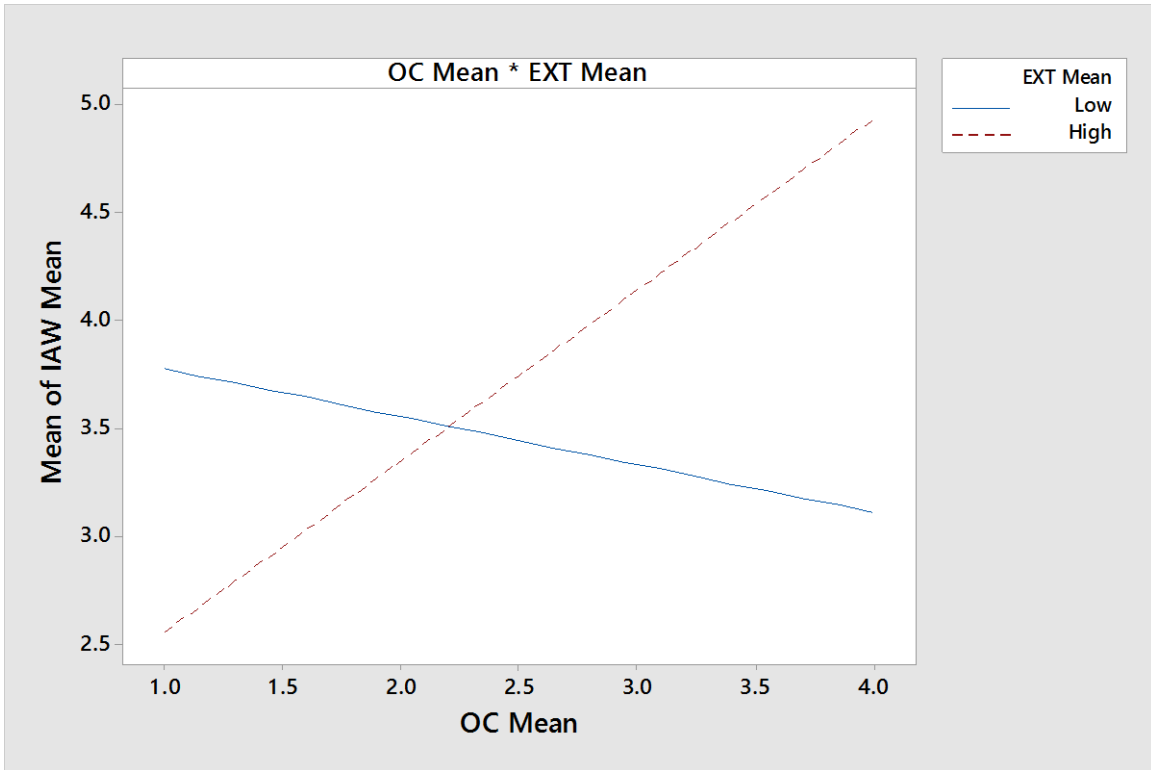


Figure 3. Factorial plot of extraversion personality moderating the relationship between organizational climate and individual innovativeness at work

Hypothesis 10

Openness personality trait will moderate the relationship between Organizational climate and individual innovativeness at work.

Table 22 presents the results of multiple linear regression used to test Hypothesis 10. Specifically, IAW was regressed on OC, OPEN and an OC x OPEN interaction term. Results found the OC x OPEN interaction term was not significant (Beta = 0.132, $Z = 0.88$, $p = 0.380$). These results do not support Hypothesis and suggest the relationship between organizational climate and individual innovativeness at work is not moderated by openness personality trait.

Table 22. *Regression of Innovativeness at Work on Organizational Climate - Moderation by Openness Personality Trait*

Term	Beta	SE	Z	p
Constant	2.080	1.690	1.23	0.222
OC	-0.213	0.587	-0.36	0.717
OPEN	0.226	0.432	0.52	0.602
OC x OPEN	0.132	0.150	0.88	0.380
<i>R-square</i>	27.30%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. OC = organizational climate composite, OPEN = openness personality trait.

Hypothesis 11

Intuition personality type will moderate the relationship between Organizational climate and individual innovativeness at work.

Table 23 presents the results of multiple linear regression used to test Hypothesis 11. Specifically, IAW was regressed on OC, INT and an OC x INT interaction term. Results found the OC x INT interaction term was not significant (Beta = -0.026, $Z = 0.17$, $p = 0.868$). These results do not support Hypothesis 11 and suggest the relationship between organizational climate and individual innovativeness at work is not moderated by intuition personality type.

