ABSTRACT

Antecedents to Turnover Intention:
Examining Organizational Learning Culture and Leader Member Exchange

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Turnover intention is an important variable for organizations seeking to retain employees and reduce costs associated with hiring and training new employees. While variables such as organizational commitment, job satisfaction, and to a lesser extent, leader member exchange, have been studied in conjunction with turnover intention, organizational learning culture has not been a prominent within the human resources management literature. I found an existing model of turnover intention which examined organizational learning culture, leader member exchange, and organizational commitment. The extant model had been created and previously validated with populations from Korea and Malaysia. Using path analysis, I sought to determine whether the model would fit a sample (*n*= 192) from the United States. The model did not fit the data well.

Next, I extended the model by adding job satisfaction, and fit it to the same sample. The model fit the data well, and explained 45-63% of the variance in turnover intention. In addition, Leader member exchange quality and organizational learning culture explained 8-28% of the variance in organizational commitment and 21-43% of the

variance in job satisfaction. I discuss the implications of the results and conclude with a discussion on the cultural considerations of the models of turnover intention, limitations on the study, and ideas for future research.

Antecedents to Turnover Intention: Examining Organizational Learning Culture and
Leader Member Exchange

by

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GLOSSARY

Affective commitment. Dimension of organizational commitment that refers to the desire to complete a task (Meyer & Allen, 1991).

Continuation commitment. Dimension of organizational commitment that refers to the need to complete a task (Meyer & Allen, 1991).

Involuntary turnover. Type of turnover that occurs when an employer initiates termination of employment of an employee (Price, 1977).

Job satisfaction. The feelings of an individual towards work and the diversified facets of the job (Spector, 1997).

Knowledge workers. Employees who utilize theoretical and analytical knowledge they obtained through formal education to develop new services or products (Drucker, 1992).

Leader member exchange (LMX). Theory based on the notion that employees (i.e., members) create unique relationships based on social exchanges with their leader or supervisor (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Janseen & VanYperen, 2004).

Learning organization. Organizations that are "skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (Garvin, 1993, p. 80).

Normative commitment. Dimension of organizational commitment that refers to having to complete a task (Meyer & Allen, 1991).

Organizational commitment is the extent to which individuals identify with their organization or the loyalty and connection with their organization (Mowday, Porter, & Steers, 1982; Randhawa & Kaur, 2014).

Organizational culture includes the beliefs, values, and assumptions that direct behavior and create shared meaning within an organization (Denison, 1990; Kotrba et al., 2012).

Role theory. Theory that individuals have social positions or roles (e.g., manager) within an organization where they expect certain behaviors of themselves and others (e.g., Linton, 1936; Mead, 1934).

Social exchange theory. Theory that social change is a process of exchanges that are negotiated by two or more parties (Homans, 1961).

Transformational learning. A change in behavior, perspective, or prior learned information (Mezirow, 2000; Merriam et al., 2007).

Turnover. The movement of employees entering and leaving an organization (Price, 1977).

Turnover intention. The deliberate and conscious willingness to leave an organization (Mobley et al., 1978; Tett & Meyer, 1993).

Voluntary turnover. Type of turnover that occurs when an employee initiates termination of employment (Price, 1977).

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To my parents, Ching Guey and Fengmei Lee– I cannot express how much I have appreciated your encouragement through this program and even more so, for the love and care you have provided to our family. Our kids are incredibly blessed to have such wonderful grandparents in their lives. To my husband, Tom– thank you for being a rock for our family. You provide for us well, you love us unconditionally, and I am joyfully looking forward to our future family dreams and adventures. To Meredith & Joshua– because of you, I have found a renewed passion for education and vocation. You are the reason and inspiration for the work I do. May you grow up to be scholars in the world, may you richly and abundantly feel the love of Jesus throughout your lives, and may you always find your way home.

DEDICATION

To those searching for their vocation (Romans 12: 6-8)

CHAPTER ONE

Introduction

Billions of dollars per year are spent by organizations on recruiting, selecting, and training new employees (Rosch, 2001). Practices that limit attrition and promote retention can save companies millions of dollar annually (Mathis & Jackson, 2003). In order to mitigate increasing operational costs, limit recruitment and training expenses, and to minimize productivity and key talent losses, factors that contribute to voluntary employee turnover should be examined (Kazi & Zadeh, 2011; Milbourn, 2012). It is imperative to understand why employees voluntarily leave a company.

1.1 Turnover

One of the most researched phenomena within organizational behavior is turnover (Price, 2001). *Turnover* is defined as the movement of employees entering and leaving an organization (Price, 1977). There are two types of turnover: voluntary and involuntary. *Voluntary turnover* occurs when an employee initiates termination of employment, while *involuntary turnover* occurs when an employer initiates termination of employment of an employee. From the organization's perspective, involuntary turnover can be positive because removing inefficient workers can increase productivity (Davidson & Wang, 2011). Thus, much of the research on turnover focuses on the causes and effects of voluntary turnover (Schneer, 1993).

Ulrich, Halbrook, Meder, Stuchlik, and Thorpe (1991) found that when there was a decrease in turnover, there was a monetary increase in business performance and a

reduction in costs associated with hiring new employees, retraining of employees, and loss of knowledge that had been acquired by the departing employee. Not only does the process of recruiting, hiring, selecting, and training new employees cost organizations billions of dollars per year (Rosch, 2001), there are also indirect costs incurred such as time and productivity loss by managers and co-workers training new employees and lower new hire productivity. By reducing turnover, these indirect costs may be reduced as well (Cascio, 2000).

1.2 Key Terms

1.2.1 Organizational Culture

Researchers have studied organizational culture as a potential factor influencing voluntary turnover. *Organizational culture* includes the beliefs, values, and assumptions that direct behavior and create shared meaning within an organization (Denison, 1990; Kotrba et al., 2012). Organizational culture is underlying and pervasive within an organization and it influences organizational functioning, employee interaction, and it impacts decision making from all levels of the company (Graham & Nafukho, 2007). Levering (1996) wrote that if a shared culture for learning existed within an organization, the results would include reduced employee turnover intention, an increase of high quality employees, and a supportive environment for innovation.

1.2.2 Organizational Learning Culture

A *learning organization* is an organization which is "skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (Garvin, 1993, p. 80). Watkins and Marsick (1993, 1996) conceptualized a

learning organization as having specific dimensions at the organizational, team, and individual levels. At the organizational and team levels, the learning activities may be developed and planned for the employees. However, in order for an organization to be classified as a learning organization, at an individual level, the employees must demonstrate *transformational learning (*Senge, 1990*).* That is, they must demonstrate a change in behavior, perspective, or prior-learned knowledge (Mezirow, 2000; Merriam et al., 2007). When an employee perceives that the organizational culture incorporates elements of a learning organization, this study will utilize the term *organizational learning culture.*

1.2.3 Leader Member Exchange

Another element of organizational culture is the way in which supervisors and managers treat their employees. If an employee has a good or trusting relationship with their supervisor, it could potentially influence their perspectives on the overall culture of the organization and lead to other impacts on their performance. The theory of *leader member exchange (LMX)* was created on the premise that unique relationships exist between leaders and the members of their teams and are based on a number of social exchanges (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Janseen & VanYperen, 2004).

1.2.4. Organizational Commitment

Resulting from social exchanges such as those created in LMX relationships, *organizational commitment* is the extent to which individuals identify with their organization or the loyalty and connection with their organization (Mowday, Porter, & Steers, 1982; Randhawa & Kaur, 2014). Porter, Steers, Mowday, and Boulin (1974) had

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also included three factors that comprised organizational commitment: (a) a desire to exert effort, (b) the belief in the values and goals of an organization, and (c) a desire to remain a member of the organization.

1.2.5 Job Satisfaction

Job satisfaction is defined as the feelings of an individual towards work and the diversified facets of the job (Spector, 1997). Additionally, it has been conceptualized as "an employee's attitudes of overall acceptance, contentment, and enjoyment in their work" (Lee-Kelley, Blackman, & Hurst, 2007, p. 206). Job satisfaction can be positive or negative and it can be a global feeling about the current job or be specific feelings about specific aspects of the job or organization.

1.3 Summary

Individual factors such as job satisfaction and commitment to the organization, combined with company culture, can influence an individual's perceived experiences with work (Joo, 2010). An organization that promotes learning and one where leaders are able to develop positive relationships with their employees can contribute to positive outcomes within the organization (Joo, 2010).

Given the problem of voluntary attrition on business outcomes, there exists the need to discover ways to mitigate turnover or, at minimum, gain understanding of the psychological underpinnings to turnover intention. Research on turnover intention and job variables such as organizational commitment and job satisfaction is often conducted by those in the fields of industrial organizational (I/O) psychology and human resources management. However, including perspectives on adult learning with theoretical underpinnings from the educational psychology field may add insight into ways in which

the organizational learning culture may influence turnover intention. Specifically, while learning opportunities are often planned from a team or organizational level, the individual's perspectives on the overall learning culture of an organization needs to be explored. Determining how the individual views an organization's learning culture, in conjunction with their perspectives on LMX, organizational commitment, and job satisfaction, may help explain the voluntary turnover phenomenon.

Further, while leader-member exchange, organizational commitment, and turnover intention have all been studied within the I/O psychology and human resource management literature, organizational learning has less of a theoretical framework within the aforementioned disciplines. The learning culture of an organization has not been as vastly studied. There has been limited research on the relationship between organizational learning, leader-member exchange, organizational commitment, and turnover intention within a single framework. Moreover, the models that do exist do not account for job satisfaction. Job satisfaction has been shown to be strongly associated with an employee's intention to leave a company (Egan, Yang, & Bartlett, 2004; MacIntosh & Doherty, 2010). Thus, it should be included in a model where turnover intention is assessed.

CHAPTER TWO

Literature Review

When learning is integrated into the corporate culture of an organization, the employees within the organization may be less likely to voluntary leave the company (Levering, 1996). The corporate culture is often manifested by supervisors towards subordinate employees (Joo, 2010), which can impact employee commitment to the organization (Jo & Joo, 2011; Joo, 2010). An employee's commitment to the organization has a negative relationship with their desire to seek employment outside of the company (Mathieu & Zajac, 1990; Meyer & Allen, 1997). There also exists a negative relationship between satisfaction with an employee's job and the employee's desire to leave the company (Griffeth, Hom, & Gaertner, 2000; Sager et al., 1998). The definitions of each construct, along with the relationships between the constructs, will be utilized to create the framework for the validation of an existing model of turnover intention and an extension of the model.

2.1 Turnover Intention

Processes and practices to promote employee retention can save time and money for companies (Mathis & Jackson, 2003). Thus, limiting attrition rates and determining what variables are related to employee turnover is important. There are two types of turnover: involuntary and voluntary (Price & Mueller, 1986). Involuntary turnover involves an employee being forced to leave an organization, while voluntary turnover occurs when the employees quits of their own volition. Voluntary turnover is often

negative for an organization because it creates high costs for organizations in hiring and training new employees. Involuntary turnover can be positive for an organization and may result in increased productivity as ineffective workers leave the company (Davidson & Wang, 2011). Therefore, the causes and effects of voluntary turnover are more often the focus of turnover research (Schneer, 1993).

Turnover intent generally precedes voluntary turnover. *Turnover intention* is the deliberate and conscious willingness to leave an organization (Mobley, Homer, & Hollingsworth, 1978; Tett & Meyer, 1993). While perceived alternative employment, job satisfaction, and organizational commitment may all predict voluntary turnover, turnover intention is typically the most proximal predictor of voluntary turnover (Mobley, Griffeth, Hand, & Meglino, 1979).

Much of the existing literature on turnover is based on Mobley's (1977) model that identifies potential antecedents to turnover. Mobley theorized turnover as a withdrawal decision process and that it occurs within a series of psychological steps: evaluation of the job, experienced job dissatisfaction, contemplating quitting, determining the expected cost of quitting, intention to search for alternative solutions, searching for alternative solutions, evaluating alternative solutions, comparing alternative solutions to the present job, intention to leave or stay, and the decision to leave or stay.

Griffeth et al. (2000) conducted a meta-analysis of the antecedents of employee turnover and classified the predictors into four groups: (a) job satisfaction, work environment factors, and organization factors; (b) demographic predictors; (c) external environmental factors and job content; and (d) other behavioral antecedents. Specifically, co-worker and supervisor support, organizational support, autonomy, compensation, job

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ambiguity, job stress, and welfare are examples of important factors of turnover intention (Deery & Shaw, 1997; Yang, 2008)

2.2 Organizational Learning Culture

Garvin (1993) defined a *learning organization* as those that are "skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (p. 80). Watkins and Marsick (1993, 1996) defined seven interrelated, yet distinct, dimensions of a learning organization at the organizational, team, and individual levels. The first dimension is continuous learning which is the organization's effort and ability to create continuous learning opportunities for their employees. The second dimension is inquiry and dialogue which is the organization's effort and ability in creating a culture of experimentation, questioning, and feedback. The third dimension is team learning which refers to the team's ability to work collaboratively and effectively. The fourth dimension is empowerment which reflects an organization's ability to develop a shared vision from its members. The fifth dimension is embedded system which refers to the organization's efforts and ability to create and maintain systems to capture and distribute learning. The sixth dimension is system connection which reflects connections between the organization's internal and external environments. The seventh dimension is strategic leadership which refers to the ability of leaders to think strategically about how learning could create change within the organization and help the organization to remain competitive within the market.

Yang, Watkins, and Marsick (2004) conceptualized dimensions one through four as people level initiatives including teams and individual employees and dimensions five through seven as structural and organizational level initiatives. Figure 2.1 shows their

conceptualizations of a learning organization along with the anticipated performance outcomes. A learning organization exists when shared learning is emphasized instead of individually-driven instruction (Malik, Danish, & Usman, 2011). In shared learning, the predication of learning activities and support of those activities is shared between the organization and the employees rather than solely originating from the employee. Successful integration of the learning dimensions could lead to both increased organizational knowledge and organization financial performance (Yang et al., 2004).
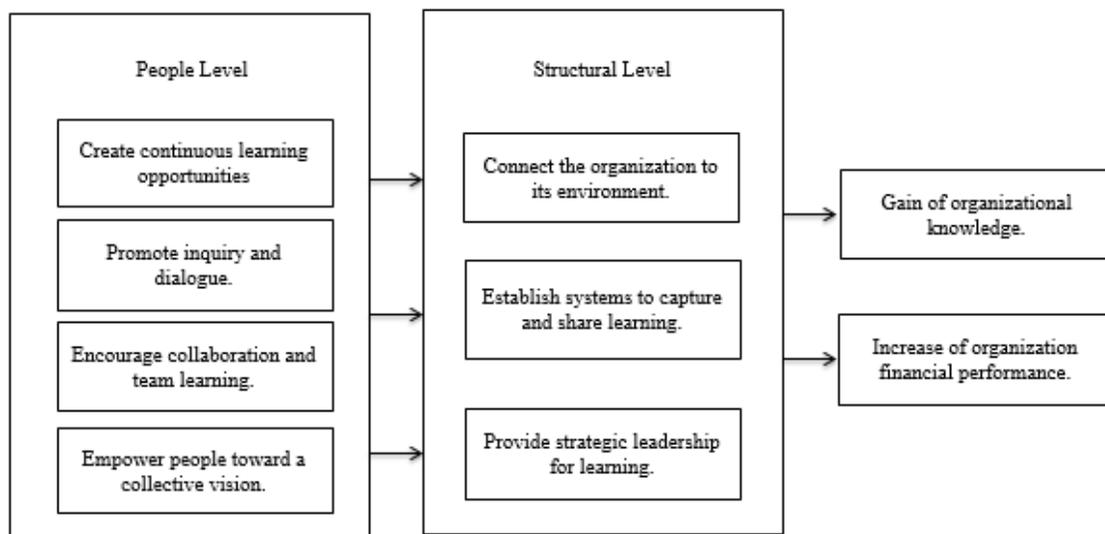
Figure 2.1. Dimensions of learning organization and performance outcomes. Adapted from "The construct of the learning organization: Dimensions, measurement, and validation" by B. Yang, K. Watkins, & V. Marsick, 2004, *Human Resource Development Quarterly, 15*, 41.

In order for an organization to become a learning organization, employees must demonstrate transformational learning (Senge, 1990). *Transformational learning* involves a change in behavior, perspective, or prior learned information (Mezirow, 2000; Merriam, Caffarella, & Baumgartner, 2007). Rather than an additive approach to learning where information is only added sequentially to prior knowledge, transformational learning occurs when life experiences, critical reflection of life experiences, and a link

between transformational learning and development are all utilized during the learning process to create a robust learning experience (Merriam et al., 2007). An employee's prior learning experiences involve more than just the learned subject matter; the experiences often involve people that were involved in environment. Thus, the role of relationships within transformational learning is important.

In order for transformational learning to occur, the ideal environment is one where people feel respected, accepted, and supported (Knowles, 1980; Merriam et al., 2007). Imel (1998) wrote that there were three roles within the learning environment: the role of the teacher, the role of the learner, and the role of the rational and the affective. The teacher's role is to create an atmosphere for learning to occur and to foster a spirit of transformative learning. The learner's role is to take an active partnering position in creating and constructing conditions for the transformative learning. Finally, an emphasis must be placed on nurturing both the rational and objective notions of learning with the affective feelings of experience and meaning. Through a set of relational exchanges such as those involving friendship, trust, and support, members within an organization create shared learning experiences thus enhancing the collaborative learning environment (Boreham & Morgan, 2004; Taylor, 2000).

Some researchers have sought to distinguish between learning organization and organizational learning. Örtenblad (2001) summarized some of the differences: "Organizational learning is a concept used to describe certain types of activity that take place in an organization while the learning organization refers to a particular type of organization in and of itself" (126). Örtenblad continued by stating that since there have been shifts between the intended meanings between the two terms, it remained important

for future researchers to clearly define their conceptualization of what actually was to be measured in their research. Hereafter, the variable of interest will be the learning organization and the measure will be the employee's perception of the organization as a learning organization. It may be referred to as *organizational learning culture* which will represent the employees' self-assessment of the learning organization.

2.3 Leader Member Exchange (LMX)

Transformational learning and a shift towards an organization having a strong culture for learning is predicated on the relationships formed between peers and between employees and their supervisors. Within business organizations, the supervisor is an integral part of influencing employee attitudes at work (Chen, 2001). From directing work activities to managing performance and time off, supervisors often oversee an employee's entire career and can impact how an employee views the job. *Leader member exchange (LMX)* theory is based on the notion that employees (i.e., members) create unique relationships based on social exchanges with their leader or supervisor (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Janseen & VanYperen, 2004). There are two primary theories that serve as the foundation for LMX– role theory and social exchange theory (Liden, Sparrowe, & Wayne, 1997).