Table 23. *Regression of Innovativeness on Organizational Climate - Moderation by Intuition Personality Type*

Term	Beta	SE	Z	p
Constant	3.120	1.520	2.05	0.042
OC	0.392	0.524	0.75	0.456
INT	-0.074	0.459	-0.16	0.872
OC x INT	-0.026	0.157	-0.17	0.868
<i>R-square</i>	6.69%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. OC = organizational climate composite, INT = intuition personality type.

Demographic Moderators

In this section, results from additional exploratory analyses are presented of demographic characteristics moderating the relationships between TL and IAW, between OC and IAW, between EXTRA and IAW, between OPEN and IAW, and between INT and IAW. Specifically, regressions were conducted with the demographic characteristics serving as moderators of the regression of IAW on each of the following: TL, OC, EXTRA, OPEN, and INT. Regressions included either a TL x Demographics, OC x Demographics, etc., interaction term. Only the significant findings are reported. These analyses revealed one significant result. The years of professional experience was found to moderate the regression of IAW on TL (see Table 24 and Figure 4). Specifically, IAW was regressed on TL, Experience and a TL x Experience interaction term. Results found the TL x Experience interaction term was significant ($\text{Beta} = -0.082$, $Z = 2.16$, $p = 0.033$) (see Table 24). To assist with interpretation of the significant interaction term, a factorial plot was created of the slope of the TL-IAW relationship when Experience was low, and a plot was created of the slope of the TL-IAW relationship when Experience was high (see Figure 4). As shown in the figure, when Experience was low (solid blue line), TL appears to have a strong positive impact on IAW. In contrast, when Experience was high (dashed red line), TL appears to have a minor negative impact in IAW.

Table 24. *Regression of Innovativeness on Transformational Leadership - Moderation by Years of Experience*

Term	Beta	SE	Z	p
Constant	1.891	0.377	5.01	<0.001
TL	0.490	0.112	4.38	<0.001
Experience	0.361	0.126	2.87	0.005
TL x Experience	-0.082	0.038	-2.16	0.033
<i>R-square</i>	19.70%			

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. TL = transformational leadership composite, Experience = years of professional work experience.

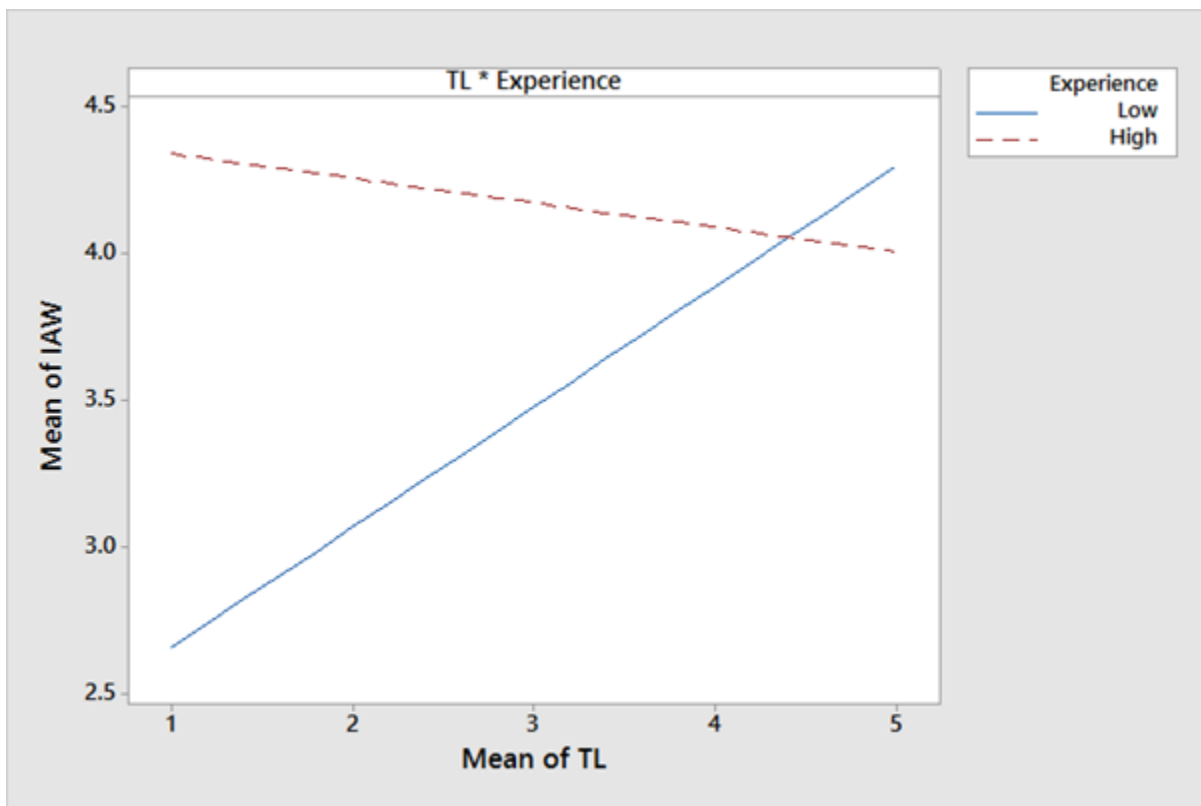


Figure 4. Factorial plot of years of work experience moderating the relationship between transformational leadership and individual innovativeness at work