2.3.1 Role Theory

LMX theory began in the 1930s with *role theory*, which posits that individuals have social positions or roles (e.g., manager) within an organization where they expect certain behaviors of themselves and others (e.g., Linton, 1936; Mead, 1934). Each person has specific preconceived notions of what people in any given role (e.g., coach, secretary,

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president, CEO) should accomplish and what their work should entail. Within a social relationship, each person's expectations help dictate how they interact with each other.

LMX theory applies the same concept of expected behaviors within and between roles to a supervisor-employee relationship. Supervisors may be more likely to give more important roles or work tasks to employees who they have classified as strong performers. Employees' previous performances on assignments have shaped their supervisor's expectations of their ability to deliver quality results on tasks within their role. Employees who obtain the more important roles may be more likely to establish higher quality relationships with their superiors which may be characterized by emotional support and trust whereas those who have been assigned less important roles may have lower quality LMX exchanges. The process is recurrent and supervisor expectations and employees' role performance are constantly being formed and reformed (Harris, 2004).

2.3.2 Social Exchange Theory

Social exchange theory takes elements from economics, psychology, and sociology; it is the theory that social change is a process of exchanges that are negotiated by two or more parties (Homans, 1961). An example of an exchange is one colleague aiding another in order to meet a deadline. In exchange for providing the help, the colleague whose project was due could include a note to a shared supervisor about the contributions of the second colleague. Each interaction between two parties is examined with a cost-benefit analysis to determine how to approach the exchange in looking for beneficial results. Blau (1964) posited that the difference between an economic exchange and a social exchange was that the latter tended to produce feelings of obligation, trust, and gratitude in addition to an exchange of goods or services

If social exchanges progress beyond the basic employment contract, high quality LMX relationships occur (Lee, 2000). High quality LMX relationships are "characterized by high levels of mutual support, trust, and loyalty" (Bezuijen, vanDam, vandenBerg, & Thierry, 2010). Supervisors are more likely to give benefits or advantages to those with whom they have a higher quality LMX relationship. In doing so, the supervisors anticipate that subordinates would produce high quality results and go beyond the normal expectations of the job description (Liden and Graen, 1980). There are, then, three domains of LMX: the supervisor, the employee, and the relationship between the supervisor and the employee (Graen & Uhl Bien, 1995). Each supervisor can have different levels of LMX with each employee which impacts each individual relationship; each exchange is differentiated and unique to the dyad (Henderson, Wayne, Bommer, Shore, & Tetrick, 2008; Vidyarthi, Erdogan, Liden, Anand, & Ghosh, 2010).

LMX is positively correlated with many variables including: (a) high job satisfaction (Gerstner & Day, 1997; Graen, Novak, & Sommerkamp, 1982); (b) strong organizational commitment (Gerstner & Day, 1997; Nystrom, 1990); and (c) high performance ratings (Gerstner & Day, 1997; Liden, Wayne, & Stilwell, 1993). High LMX is associated with high commitment to the organization and a strong organizational culture– all leading to lower turnover intention (Joo, 2010). Leaders who actively engage in trusting relationships with their employees are likely to be effective in encouraging learning activities (Asgari, Silong, Ahmad, & Samah, 2008; Bezuijen et al., 2010).

There has been little research on the relationship between organizational learning culture and LMX. Islam, Khan, Ahmad, and Ahmed (2013) and Joo (2010) independently found that the two constructs were positively correlated. 516 employees in a large Korean

manufacturing company served as the sample in Joo's (2010) study on organizational learning culture and LMX. The participants completed a self-administered questionnaire on their perceptions of organizational learning culture and LMX. Joo posited that the positive correlation existed because supportive leaders promoted knowledge amongst individuals, thus increasing organizational learning.

The relationship and satisfaction that an employee has with his or her manager may dictate their desire to turnover. However, the extant research on the relationship between LMX and turnover has yielded conflicting results. For instance, Graen, Liden, and Hoel (1982) reported that a direct relationship between LMX and turnover did not exist. However, Gerstner and Day (1997) found that a negative correlation existed between LMX and turnover, $r = -.31$. Wells and Peachey (2011) studied the relationship between satisfaction with one's leader and voluntary turnover intention. They found that there was a direct negative relationship, $r = -.35$, between leadership behaviors and voluntary turnover, which was partially mediated by satisfaction with the leader. Vecchio, Griffeth, and Hom (1986) suggested that the relationship between LMX and turnover intention could be mediated or moderated by cognitive or affective processes but did not provide examples.

2.4 Organizational Commitment

Beyond organizational learning and LMX, there are other factors that may impact turnover intention. One of those is organizational commitment. *Organizational commitment* is the extent to which individuals identify with their organization or the loyalty and connection with their organization (Mowday et al., 1982; Randhawa & Kaur, 2014). Mowday et al. (1982) noted three factors that comprised organizational

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commitment: "(a) a strong belief in and acceptance of the organization's goals and values; (b) a willingness to exert considerable effort on behalf of the organization; and (c) a strong desire to maintain membership in the organization" (p. 27). When employees experience something that motivates them within an organization, they are increasingly committed to the organization (Meyer & Herscovitch, 2001).

Organizational commitment is developed as a result of a social exchange process where positive work experiences contribute an employee's positive work behaviors or attitudes (Meyer & Allen, 1991). Meyer and Allen (1991) defined three dimensions of organizational commitment: affective, continuation, and normative commitment. *Affective commitment* refers to the desire to complete a task, *continuation commitment* refers to the need to complete a task, and *normative commitment* refers to having to complete a task. Each commitment component may develop at different times. Continuation commitment develops after employment, affective commitment develops after certain work experiences, and normative commitment develops through some reciprocal exchange or interaction between the employee and the organization (e.g. Allen & Meyer, 1997; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002).

Employees with more organizational commitment have longer job tenure and better attendance than employees with less organizational commitment (Mowday et al., 1982; Somers, 1995). Bluedorn (1982) wrote that individuals with low levels of organizational commitment were more inclined to switch jobs whenever the opportunity arose when compared to individuals with high levels of organizational commitment. Dessler (1999) noted five ways an organization develops committed employees as shown in Figure 2.2.
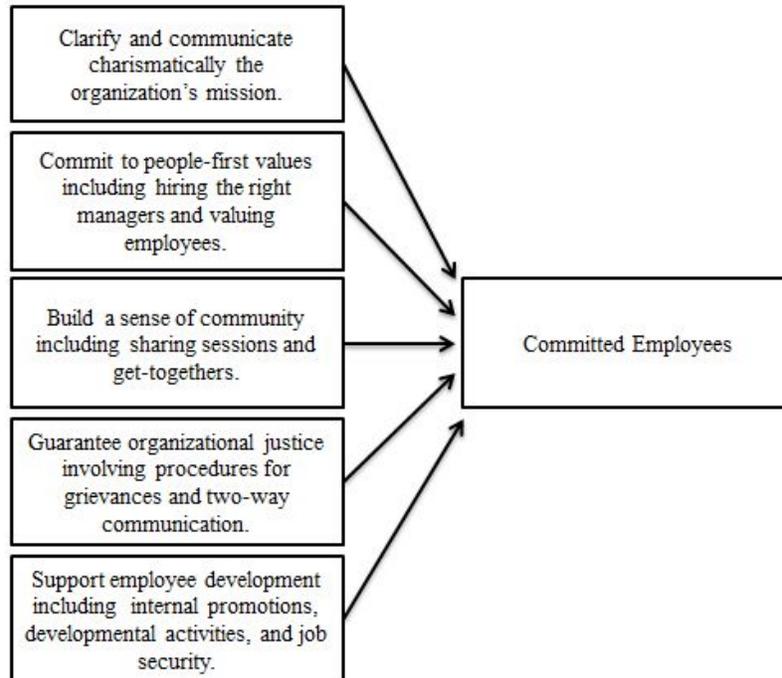
Figure 2.2. Five ways an organization can help develop committed employees. Adapted from "How to earn your employees' commitment," by G. Dessler, 1999, *Academy of Management Executive,* 13, 58-67.

Much of the prior research on organizational commitment has utilized affective commitment as a measure rather than continuation or normative commitment (Meyer & Allen, 1997; Meyer et al., 2002; Vandenberghe & Tremblay, 2008). Affective commitment represents an emotional connection or attachment to an organization which in turn manifests as the desire to complete specific tasks. One of the components of affective commitment is the development of trust. Nyhan (1999) found that while both systems trust (between the organization and the employee) and interpersonal trust (between the manager and the employee) were important in developing affective commitment, the relationship between interpersonal trust and affective commitment was much stronger. This suggests that while the level of trust that an employee feels towards an organization is important to increase organizational commitment, the relationship that employees have with their managers is even more important. Multiple studies have found

that LMX was positively correlated (*r:* .36 - .49) with organizational commitment (Green, Anderson, & Shivers, 1996; Golden & Veiga, 2008; Major, Kozlowski, Chao & Gardner, 1995; Nystrom, 1990; Wayne, Shore, & Liden, 1997). Where a high quality of LMX exists, organizational commitment is enhanced.

Another variable that may enhance organizational commitment is organizational learning culture. Prior studies have shown that learning and development activities serve at least two purposes: (a) enhancing employees' knowledge and abilities, and (b) increasing their commitment to the organization. (Ahmad & Bakar, 2003; Paul & Anatharaman, 2004). Lim (2003) found that affective organizational commitment and organizational learning were positively correlated (*r:* .36 -.54) and Wang (2005) reported similar results (*r:* .24 - .35).