Individual Innovativeness at Work Model

The hypothesis testing discussed in the previous section indicated a positive significant relationship between organizational climate (Hypothesis 1), transformational leadership (Hypothesis 2), and extraversion (Hypothesis 3) and openness (Hypothesis 4). In addition, the experience demographic appeared to moderate the relationship between transformational leadership and individual innovativeness at work. In order to predict individual innovativeness at work, stepwise regression analysis was conducted on the above-mentioned variables that demonstrated a positive relationship with individual innovativeness at work. A regression model that includes the organizational climate for innovation, transformational leadership - individualized consideration, openness personality trait, and experience was generated and is depicted in Table 25. As the table indicates, the model components are significant predictors of individual innovativeness at work, accounting for 40.5% of the variance. The unstandardized regression coefficient for the individual innovativeness scale suggests a one-unit change in the openness personality trait is estimated to predict an increase in individual innovativeness at work by 0.467. Since individual innovativeness at work was scored along a 1 to 5 Likert-scale, a one-unit increase in openness is predicted to increase individual innovativeness by almost 9%. Also, a one-unit change in the transformational leadership - individualized consideration subscale is estimated to predict an increase in individual innovativeness of 0.53. This suggests that a one-unit increase in the transformational leadership - individualized consideration subscale is predicted to increase individual innovativeness at work by almost 11%. Similarly, the organizational climate for innovation is estimated to predict an increase in individual innovativeness of 0.799. A one-unit increase in organizational climate for innovation

therefore is predicted to increase individual innovativeness by almost 16%. Finally, a one-unit change in experience is estimated to predict an increase in individual innovativeness at work of 0.148. This suggests that a one-unit increase in experience is predicted to increase individual innovativeness at work by almost 3%.

Table 25. *Regression of Individual Innovativeness at Work on Openness, Individualized Consideration, Innovation, and Experience*

Term	Beta	SE	Z	P	VIF
Constant	2.056	4.205	0.49	0.626	
OPEN	0.467	0.09	5.21	<0.001	1.041
IC	0.533	0.16	3.31	0.001	1.118
INO	0.799	0.25	3.20	0.002	1.095
Experience	0.148	0.05	2.84	0.005	1.016
R-square	40.5%				

Note. Beta of the linear regression is presented as the unstandardized regression coefficient. SE = standard error of Beta. OPEN = openness personality trait, IC = transformational leadership - individualized consideration, INO = organizational climate for innovation, Experience = years of professional work experience.

Chapter 5: Discussion

This study investigated empirically the impact of transformational leadership, organizational climate, extraversion personality trait, openness personality trait, intuition personality type, and individual innovativeness at work. Self-report survey data from a convenience sample of N = 161 professionals employed by large and mid-size manufacturing organizations in mid-western states were analyzed using descriptive and inferential statistics. This chapter presents a discussion of the major study findings in terms of summary of results, study implications, and recommendations for practice. The chapter concludes with a discussion of the study limitations and recommendations for future research.

This study found several major findings concerning the relationship among transformational leadership (TL, independent variable), organizational climate (OC, independent variable), extraversion personality trait (EXTRA, independent and moderating variable), openness personality trait (OPEN, independent and moderating variable), intuition personality type (INT, independent and moderating variable), individual innovativeness at work (IAW, dependent variable), and demographic characteristics (moderating variables). First, study data were found to be reliable in the study sample according to results of Cronbach's alpha tests of internal consistency reliability. Next, results of an exploratory factor analysis on individual innovativeness at work (IAW) found IAW appeared to be comprised of two factors: innovation implementation, and creativity and innovation perception.

Results of descriptive statistics using frequency analysis indicated that the study sample contained significantly more males than females and more than half of whom were 18 to 30 years of age. The study sample was also comprised of predominantly Caucasian/White

employees with a Bachelor's or graduate degree who reported working in administration, finance, HR, IT, marketing, purchasing/supply chain, or sales, with 0 to 5 years professional experience, and as a first line employee (1/3 of the study participants were supervisors, managers, or directors).