Employees who exhibit higher levels organizational commitment are less likely to leave the organization (Mathieu & Zajac, 1990; Meyer & Allen, 1997; Mowday et al., 1982). Thatcher, Stepina, and Boyle (2002) studied 191 information technology workers in the U.S. and found that a negative relationship (*r* = -.45) existed between organizational commitment and turnover intention. Research has shown that an indirect relationship exists between job satisfaction and turnover intention, mediated by organizational commitment (Deconnick & Bachmann, 2007; Griffeth et al., 2000; Meyer & Allen, 1997).

Mathieu and Zajac (1990) conducted a meta-analysis of antecedents, correlates, and consequences of organizational commitment. They found organizational commitment had a negative relationship with turnover intention (*r* = -.46). There are three components to organizational commitment: affective, continuance, and normative (Meyer & Allen,

1991). Many prior studies have shown that affective commitment has the most consistent and strongest relationship with turnover intention rather than continuance or normative commitment (Meyer & Allen, 1997; Meyer et al., 2002; Vandenberghe & Tremblay, 2008). In a meta-analysis conducted by Meyer et al. (2002), the strongest correlation was between turnover intention and affective commitment ($r = -.56$) followed by normative commitment ($r = -.33$) and finally with continuance commitment ($r = -.18$).

2.5 Job Satisfaction

The amount of commitment a person has towards an organization may impact the decision to leave their current job, but the level of satisfaction they experience may also be a factor. Job satisfaction is a difficult construct to define, as there is no consensus on the behaviors that define this construct. Some scholars have conceptualized it as an emotional state, specifically as a positive emotional state that relates to one's job (e.g., Seashore, Lawler, Mirvis, & Cammann, 1983) and as "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values" (Locke, 1969, p. 316). A broader definition simply identifies *job satisfaction* as the feelings of an individual towards work and the diversified facets of the job (Spector, 1997). Additionally, it must also encompass personal attitudes and traits, the work environment, and characteristics of the job (Smith, Kendall, & Hulin, 1969).

Job satisfaction is influenced by multiple environmental factors that are constantly changing. It is derived from multiple factors including job characteristics (Wall & Martin, 1987), pay (Irvine & Evans, 1995; Judge, Piccolo, Posakoff, Shaw, & Rich, 2010; Spector, 1997), role tension or conflict (Klenke-Hamel & Mathieu, 1990), job stress

(Spector, 1997), and organizational constraints (Laff, 2007; Mayhew, 2005; Spector, 1997).

Job characteristics include the nature and the content of the work or the job itself (Wall & Martin, 1987). Complex jobs are more interesting for the employees than menial tasks, which, in turn, leads to higher job satisfaction. Judge et al. (2010) conducted a meta-analysis on the relationship between job satisfaction and pay. They found that pay level is positively correlated with job satisfaction, ($r = .15$).

Role tensions or conflict occur when an individual's perception of the demands and responsibilities of the job are incompatible with the actual job itself (Bedeian & Armenakis, 1981). It also includes ambiguity experienced when an employee is unsure of the responsibilities of their work (Spector, 1997). Having unresolved role conflict or role ambiguity may result in negative job satisfaction (Bedeian & Armenakis, 1981; Klenke-Hamel & Mathieu, 1990). Job stress is another component of job satisfaction; a specific stressor can motivate one employee to work and be satisfied while it can drive another employee to stop working and become dissatisfied (Gieck, 1984). Job dissatisfaction occurs when an employee has stressors that overwhelm existing coping mechanisms. (Cooper & Cartwright, 1994).

Organizational constraints refer to aspects of the job environment that may hinder job performance (Spector, 1997). Constraints include job-related information necessary to perform assigned tasks, access to tools, equipment, materials, and supplies to perform the job, budgetary support, help and required support from others, adequate training and task preparation, time availability and deadlines imposed on completion of the task, and physical aspects of the work environment (Peters, O'Connor, & Rudolf, 1980). Peters et

al. (1980) noted that help and support from others is especially crucial with new employees transitioning onto the job. When support is not readily available to new employees, they experience low job satisfaction. Appropriate training from peers and supervisors, and other learning experiences also have the ability to lower stress that can lead to higher job satisfaction (Peters et al., 1980).

Job satisfaction is positively correlated with life satisfaction (r: .25-.44; Judge & Watanabe, 1993); job performance (r = .30; Judge, Thoresen, Bono, & Patton, 2001); and stress, (r: -.61 - -.71; Ramanathan, 1991). Job satisfaction is also positively correlated with LMX (r: .47-.66) (Golden & Viega, 2008; Green et al., 1996; Major et al., 1995; Volmer, Niessen, Spurk, Linz, & Abele, 2011). Epitropaki and Martin (2005) found that LMX predicted job satisfaction and noted that this was likely due to the fact that a high-quality LMX relationship would allow the employees to have positive socio-emotional experiences with their supervisors. From those positive experiences, employees may gain privileges and resources from their supervisors that would lead to increased job satisfaction.

While many studies have shown that a relationship exists between job satisfaction and organizational commitment, the causal order between job satisfaction and organizational commitment is unclear. Bateman and Strasser (1984) posited that organizational commitment was an antecedent to job satisfaction, while Williams and Hazer (1986) stated that job satisfaction was the antecedent to organizational commitment. Still others noted a reciprocal relationship between the two constructs (Mathieu & Zajac, 1990; Meyer et al., 2002).

Job satisfaction has an inverse relationship with turnover (r: -50 - -.43; Egan et al., 2004; Griffeth et al., 2000; Han & Jekel, 2011; Kanwar, Singh, & Kodwani, 2012; Wang, Yang, & Wang, 2012). Sager et al. (1998) theorized that people who were dissatisfied with their job would start thinking about quitting their job, have intentions to search for alternative jobs, and intend to leave the organization. This finding is consistent with theories of job dissatisfaction leading to turnover intention and eventually turnover.

2.6 Current Study

The purpose of the current study is to cross-validate and extend Joo's (2010) model for turnover intention, which is shown in Figure 2.3. Joo utilized a sample of 516 knowledge workers at a large South Korean firm. *Knowledge workers* are employees who utilize theoretical and analytical knowledge they obtained through formal education to develop new services or products (Drucker, 1992). This includes information technology (IT) professionals with college degrees who create and maintain databases such as those included in the current study sample. He found that organizational commitment fully mediated (i.e., accounted for) the relation between both organizational learning and LMX with turnover intention.

Although Joo (2010) sampled employees from South Korea, turnover intention is an important variable for companies across the globe (Price, 2001). Joo even noted that his model should be replicated with populations that have varying educational and demographic backgrounds. To date, his model has only been cross-validated in one study (Islam et al., 2013), which used a sample of 415 Malaysian employees within the banking industry. They were able to closely replicate the results of Joo's (2010) study and validate his model; figure 2.4 shows the Islam et al. (2013) path model.
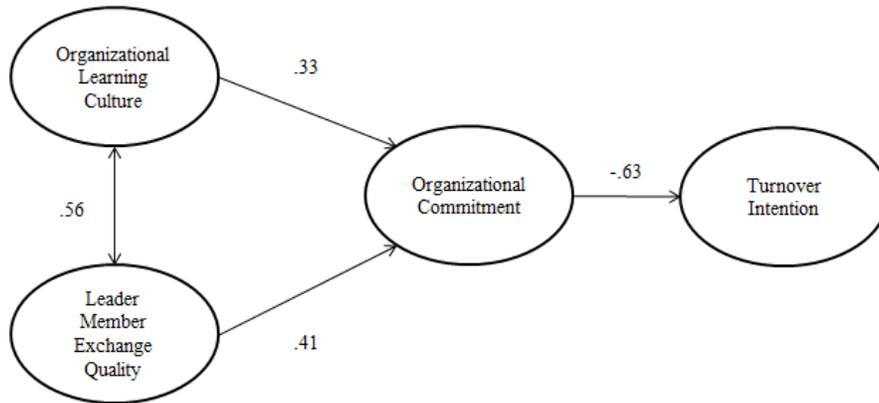
Figure 2.3. Joo Model of Turnover Intention with standardized path coefficients. Adapted from "Organizational commitment for knowledge workers: The roles of perceived organizational learning culture, leader-member exchange quality, and turnover intention," by B. Joo, 2010, *Human Resource Development Quarterly, 21,* 78.
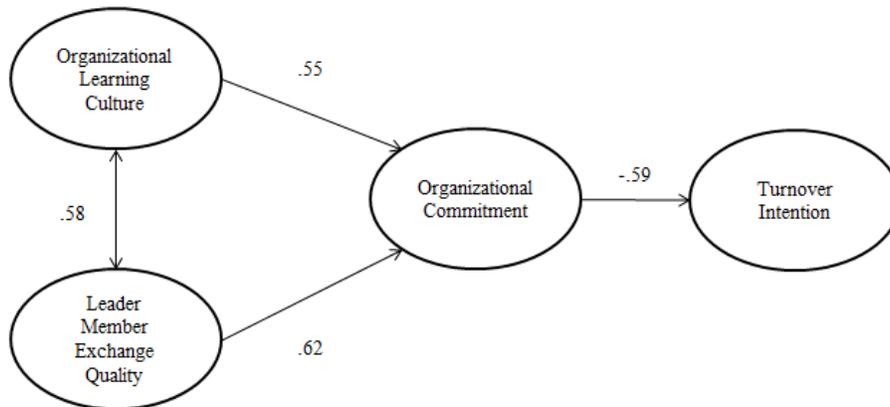
Figure 2.4. Islam et al. Model of Turnover Intention with standardized path coefficients. Adapted from "Organizational learning culture and leader-member exchange quality," by T. Islam, S.R. Khan, U.N.U. Ahmad, & I. Ahmed, 2013, *The Learning Organization, 20,* 331.