Results from the inferential statistics of the 11 study hypotheses created to help understand the relationship among the study independent, moderating, and dependent variables indicate:

Hypothesis 1, supported. To test Hypothesis 1, IAW was regressed on TL. Hypothesis 1 was supported, suggesting that TL does have a positive impact on IAW, accounting for approximately 11% of the variance in IAW. Multiple regression analysis of IAW regressed on the set of four TL factors found the individualized consideration factor of TL was significantly associated with increases in IAW.

Hypothesis 2, supported. To test Hypothesis 2, IAW was regressed on OC. Hypothesis 2 was supported, suggesting OC does have a positive impact on IAW, accounting for approximately 6% of the variance in IAW. Multiple regression analysis of IAW regressed on the set of two OC factors found the innovation factor of OC was significantly associated with increased in IAW.

Hypothesis 3, supported. To test Hypothesis, IAW was regressed on EXTRA. Hypothesis 3 was supported, suggesting EXTRA does have a positive impact on IAW, accounting for 5% of the variance in IAW.

Hypothesis 4, supported. To test Hypothesis 4, IAW was regressed on OPEN. Hypothesis 4 was supported, suggesting OPEN does have a positive impact on IAW, accounting for approximately 21% of the variance in IAW.

Hypothesis 5, not supported. To test Hypothesis 5, IAW was regressed on INT. Hypothesis 5 was not supported, suggesting INT does not have an impact on IAW.

Hypothesis 6, supported. To test Hypothesis 6, IAW was regressed TL, EXTRA, and a TL x EXTRA interaction term. Hypothesis 6 was supported, suggesting EXTRA does moderate the relationship between TL and IAW. A factorial plot of EXTRA moderating the relationship between TL and IAW suggests TL styles are likely to have a strong positive impact on innovativeness in individuals who are extraverted.

Hypothesis 7, not supported. To test Hypothesis 7, IAW was regressed on TL, OPEN and a TL x OPEN interaction term. Hypothesis 7 was not supported, suggesting OPEN does not moderate the relationship between TL and IAW.

Hypothesis 8, not supported. To test Hypothesis 8, IAW was regressed on TL, INT and a TL x INT interaction term. Hypothesis 8 was not supported, suggesting INT does not moderate the relationship between TL and IAW.

Hypothesis 9, supported. To test Hypothesis 9, IAW was regressed on OC, EXTRA, and an OC x EXTRA interaction term. Hypothesis 9 was supported, suggesting EXTRA does moderate the relationship between OC and IAW. A factorial plot of EXTRA moderating the relationship between OC and IAW suggests OC is likely to have a strong positive impact on innovativeness in individuals who are extraverted. In contrast, when individuals are not extraverted, the climate of the organization may actually impede and reduce innovativeness at work.

Hypothesis 10, not supported. To test Hypothesis 10, IAW was regressed on OC, OPEN and an OC x OPEN interaction term. Hypothesis 10 was not supported, suggesting OPEN does not moderate the relationship between OC and IAW.

Hypothesis 11, not supported. To test Hypothesis 11, IAW was regressed on OC, INT and an OC x INT interaction term. Hypothesis 11 was not supported, suggesting INT does not moderate the relationship between OC and IAW.

Demographic characteristics moderating the impact of TL, OC, EXTRA, OPEN and INT on IAW. Regressions were conducted with the demographic characteristics serving as moderators of the regression of IAW on each of the following: TL, OC, EXTRA, OPEN, and INT. Regressions were conducted in a similar manner as hypotheses Hypothesis 6 to Hypothesis 11 (i.e., a TL x Demographics, OC x Demographics, etc., interaction term was included in the multiple regression analysis). These analyses revealed that years of professional experience was found to moderate the regression of IAW on TL. A factorial plot suggests transformational leadership styles are likely to have a strong positive impact on innovativeness in individuals who have minimal professional work experience. In contrast, when individuals are experienced employees, the transformational leadership styles in the organization may actually impede and reduce innovativeness at work.

Study Implications

This section discusses the main study implications of the descriptive and inferential statistics. The first study implications are the study sample was comprised primarily of young white employees between 21 to 30 years of age who are first line employees in administration, finance, HR, IT, marketing, purchasing/supply chain or sales, with 0 to 5 years of experience, and with some college or an associate's or a bachelor's degree. Level of innovativeness in the sample increased with their age, education, and years of work experience. Also, innovativeness was higher in supervisors, managers and directors compared to first line employees. Results also imply the level of transformational leadership

of the study participants' leaders increased with the participants' age and years of work experience.