Joo's (2010) model has not been studied using employees from an organization in the United States. If his model was replicated in the US, it would provide further evidence for cross-cultural validity as well as provide insight into mitigating turnover intention amongst American employees. Both Korea and Malaysia are considered collectivist societies while the United States is considered an individualist society. Individuals from collectivist cultures view themselves as parts of the whole society while

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individuals from individualist cultures are motivated more by personal objectives rather than group goals (Triandis, 1995). Employees from collectivist societies often seek the prosperity or productivity of the firm more than their own happiness which may influence their organizational commitment and their LMX quality.

The current study proposes examining Joo's (2010) model in a sample of employees from the United States using both knowledge workers and non-knowledge workers. Additionally, this study will extend his model by adding job satisfaction to the model to determine if this variable provides a better explanation of turnover intention than the model created by Joo (2010). Figure 2.5 displays the proposed path model with job satisfaction added (Parker model).
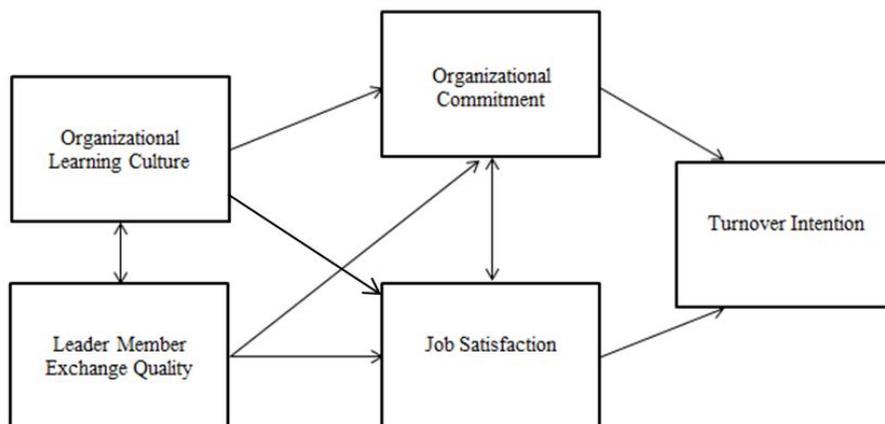
Figure 2.5. Parker Model of Turnover Intention. Error terms excluded for the endogenous variables.

2.7 Research Questions

1a. Does the turnover intention model created by Joo (2010) fit data from knowledge and non-knowledge workers from the United States?

1b. If the answer to question 1a is affirmative, then, how similar are the path coefficients from the current study to those from Joo's study?

2. Does adding job satisfaction improve Joo's (2010) original model

CHAPTER THREE

Methods and Materials

3.1 Method

3.1.1 Sample

A Fortune-500 human capital and management consulting organization with a large division based in the southeastern region of the United States provided the sample for this study. The company is a subsidiary of an international corporation that specializes in human resources solutions, risk management, and consulting. Offices are located globally and some employees have alternative work patterns, including telecommuting. Employees within the firm work in various roles including, but not limited to, consultants, systems analysts, business operations associates, customer service associates, and project managers. The customer service associates are not required to have a college degree.

A senior level business leader within the organization agreed to distribute the study's questionnaires to his business group via corporate e-mail. This group of employees represented the entire sector for which the leader had responsibility. Employees included those in the technology, customer service, and operations fields. The sampling method was a convenience sample as the leader sent the survey invitation to his distribution group, which only represents a subset of the organization's employees. Other sampling methods were not feasible in this situation as the organization does not allow

employee access by outside researchers. The study was approved by the Baylor

University Instructional Review Board and a copy of the document is in Appendix A.

3.1.2 Data Collection

I used an online questionnaire to collect data for this study. The use of an online

questionnaire was better than a paper-and-pencil format because it minimized the amount

of time employees had to spend answering the items. To solicit responses, I sent the

distribution group an e-mail request and offered a small incentive for participation ($5

gift card to a coffee shop). The questionnaire was available for two weeks. A copy of the

email is provided in Appendix B.

I took steps to ensure response anonymity. In order for a participant to receive the

incentive, respondents had to complete a separate form that requested their e-mail

address. After the two-week response period was over, I compiled a list of participant e-

mail addresses and sent them the promised incentive. The participants' e-mail addresses

remained confidential.

3.2 Measures

All instruments for this study were developed in the United States. With the

exception of the job satisfaction measures, each of the scales were used in Joo's (2010)

study. All items utilized a 5-point Likert-type scale that ranged from 1 (strongly disagree)

to 5 (strongly agree). Copies of all instruments are in Appendix C.

The demographic variables in the survey included: (a) sex (b) age; (c) length of

time employed with the company; (d) average number of days working virtually per

week; (e) highest level of education completed; (f) most recent performance ranking on a

company scale of 1-5; and (g) length of time working with the employees' current leader/supervisor.

3.2.1 Organizational Learning Culture

To measure organizational learning culture, I used the Dimensions of the Learning Organizational Questionnaire (DLOQ). Watkins and Marsick (1993) developed the DLOQ to measure organizational learning culture. They conceptualized organizational learning as a one-dimensional construct comprised of seven sub-constructs: continuous learning, dialogue and inquiry, embedded system, empowerment, strategic leadership, system connection, and team learning. The DLOQ is a self-report instrument where participants are asked to provide responses to statements about their organization.

The DLOQ has been utilized in multiple studies where a learning organization is of interest define the learning organization construct (Malik et al., 2011; Marsick & Watkins, 2003; Redding, 1997; Yang et al., 2004). The validity and reliability of the DLOQ scores have been examined in several cultures: China, Korea, Taiwan, and the United States. Coefficient alpha for the DLOQ scores ranged from .71 to .91 (Ellinger, Ellinger, Yang, & Howton, 2002; Lien, Hung, Yang, & Li, 2006; Song, Joo, & Chermack, 2009; Yang et al., 2004; Zhang, Zhang, & Yang, 2004). Within studies that utilized participants solely from the United States, the coefficient alpha values ranged from .75 to .89 (Ellinger et al., 2002; Yang et al., 2004). Construct validity has also been established with a higher-order factor model showing that the seven dimensions all load highly onto the construct of the learning organization (Song et al., 2009).

Yang et al. (2004) created an abbreviated version of the DLOQ with 21 items. In

Joo's (2010) study, he utilized one item representing each sub-construct for a total of

seven items. He found the alpha reliability value for the seven-item DLOQ score to be

.82, which is similar to the value of .84 found by Islam et al. (2013). For this study, I used

the seven-item DLOQ.

3.2.2 Leader Member Exchange Quality

To measure LMX quality, I used the LMX7(Graen et al., 1982; Scandura &

Graen, 1984; Seers & Graen, 1984). This seven-item self-report scale measures the

degree to which leaders and members have a mutual respect for each other and, in turn, a

strong sense of obligation towards each other. Reviews of the literature show that this is

the most appropriate measure of the dyadic relationship quality in working relationships

(Gerstner & Day, 1997; Graen & Uhl-Bien, 1995). Graen and Scandura (1987) suggested

that the employees should be the only respondents to the survey when utilized as a one-

time measure; the leaders would be likely to provide responses that were socially

desirable about treating all of their employees similarly (Howell & Hall-Merenda, 1999,

p. 685).

Maslyn and Uhl-Bien (2001) examined construct validity for the LMX7 and

found it to be a valid measure of LMX. As a measure of the reliability of the LMX7,

coefficient alphas of .86 and .84 were reported during the development of the scale

(Scandura and Graen, 1984). Further research has also confirmed high internal

consistency, (α = .85 - .90) of the LMX7 (Bernerth, Armenakis, Feild, Giles, & Walker,

2007; Gerstner & Day, 1997; Maslyn & Uhl-Bien, 2001).

3.2.3 Organizational Commitment

To measure organizational commitment, I used the Organizational Affective Commitment Scale (Meyer, Allen, & Smith, 1993). There are three conceptualized dimensions of organizational commitment (i.e., affective, continuance, and normative commitment), but affective commitment has been the most-widely used dimension to measure organizational commitment, and will thus be the focus of measurement in this study. Meyer et al. (2002) reported that the Affective Commitment Scale (ACS) is a stronger predictor and correlate of turnover related variables than the Continuance Commitment Scale (CCS) and the Normative Commitment Scale (NCS). The ACS is comprised of eight items (Meyer et al. 1993).

Allen and Meyer (1996) analyzed the reliability of the three scales using over 40 different employee samples. They reported a median coefficient alpha of .85 for the ACS (Allen & Meyer, 1996). Krishnaveni and Ramkumar (2008) examined the construct validity (Cronbach & Meehl, 1955) of the ACS, and found that no modifications to the scale were needed. They estimated internal consistency reliability (α) to be .72.

3.2.4 Job Satisfaction

To measure job satisfaction, I used the Michigan Organizational Assessment Questionnaire (MOAQ). It is a three-item self-report scale for job satisfaction (Cammann, Fichman, Jenkins, & Klesh, 1983). Developed as part of the larger scale MOAQ, the job satisfaction scale was designed to provide a global indication of an employees' satisfaction with a job. Bowling and Hammond (2008) noted several advantages to utilizing the MOAQ- Job Satisfaction Scale (MOAQ-JSS). The MOAQ-JSS only uses three items, which is considerably shorter than other job satisfaction scales.

For example, the Minnesota Satisfaction Questionnaire has a long-form with 100 items and a short-form with 20 items (Weiss, Dawis, England, & Lofquist, 1967). Second, the face-validity of the MOAQ-JSS is high and addresses the affective nature of the job satisfaction construct. Finally, other instruments assess components of job satisfaction such a pay, supervision, and promotional opportunities, while the MOAQ-JSS assesses global job satisfaction.