The main study implications concern the significant positive impact on innovativeness by transformational leadership and organizational climate. In particular, the individualized consideration factor of TL and the innovation factor of OC were found to be associated with innovativeness. The study results are consistent with the findings of research by Cekmecelioglu and Ozbag (2016), Cheung and Wong (2010), Khalili (2016), Mittal and Dhar (2015) and Tung (2016) concerning the positive relationship between transformational leadership and individual creativity. Study results are also consistent with research by Gundry et al. (2016), Lin and Liu (2012), and Montes et al. (2004) that showed a positive relationship between organizational climate and innovation perception of employees.

Study results indicate the attention employees receive from their leader reflects favorably on their perception of creativity and innovation. Given the majority of the U.S. labor work force is between 18 to 34 years of age, to increase innovativeness in the new young employee, it is important to recognize the need for transformational leaders who actively listen to others and who are sensitive to employee's needs for growth, development, and recognition (Bass & Riggio, 2006). It also important for the employee's organization to have an organizational climate that encourages and supports innovation.

Another goal of the study was to assess the impact on innovativeness by extraversion, openness, and intuition personality traits/type. Results found extraversion and openness personality traits had a positive impact on innovativeness, whereas intuition personality type did not impact innovativeness. The positive impact of extraversion personality type on innovativeness is consistent with the findings of Furnham and Bachtiar (2008), Furnham et

al. (2009), Furnham et al. (2012), Kandler (2016), King et al. (1996), Kwang and Rodrigues (2002), and Sung and Choi (2009), who found a positive relationship between extraversion and employee creativity. These results are consistent with the findings of Conor and Silvia (2015), Feist (1998), Furnham (1999), Furnham et al. (2012), George and Zhou (2001), Hughes et al. (2012), Kandler (2016), Kwang and Rodrigues (2002), Reilly et al. (2002) and Sung and Choi (2009), who found positive relationships between openness and employee creativity. The lack of impact of intuition personality type on innovativeness is not consistent with the body of research where intuition was found to be related to creativity and innovation (e.g., Hautala, 2005; Schyns & Sanders, 2007; Van Der Kam et al., 2015). However, the research on intuition personality type was conducted in an academic setting with student participants. One key finding from a study by Lee and Min (2016) indicated that even though intuitive professionals were found to have a higher creative potential than sensing professionals, professional domains were significant predictors of most of the tested creativity, even over and above the personality types. In addition, business professionals (which comprised over half of the sample in this study) were found by Lee and Min to possess lower levels of creativity than other professionals.

This study also assessed if personality and demographic characteristics moderated the impact of transformational leadership and organizational climate on innovativeness. Results found extraversion personality trait in the study sample, years of experience, and ethnicity moderated the TL-innovativeness and OC-innovativeness relationships. Results did not support openness personality trait or intuition personality type as moderators, nor any of the other demographic characteristics. The study found that for White participants in the study sample who identify themselves as extraverted and who have minimal work experience, the

transformational leader plays a critical role on their innovativeness at work. These findings imply in organizations with young workers who are extraverted, transformational leadership is important for encouraging innovativeness at work.

Recommendations for Practice

The results of the study have important implications that will help guide leadership training. The study found transformational leadership is critical to the development of individual innovativeness at work. Even though employees with different personality traits and types behave differently, a transformational leader needs to develop an understanding of individual differences and drive innovativeness in the organization. This can be accomplished by training the leaders in the organization on the principles of transformational leadership and helping them implement steps to encourage individual innovativeness.

Another recommendation derived from the study results is that an innovation model should be developed in the organization that incorporates creativity and innovation implementation elements. The innovation model should include processes that enhance creativity and guide the implementation of innovation within the organization. Finally, organizational leaders should create a climate that promotes innovation in the organization. Even though different individuals react differently to organizational climate (as demonstrated by the findings of the study), an organizational climate that promotes innovation is likely to have a positive impact individual innovativeness in the organization.

Study Limitations

There are four research limitations in the proposed research study. The first limitation of the current study is the sole reliance on self-report data. When a study uses only one type of data collection, there is potential for mono-method bias and inflated correlations. Thus,

there is a potential for artificially high observed relationships, as compared to those that might have resulted if several methods of data collection were used. A second limitation of the study is that the cross-sectional nature of the research design prevents the determination of causation. Another limitation of the study is the use of a convenience sample which limits the ability to generalize the results to the population. Finally, there is still no agreement in the climate literature on the number of climate dimensions there are (Koys & DeCotis, 1991). On the one hand, Schneider and Reichers (1983) argue for climate dimensions specific to the research issue at hand, while others support the use of more generalized dimensions (James et al., 1990). In this study, the Schneider and Reichers approach was accepted and specific climate dimension for innovation and flexibility was utilized. It is impossible to know how the results of this study would vary if additional dimensions or different dimensions of climate are investigated.