In their meta-analysis of 79 studies examining the reliability and validity of the MOAQ-JSS, Bowling and Hammond (2008) found that the average coefficient α value was .84. Moreover, they found that the patterns between the MOQA-JSS score and external variables were similar to those in the predefined nomological network for job satisfaction, so concluded there was strong construct validity for the instrument (Bowling & Hammond, 2008).

3.2.5 Turnover Intention

To measure turnover intention, I used Mobley et al.'s (1978) three-item scale. Mobley et al. created a model of voluntary turnover intention and developed a scale once they found that voluntary turnover intention was more likely to predict turnover intention than other factors. In their factor analysis, Mobley et al. found the three items in the scale were distinctive from one another.

The items measure the thought of quitting a job, the intention to search for a new job within a year, and planning to leave the current company once a new job was acquired. The three questions are similar in content to those on other turnover intention scales (e.g., Shore & Martin, 1989). In studies of turnover intention amongst employees,

coefficient alpha reliability values ranged from .86 to .90 (Joo, 2010; Islam et al., 2013; Yin-Fah, Foon, Chee-Leong, & Osman, 2010).

3.3 Common Method Variance

Common method variance (CMV) is a potential confound with all behavioral research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). CMV has to potential to arise when using the same method to measure all the variables in a study, and can produce spurious relations among variables (Campbell & Fiske, 1959). Concerns about CMV are often raised with studies that use self-report instruments and cross-sectional designs (Spector, 2006).

Conway and Lance (2010) noted that four specific areas should be addressed when considering bias due to CMV. First, there should be rationale for using self-report instruments. Chan (2009) noted that self-report is appropriate for the measurement of private thoughts. In this study, self-report is appropriate because the the measured constructs are employee perceptions. Second, there needs to be evidence of construct validity for the instruments' scores. I have provided this information in Section 3.2. Third, items measuring the constructs should not overlap. The items for all the instruments in this study are unique to intended constructs.

Fourth, there must be evidence that the researcher considered common method bias proactively. I explored multiple ways to reduce CMV. First, I discussed adding another data source (e.g., manager) or collecting data at two different time points with my contact at the organization, but these were not feasible options. Next, I searched for another measure of organizational learning culture, but the measures I found had either

little validly evidence or had too many items. Last, I explored the possibility of randomizing or counterbalancing the questions, but the benefits incurred by doing this were outweighed by the disruption it would cause to the overall flow of the questionnaire. Consequently, I followed Podsakoff et al.'s (2003) recommendations to minimize the influence of CMV by ensuring anonymity of the respondents and that all of the instructions were explicit and clearly worded.

There are ways to control for CMV statistically after the data are collected (e.g., marker variables, adding a single latent variable), but they all have some drawbacks. Conway and Lance (2010) even cautioned against using any *post-hoc* statistical remedies for CMV as empirical examinations of the methods have been generally poor.

3.4 Data Analysis

3.4.1 Software

All analysis was completed in R (R Core Team, 2015 using the following packages: (a) *BaylorEdPsych* (Beaujean, 2012); (b) *lavaan* (Rosseel, 2012); (c) *mice* (van Buuren & Groothius-Oudshoorn, 2001); (d) *missMech* (Jamshidian, Jalal, & Jansen, 2014); (e) *mvn* (Korkmaz, Goksuluk, & Zararsiz, 2014); (f) *psych* (Revelle, 2015); and (g) *psychometric* (Fletcher, 2010). The R syntax I used for all the analyses is in Appendix E.

3.4.2 Composite Scores

I computed unit-weighted standardized composite scores for each of the scales to serve as direct measures of the latent constructs. Unit-weighting refers to the process of summing values using a weight of one for each variable, which is equivalent to a simple

summation. Unit weights work well when: (a) the predictor variables are positively correlated, (b) the relations between the predictors and criterion can be modeled based on theory, and (c) when there are many items for each scale (Bobko, Roth, & Buster, 2007). Moreover, there is evidence to suggest that the precision of the weights (e.g., unit vs. least squares) used for a composite score does not create substantially different results as long as the directional sign is accurate (e.g., Green, 1977; Wainer, 1976). Prior to summing, following Bobko et al.'s (2007) recommendation, I standardized the item values (i.e., Z-scores) before creating the composite scores.

3.4.3 Path Analysis

I used path analysis to estimate the model parameters and the fit of the theorized models to the observed data. In path analysis, all of the variables are directly observed (i.e., manifest) and the objective is to estimate the strength of hypothesized relationships among these variables (Beaujean & Parker, in press; Loehlin, 2004).

These relationships in a path analysis are displayed using a path diagram, which uses geometric figures to represent the variables' theorized relations (Stage, Carter, & Nora, 2004). There are two categories for variables within a path diagram: endogenous (those with a direct cause) and exogenous (those without a direct cause). Once the variables are depicted within the model, arrows are used to show the relationships between the variables. A single-headed arrow means that the relation goes in only one direction while a double-headed arrow shows a non-directional relationship (i.e., covariance/correlation). Error terms are always attached to endogenous variables and represent the difference between the observed values and the baseline model.

In a path analysis, path coefficients measure the magnitude of the relations among the variables. Standardized path coefficients (b^*) measure the relations in Z-score units, as is done with Pearson correlations and standardized regression coefficients. Standardized values are particularly useful when comparing the magnitude of path coefficients within a model. Because they force all the variables to have unit variance, however, they should not be used for comparisons across samples or models. Unstandardized path coefficients (b) measure the variable relations in the variables' native units. Because they do not alter the variables' variance, they are useful in comparing path coefficients across different samples and across models that use the same variables (Stage et al., 2004).

3.4.4 Measures of Model Fit

To determine the fit of the theorized models to the observed data, I examined multiple measures of model fit (Hu & Bentler, 1998, 1999). The χ^2 statistic was utilized as a measure of fit between the fitted and sample covariance matrices. High associated probability (*p)* values (i.e., > .10) of the χ^2 value is one common measure of fit (Barrett, 2007). χ^2 is sensitive to sample size, however, so I also examined more robust measures of model fit (West, Taylor, & Wu, 2012).

The additional fit indexes that I evaluated were: (a) the Comparative Fit Index (CFI), (b) the Root Mean Square Error of Approximation (RMSEA), (c) Akaike's Information Criterion (AIC), and (d) the Standardized Root Mean Square Residual (SRMR). These particular measures were chosen as they include a variety of indexes types (i.e., absolute, relative, noncentrality-based), and they have performed well when evaluating varying models (Marsh, Hau, & Grayson, 2005).

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The CFI is an incremental index which means that model fit is determined by comparing the baseline model with the model fit. The only estimated parameters in the baseline model are the manifest variable variances. The CFI is not affected by population size and values closer to one indicate a better fit (West et al., 2012). The RMSEA evaluates whether the model of interest is a suitable approximation for the data; with values closer to 0 indicating a better fit.

The AIC is an information-theoretic criterion index (Burnham & Anderson, 2004), so balances model fit against model complexity. Smaller values for the AIC indicate a better fit when comparing models but there are no set guidelines for the values themselves. Finally, the SRMR measures the absolute fit of the specified model by comparing the standardized difference between the predicted correlations and the observed correlations. Values closer to 0 indicate a better fit.

The guidelines I used to identify how well a model fit the data were: (a) CFI > .95 (West et al., 2012), (b) RMSEA < .06 (West et al., 2012), and (c) SRMR < .08 (Hu & Bentler, 1999; Sivo, Xitao, Witta, & Willse, 2006; West et al., 2012). There are no specified values for the AIC, but smaller values indicate a better fitting model.

3.4.5 Effects

To understand the variable relations within the models, I calculated the indirect, direct, and total effects of the predictor variables. This is especially important with models that have mediating variables– such as the ones I use in this study– in order to examine the nature of the variable relations. A mediating variable is one that fully or partially explains the relation between a predictor and outcome variable (MacKinnon, Fairchild, & Fritz, 2007).

Direct effects represent the change in the outcome variable when a one-unit increase is made to the predictor variable. *Indirect effects* represent the change to the outcome variable when the mediator variable changes as a result of a hypothetical one-unit increase in the predictor variable. The *total effects* are the summation of the direct and indirect effects and represent the entire relation between the predictor variable and outcome variable.

CHAPTER FOUR

Results

4.1 Response Rate

Employees received an electronic request to participate in this study. Those interested in participating followed a link in the email to complete the questionnaire. Of the 378 employees who received the initial request, 210 (55.56%) answered items on the questionnaire.

4.2 Missing Data

Of the 210 returned surveys, 203 (96.67%) were deemed usable representing 53.70% of the initial individuals solicited. I classified responses as unusable if they did not answer a majority of the questionnaire items. Most of these respondents only completed the demographic items. Of the 203 usable responses, 11 did not answer 1 or more items. I analyzed these 11 responses to determine if there was a noticeable pattern for the missing data and could not find any patterns. Next, I used Little's (2003) missing completely at random (MCAR) test to determine if the missing data were ignorable (Pigott, 2001). Little's test ($\chi^2 = 6.82$, $df = 12$, $p = .87$) indicated that there was no pattern in the missing values, so I used listwise deletion to removed observations with missing data. This left 192 participants in the final sample, which represents a response rate of 50.79%. This is close to the average response rate of 52.3% for organizational survey research (Anseel, Lievens, Schollaert, & Choragwicka, 2010).