Recommendations for Future Research

Several findings were consistent with the hypotheses postulated at the onset of the study. There were however several findings that were not consistent with the hypotheses and are worthy of future research. One item that is proposed for future research is the further investigation of the sensing-intuitive personality type with individual innovativeness at work. The results in this study did not indicate a significant relationship while other studies have shown that a positive relationship exists (Jacobson, 1993; Isaksen et al., 2003; Cheng et al., 2010; Eubanks et al., 2010; Chatterjee, 2014; and Lee & Min, 2016). It is possible based on the findings of Lee and Min (2016) that profession plays a bigger role in determining creativity more than the personality type. Another item that should be investigated is the relationship of the individualized consideration subscale on the perception of creativity and

innovation. A consistently positive relationship was predicted by this study between the creativity and innovation subscale and individualized consideration. This positive relationship existed even when the transformational leadership scale and its other subscales did not demonstrate a significant relationship with the perception of creativity and innovation. Finally, given the significant increase and continued growth of the millennials demographic coupled with the decline of baby boomers in the U.S. work force, it is important to develop an understanding of the personality traits and types of the millennials. It is also important to understand the relationship between these personality traits, types, and individual innovativeness at work.

Summary

To meet the demands of today's competitive business environment to create new and innovative products, and to encourage new and innovate approaches to business, organizational leaders should focus on increasing individual innovativeness among its employees. Managing innovativeness can be a challenge for many organizational leaders. Results of this study suggest individual innovativeness at work can be enhanced via transformational leadership styles concerned with actively listening to others and being sensitive to individual needs for growth, development, and recognition (i.e., individualized consideration); organizational climates concerned with encouraging and promoting innovation; and extraverted employees who are open to new and innovative experiences.

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Appendix A: Questionnaire for Survey Participants

The purpose of this survey is to assess your perceptions toward your current workplace (your current organization). This questionnaire consists of 5 five brief surveys measuring your perceptions of your supervisor, innovation in your current organization, and your personality. All responses collected from this survey are confidential and anonymous.

Demographics

Gender: – Male – Female

How old are you? _____

Education Level: – H.S. Diploma – Some College
 – Associate’s Degree – Bachelor’s Degree
 – Master’s Degree – Doctorate Degree

Profession – Technical (Product / development engineer, designer, project manager, scientist)
 – Business (Administration, finance, HR, IT, marketing, purchasing / supply chain, sales)
 – Manufacturing (Process engineer, production, quality, maintenance, logistics)
 – Professional services / consultant

Career Level: – First Line Employee (You do not supervise anyone)
 – Supervisor
 – Manager
 – Director
 – Executive (You are a part of the senior management team)

How many years of experience do you have? _____

Race: – Caucasian / White – Black / African -American
 – Hispanic or Latinos – Asian/ Pacific Islander
 – American Indian / Alaska Native

Organizational Climate

The following questions assess your perception of the innovation and flexibility climate in your organization. These items are ranked on a 4-point scale and range from “Definitely False” to “Definitely True”. Please select the rating that best describes your perception of the following activities in your organization:

No.		Definitely False	Mostly False	Mostly True	Definitely True
1	New ideas are readily accepted here	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	This company is quick to respond when changes need to be made	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Management here are quick to spot the need to do things differently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	This organization is very flexible; it can quickly change procedures to meet new conditions and solve problems as they arise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Assistance in developing new ideas is readily Available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	I generated and successfully implemented product or process improvement ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	People in this organization are always searching for new ways of looking at problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Personality

The following questions assess your perception of your personality. These items are ranked on a 5-point scale and range from “Inaccurate” to “Accurate”. Please select the rating that best describes how you best perceive your personality:

No.		Inaccurate	Partially Inaccurate	Neither	Partially Accurate	Accurate
1	I am the life of the party.	0	0	0	0	0
2	I feel comfortable around people.	0	0	0	0	0
3	I start conversations.	0	0	0	0	0
4	I talk to a lot of different people at parties.	0	0	0	0	0
5	I don't mind being the center of attention.	0	0	0	0	0
6	I don't talk a lot.	0	0	0	0	0
7	I keep in the background.	0	0	0	0	0
8	I have little to say.	0	0	0	0	0
9	I don't like to draw attention to myself.	0	0	0	0	0
10	I am quiet around strangers.	0	0	0	0	0
11	I have a rich vocabulary.	0	0	0	0	0
12	I have a vivid imagination.	0	0	0	0	0
13	I have excellent ideas.	0	0	0	0	0
14	I am quick to understand things.	0	0	0	0	0
15	I use difficult words.	0	0	0	0	0
16	I spend time reflecting on things.	0	0	0	0	0
17	I am full of ideas.	0	0	0	0	0
18	I have difficulty understanding abstract ideas.	0	0	0	0	0
19	I am not interested in abstract ideas.	0	0	0	0	0
20	I do not have a good imagination.	0	0	0	0	0
21	I am more realistic than speculative	0	0	0	0	0
22	I am more attracted to sensible people than imaginative people	0	0	0	0	0
23	I am more interested in what is actual than what is possible	0	0	0	0	0
24	In doing ordinary things, I am more likely to do them the usual way rather than my own way	0	0	0	0	0
25	Visionaries are annoying and not fascinating	0	0	0	0	0
26	Common sense is rarely questionable	0	0	0	0	0
27	I go more by facts than principles	0	0	0	0	0
28	I am more likely to trust my experience than a Hunch	0	0	0	0	0
29	I feel more practical than ingenious	0	0	0	0	0
30	I am more likely to see how others are useful than to see how others see	0	0	0	0	0

Supervisory Leadership

The following questions assess your perception of your supervisor and their leadership style. These items are ranked on a 5-point scale and range from “Not at All” to “Frequently if not Always”. Please select the rating that best describes the frequency your supervisor participates in the following activities:

No.		Not at All	Once in a While	Sometimes	Fairly Often	Frequently if not Always
1	My supervisor provides me with assistance in exchange for my efforts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	My supervisor re-examines critical assumptions to question whether they are appropriate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	My supervisor fails to interfere until problems become serious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	My supervisor focuses attention on irregularities, mistakes, exceptions, and deviations from standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	My supervisor avoids getting involved when important issues arise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	My supervisor talks about their most important values and beliefs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	My supervisor is absent when needed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	My supervisor seeks differing perspectives when solving problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	My supervisor talks optimistically about the Future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	My supervisor instills pride in me for being associated with him/her	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	My supervisor discusses in specific terms who is responsible for achieving performance targets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	My supervisor waits for things to go wrong before taking action	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	My supervisor talks enthusiastically about what needs to be accomplished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	My supervisor specifies the importance of having a strong sense of purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	My supervisor spends time teaching and Coaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	My supervisor makes clear what one can expect to receive when performance goals are achieved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	My supervisor shows that he/she is a firm believer in “If it ain’t broke, don’t fix it.”	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	My supervisor goes beyond self-interest for the good of the group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	My supervisor treats me as an individual rather than just as a member of a group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	My supervisor demonstrates that problems must become chronic before taking action	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