Demographic information for the sample are provided in Appendix D. Descriptive statistics for the study's variables are included in Table 4.1 (raw values) and Table 4.2 (composite scores). The correlations and covariances between the measured values of interest are in Table 4.3.

Table 4.1. Descriptive Statistics for Variables' Raw Values (n = 192)

Variable	Mean	*SD*	*SE*	Skew
LMXTime	2.33	1.40	.10	.64
Job Satisfaction	11.12	2.37	.17	-.88
LMX Quality	26.75	5.19	.37	-.54
Organizational Commitment	24.57	3.15	.23	-.65
Organizational Learning Culture	23.46	4.57	.33	-.28
Turnover Intention	8.10	3.18	.23	.37

Note. These statistics reflect the raw data, prior to transforming the values into Z-scores and computing composite scores. The maximum possible scores for job satisfaction, LMX, organizational commitment, organizational learning culture, and turnover intention were 15, 35, 40, 35, and 15 respectively. *SD* = standard deviation; *SE* = standard error

Table 4.2. Descriptive Statistics for Composite Score Values

Variable	Mean	*SD*	Minimum	Maximum	Kurtosis	Skew
Job Satisfaction	.22	2.58	-8.65	4.45	1.36	-.88
LMX Quality	.00	5.62	-19.4	8.91	.33	-.54
Organizational Commitment	.00	3.33	-12.41	8.92	1.65	-.65
Organizational Learning Culture	.00	5.08	-18.48	12.82	.34	-.28
Turnover Intention	.01	2.28	-4.52	6.11	-.25	.37

Table 4.3. Correlations and Covariances Among Measured Variables

Variable	1	2	3	4	5
1. Job Satisfaction	6.68	6.66	5.64	6.46	-4.20
2. LMX Quality	.46	31.61	5.56	11.46	-5.33
3. Organizational Commitment	.65	.30	11.12	6.83	-4.51
4. Organizational Learning Culture	.49	.40	.40	25.77	-5.11
5. Turnover Intention	-.71	-.42	-.59	-.44	5.20

Note. The correlations are displayed on the lower triangle, the covariances are displayed on the upper triangle, and the variance is on the principal diagonal.

4.4 Assumptions

There are a set of assumptions for conducting a path analysis. First, the model should be specified correctly (e.g., directional arrows are pointing the right direction, any variables potentially causing both an endogenous and exogenous variable are included in the model). Second. the relations between the endogenous and exogenous variables must be linear. Third, the residuals should be uncorrelated with all other model variables and follow a multivariate normal distribution. (Streiner, 2005).

The first assumption cannot be formally tested; it relies on a thorough understanding of the literature. The second and third assumptions can be examined. To examine the second assumption, I looked at plots of the residuals and the Q-Q plots between the measured variables. All the endogenous and exogenous variables appeared to have linear relations. I do not present the plots for space considerations, but the syntax I used to create them is in Appendix D.

To examine normality, I checked all of the endogenous variables for excessive skewness and kurtosis (see Table 4.2). Using George and Mallery's (2010) guidelines, all of the variables were found to be within an acceptable range of ± 2. To assess multivariate normality, I examined Royston's (1983) *H* test. The variables do not appear to be multivariate normal ($H = 396.99$, $p < .001$). When data are not multivariate normal, one option in path analysis is to use more robust estimator. I used a robust maximum likelihood (ML) estimator with Satorra and Bentler's (1994) scaled χ^2 statistic as well as robust standard errors.

To examine the influence of the multivariate non-normality, I compared the standard errors from traditional ML estimation with the robust standard errors. The

differences between the standard errors were minimal (< .05 for all comparisons); this suggests that the multivariate non-normality likely did not have a substantial influence on the results. In the results, I only report values from the robust estimator.

4.5 Multicollinearity

Multicollinearity occurs when one or more predictor variables can essentially reproduce another predictor variable. This can lead to incorrect estimates of standard errors and path coefficients (Mason & Perreault, 1991). I examined multicollinearity by computing the variance inflation factor (VIF) values for all the predictor variables. VIF is an estimate of how much of the error <u>variance</u> of a path coefficient increased because of predictor collinearity. VIF values that exceed ten indicate that the predictor variables may be collinear (Stevens, 2002). No VIF values were higher than two for either model; thus, multicollinearity was likely not a problem with this study's models.

4.6 Path Analysis

4.6.1 Joo Model

Figure 4.1 contains the Joo model with standardized path coefficients, while Table 4.4 provides the unstandardized coefficient, standard error, and R^2 values. The fit measures for the model are in Table 4.5. All the values are outside of the acceptable value range, indicating that the model does not fit the data well.

Since the model was not a good fit for the data, I examined if there were any particular aspects of the model that were problematic. First, I calculated the standardized residual correlations (McDonald, 2010). The standardized residual correlations compare the variable correlations in the sample to the variable correlations implied by the model

coefficients. I found that there were high residual correlations from both organizational

learning culture and LMX to turnover intention (-.20 and -.24, respectively).

Table 4.4. Path Coefficients for Joo Model

Outcome	Predictor	b	SE b	b*
Turnover Intention (R^2=.35, 95% CI [0.24, 0.46])	Organizational Commitment	-0.41	0.05	-0.59
Organizational Commitment (R^2=.18, 95% CI [0.08, 0.28])	Organizational Learning Culture	0.22	0.05	0.34
	LMX Quality	0.10	0.04	0.16

Note. b= unstandardized regression coefficient; SE b = standard error of b; b* = standardized regression coefficient; R^2 = coefficient of determination.
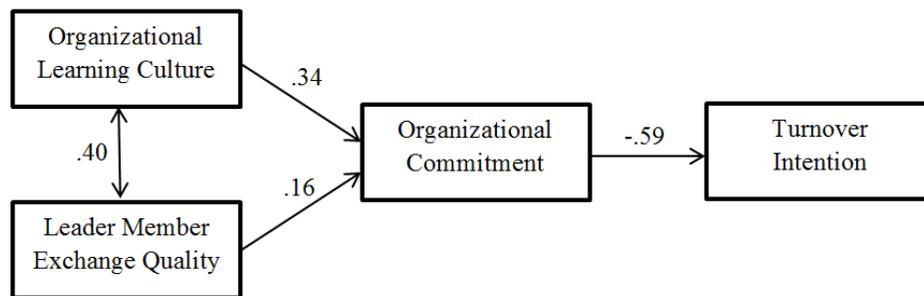
Figure 4.1. Path model for data fit using the Joo model with standardized coefficients. Error terms excluded for the endogenous variables.

Second, I examined the modification indices. Modification indices show what

happens to the model (i.e., reduction in χ^2) when a given model constraint is released.

Typically, the constraint consists of estimating a path that was constrained to zero. Two

relations with large modification indices were the paths from organizational learning

culture and LMX to turnover intention (χ^2 reduction of 11.69 and 15.17, respectively), as

well as a path from organizational commitment to turnover intention residual (χ^2

reduction of 18.27). These results indicate that organization commitment likely does not

fully mediate the relation between turnover intention and both organizational learning

culture and LMX.

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To determine if including the organizational learning culture -turnover intention and LMX-turnover intention paths would improve the model, I added them to the original Joo model and re-estimated the parameters. The AIC improved (see Table 4.5), despite being a more complex model than the original Joo model. As adding both paths makes the model just identified, the other fit indices are not informative.

Table 4.5. Joo Model Fit Indices

Model	χ^2 (p)	df	CFI	RMSEA	SRMR	AIC
Joo Model	21.86(0)	2	.86	.23	.09	4109.43
Joo Model (alt)	0(0)	0	–	–	–	4086.40

Note. df: degrees of freedom, CFI: Comparative Fit Index, RMSEA: Root Mean Square Error of Approximation, SRMR: Square Root Mean Residual, AIC: Akaike's Information Criterion. –: Not informative due to having a just-identified model.

4.6.2 Parker Model

Figure 4.2 contains the Parker model with standardized coefficients, while Table 4.6 provides the unstandardized coefficient, standard error, and R^2 values. The fit measures are shown in Table 4.7 and indicate the model fits the data well as all the values are within the acceptable value ranges.
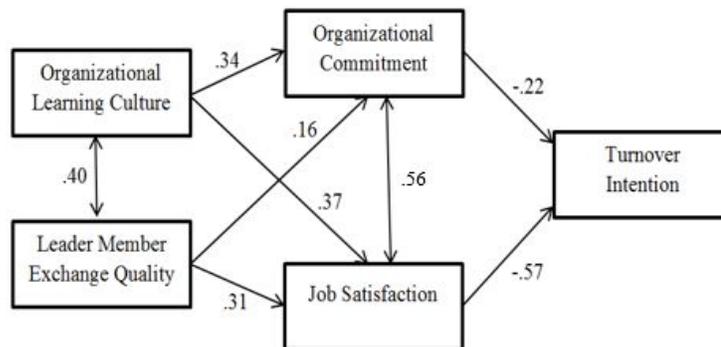

Figure 4.2. Path model for data fit using the Parker model with standardized coefficients. Error terms excluded for the endogenous variables.

In this sample, organizational learning culture and LMX quality were positively related to both organizational commitment and job satisfaction. Both organizational commitment and job satisfaction were negatively related to turnover intention, with the later having a stronger relation than the former. The model accounted for between 45-63% of the variance in turnover intention.