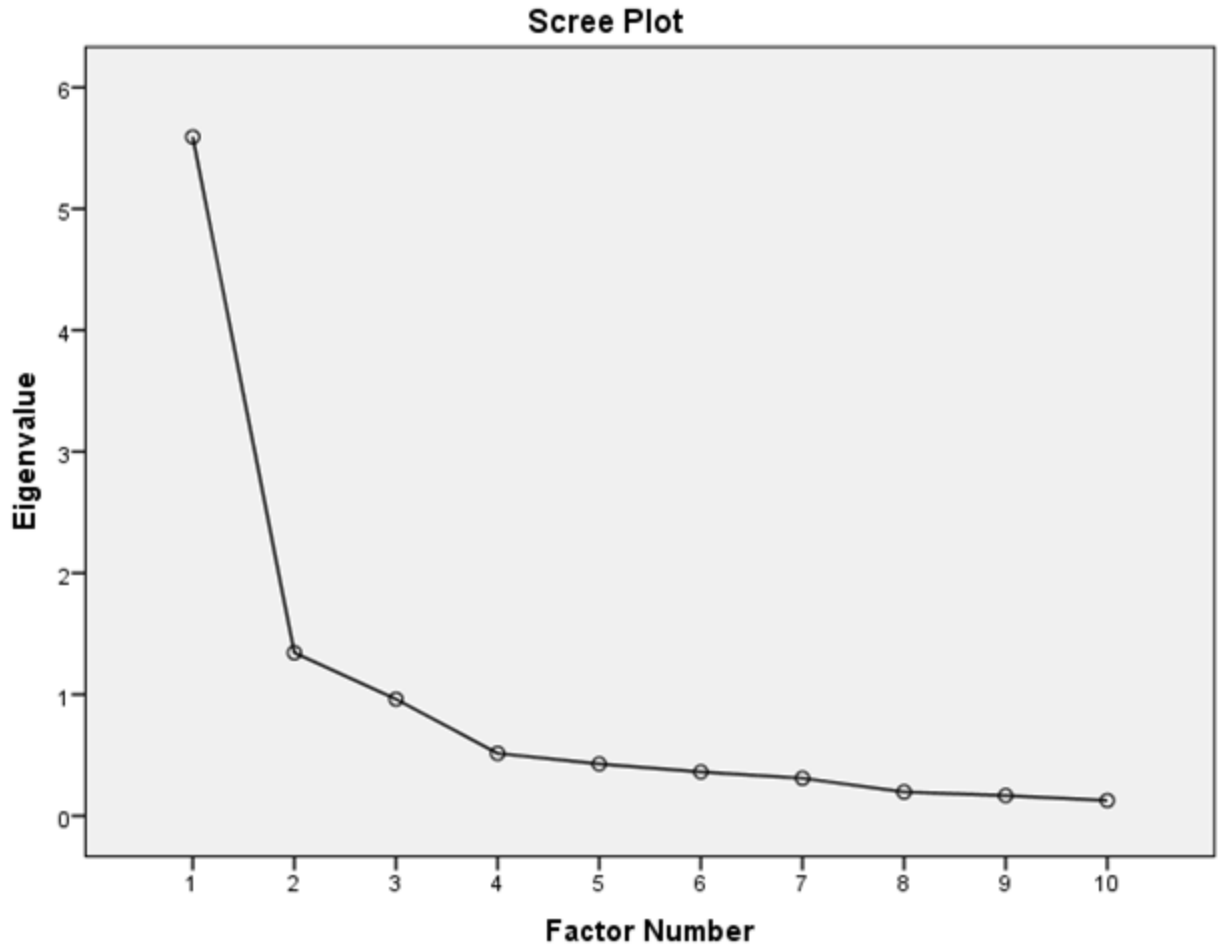
21	My supervisor acts in ways that builds my Respect	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22	My supervisor concentrates his/her full attention on dealing with mistakes, complaints, and failures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23	My supervisor considers the moral and ethical consequences of decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24	My supervisor keeps track of all mistakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25	My supervisor displays a sense of power and confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26	My supervisor articulates a compelling vision of the future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27	My supervisor directs my attention toward failures to meet standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28	My supervisor avoids making decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29	My supervisor considers me as having different needs, abilities, and aspirations from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30	My supervisor gets me to look at problems from many different angles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31	My supervisor helps me to develop my Strengths	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32	My supervisor suggests new ways of looking at how to complete assignments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33	My supervisor delays responding to urgent Questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34	My supervisor emphasizes the importance of having a collective sense of mission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35	My supervisor expresses satisfaction when I meet expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36	My supervisor expresses confidence that goals will be achieved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37	My supervisor is effective in meeting my job-related needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38	My supervisor uses methods of leadership that are satisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39	My supervisor gets me to do more than I expected to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40	My supervisor is effective in representing me to higher authority	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41	My supervisor works with me in a satisfactory way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42	My supervisor heightens my desire to Succeed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43	My supervisor is effective in meeting organizational requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44	My supervisor increases my willingness to try harder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45	My supervisor leads a group that is effective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Individual Innovativeness at Work

The following questions assess your perception of your innovativeness. These items are ranked on a 5-point scale and range from “Inaccurate” to “Accurate”. Please select the rating that best describes how you best perceive your innovative behavior:

No.		Inaccurate	Partially Inaccurate	Neither	Partial Accurate	Accurate
1	I generate new product ideas	○	○	○	○	○
2	I generate and successfully implement new product ideas	○	○	○	○	○
3	I generate new process ideas	○	○	○	○	○
4	I generate and successfully implement new process ideas	○	○	○	○	○
5	I generate product or process improvement Ideas	○	○	○	○	○
6	I generate and successfully implement product or process improvement ideas	○	○	○	○	○
7	A benefit is realized from the ideas that I Generate	○	○	○	○	○
8	A benefit is realized from the ideas that I generate and implement	○	○	○	○	○
9	I consider myself to be a creative individual	○	○	○	○	○
10	I consider myself to be an innovative Individual	○	○	○	○	○

Appendix B: Individual Innovativeness at Work Scale Development – Scree Plot



Appendix C: Human Subject Approval

From: Sonia Chawla <no-reply@irbnet.org>
Date: Fri, 3 Jun 2016 16:20:50 -0400 (EDT)
Subject: IRBNet Board Action
To: Khalid Iskandarani <kiskanda@emich.edu>, Alphonso Bellamy <abellamy@emich.edu>

Please note that Eastern Michigan University Human Subjects Review Committee (UHSRC) has taken the following action on IRBNet:

Project Title: [900559-1] Assessing the Impact of Transformational Leadership, Personality, and Organizational Climate on Individual Innovative Behavior

Principal Investigator: Khalid Iskandarani, PhD

Submission Type: New Project
Date Submitted: April 21, 2016

Action: EXEMPT
Effective Date: June 3, 2016
Review Type: Exempt Review

Should you have any questions you may contact Sonia Chawla at schawlaw@emich.edu.

Thank you,
The IRBNet Support Team

www.irbnet.org