Table 4.6 Path Coefficients for Parker Model

Outcome	Predictor	b	SE b	b*
Turnover Intention (R^2=.54, 95% CI [0.45, 0.63])	Job Satisfaction	-0.50	0.06	-0.57
	Organizational Commitment	-0.15	0.04	-0.22
Organizational Commitment (R^2=.18, 95% CI [0.08, 0.28])	Organizational Learning Culture	0.22	0.05	0.34
	LMX Quality	0.10	0.04	0.16
Job Satisfaction (R^2=.32, 95% CI [0.21, 0.43])	Organizational Learning Culture	0.19	0.04	0.37
	LMX Quality	0.14	0.03	0.31

Note. b= unstandardized regression coefficient; SE b = standard error of b; b* = standardized regression coefficient; R^2 = coefficient of determination.

Table 4.7. Parker Model Fit Indices

Model	$\chi^2(p)$	*df*	CFI	RMSEA	SRMR	AIC
Parker Model	5.46(.07)	2	.99	.10	.03	4819.51

Note. df: degrees of freedom, CFI: Comparative Fit Index, RMSEA: Root Mean Square Error of Approximation, SRMR: Square Root Mean Residual, AIC: Akaike's Information Criterion.

4.7 Model Comparison

According to the χ^2, CFI, RMSEA, and SRMR, the Parker model fits the data well and better than the Joo model. The AIC for the Parker model is higher than for the Joo model, which indicates a poorer fit. As the AIC penalizes models for complexity and the Parker model estimates 13 parameters instead of the 8 estimated by the original Joo model, this is likely the reason the AIC favors the Joo model.

The fit of the Joo model was not only worse than the Parker model, but was outside of the acceptable range for all the fit measures. Thus, the model's path coefficients and other model-based statistics (e.g., R^2) should be interpreted with caution. Moreover, comparison of these values across models is not warranted.

4.8 Effect Decomposition

I decomposed the total effects in the Parker model into direct and indirect effects. They are given in Table 4.8. As an example of how to interpret the values, the total effect of LMX on organizational commitment is .30, which is the total effect and the same as the original correlation between the variables. This .30 can be decomposed into direct effects and indirect effects. The direct effect is .16, indicating that a one-unit change in LMX produces as .16-unit change in organizational commitment. The indirect effect of LMX through organizational learning culture is .14 (i.e., .40 x .34). This indicates that a one-unit change in LMX produces as .14-unit change in organizational commitment through organizational learning culture.

Table 4.8. Summary of Effects for Parker Model

Outcome	Predictor	Effects		
		Direct	Indirect	Total
Turnover Intention	LMX Quality	—	-.44	-.44
	Organizational Commitment	-.22	-.23	-.45
	Organizational Learning Culture	—	-.51	-.51
	Job Satisfaction	-.57	-.09	-.66
Organizational Commitment	LMX Quality	.16	.32	.48
	Organizational Learning Culture	.34	.27	.61
Job Satisfaction	LMX Quality	.31	.27	.58
	Organizational Learning Culture	.37	.29	.66

4.10 Effect Sizes

I utilized two measures of effect size: Pearson correlations (r) and the squared multiple correlation (R^2). The correlations are reported in Table 4.3 and the R^2 values for the Parker model are in Table 4.6. The R^2 value indicates the amount of variance accounted for a variable by its predictors in the model. In the Parker model, 45%-63% of the variance of turnover intention is explained by LMX, organizational commitment, organizational learning culture, and job satisfaction. LMX and organizational learning culture account for 8%-28% of the variance in organizational commitment and 21%-43% of the variance in job satisfaction.

CHAPTER FIVE

Discussion

The purpose of the current study was to determine whether organizational learning culture, leader member exchange (LMX) quality, organizational commitment, and job satisfaction influence turnover intention. Using respondents from a Fortune-500 company (n=192), I answered the following research questions:

1a. Does the turnover intention model created by Joo (2010) fit data from knowledge and non-knowledge workers from the United States?

1b. If the answer to question 1a is affirmative, how similar are the path coefficients from the current study to those from Joo's study?

2. Does adding job satisfaction improve Joo's (2010) original model?

5.1 Research Question Responses

5.1.1 Research Question 1

To answer the first question, I fit the data obtained from the current sample to the Joo model. None of the fit statistics' values were within the specified guidelines. As the model fit was not deemed acceptable, the path coefficients should be interpreted with great caution. Overall, the Joo model accounted for between 25-45% of the variance in turnover intention. As theorized, organizational learning culture and LMX were positively related. Additionally, both LMX and organizational learning culture were positively related to organizational commitment which, in turn, was negatively related to turnover intention. When employees perceive high LMX quality and believe that a culture for organizational learning exists, the employees demonstrate higher commitment

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to the organization. When employees are more committed to an organization, they are less likely to have a high intention to turnover.

When I added paths between organizational learning culture and LMX quality directly to turnover intention, the fit of the model improved. While Joo (2010) and Islam et al. (2013) examined similar models with the added paths, they concluded that the additional paths were not needed. It is possible that the current study's sample, which included both knowledge workers and non-knowledge workers in the United States, varied enough in composition that the added paths are important in the model.

5.1.2 Research Question 2 Discussion

To answer the second question, I fit the data to model that included job satisfaction to Joo's (2010) model as a mediating variable between turnover intention and both organizational learning culture and LMX (i.e., Parker model). The model fit the data well and explained between 45-63% of the variance in turnover intention. Adding job satisfaction improved the model fit over the Joo model and made the resulting statistics interpretable.

Egan et al. (2004) noted the strong association between job satisfaction and employee turnover intention. Thus, as the model confirms, job satisfaction is an important component and antecedent to turnover intention and should be included. The Parker model can explain roughly half of the variance in turnover intention. The theoretical framework established in creating the Parker model was confirmed using the path analysis in this study.

5.2 Summary

Both organizational learning culture and LMX quality were positively related to organizational commitment and job satisfaction. When employees report high LMX quality and a corporate culture of a learning organization, they are more committed to the organization and have higher job satisfaction. Thus, allowing training managers to focus on their relationships with their employees may allow employees to feel more satisfied with their job and increases their likelihood to feel organizational commitment. Additionally, if the company– or even those in charge at a team level– can develop a culture that emphasizes transformational learning experiences for their employees, it will likely increase job satisfaction and organizational commitment.

Both organizational commitment and job satisfaction had a negative effect on turnover intention. When employees have higher organizational commitment and high job satisfaction, they are less likely to intend to leave their current job. It can be difficult to influence job satisfaction or organizational commitment since there are multiple factors involved in each variable. Nonetheless, focusing on increasing both LMX quality and organizational learning culture can increase job satisfaction and organizational commitment, which can limit attrition.

The relation between organizational learning culture and organizational commitment has not been extensively studied (Joo, 2010), nor has the relation between organizational learning culture and job satisfaction. In this study, when employees had the perception that their organization was a learning organization, they were more committed to the organization and they reported higher job satisfaction.

Joo (2010) found that his model was a good fit for his sample of Korean participants. Islam et al. (2013) replicated the study and found that the Joo model was also a good fit for their sample of Malaysian participants. One reason for the difference in goodness of fit between the two prior samples and the current sample could be the composition of the sample. The current sample did not have the constraint of having only employees classified as knowledge workers. Knowledge workers are employees who utilize theoretical and analytical knowledge they obtained through formal education to develop new services or products (Drucker, 1992).

This study had a combination of knowledge workers and those who would not be classified as knowledge workers, including customer service associates. Sawyer, Srinivas, and Wang (2009) reported that turnover rates in the call center industry, which would include customer service associates, are 35 percent to 50 percent annually. Thus, utilizing participants who are not knowledge workers in the current sample may have impacted the overall commitment levels to the organization and inflated the turnover intention rates.

Further, the current sample was from the United States. The prior studies that utilized the Joo model included samples from Korea and Malaysia (Joo, 2010; Islam et al., 2013). The Joo model was not an acceptable fit for the sample from the United States. Each of the measured variables may have been influenced by the way in which the employees viewed their employment and their objective of employment. That is, those from collectivist cultures, such as Korea and Malaysia, may display higher commitment to an organization rather than those from individualist cultures, such as the United States.

5.3 Limitations

This study is not without its limitations. This study utilized a convenience sample based on gaining access to the participants. Because of this, the sample may not be representative of the entire firm. In this study, 91% of the participants were between the ages of 25 and 55. In comparison to the Bureau of Labor Statistics 2014 labor force statistics for management, business, and financial operations occupations, only 41% of the population was between the ages of 25 and 55. An additional 39% were older than 55 years old but in the current sample, only 6% of the population was older than 55 years old (U.S. Department of Labor, 2015). Thus, this model should be studied with a sample that may be more representative of the current population.

Next, this study utilized a path analysis to model the data. Use of the path analysis showed that the theoretical relationships established in the model were confirmed by the parameter estimates; however, this does not establish causality. That is, the direction of the relationship between organizational commitment and turnover intention cannot be confirmed.

Finally, common method variance may have been an issue in the present study. The data collected was all self-reported data. While it was essential to the nature of the research on participant perspectives, there is a possibility that correlations were inflated due to using the same source to measure all of the constructs (Crampton & Wagner, 1994). Additionally, it would not have been feasible to obtain a different source for the responses.

5.4 Recommendations for Future Research

The Joo model was not an acceptable fit for the current study data sample from the United States but it was an acceptable fit for data samples from Korea and Malaysia. There may be cultural differences that influence the roles of the measured variables. Thus, an extension of this study would be to further explore how the models vary between collectivist and individualistic societies.

Additionally, in order to reduce the concern of common method variance, a future study might look at the perceived LMX of the leader or determine another way to assess whether the organization meets the definition of a learning organization. This would allow the researcher to assess LMX from the dyadic perspective of both the leader and members. There may also be an opportunity to design a study using multilevel modeling when assessing the dynamics between groups within an organization.

Control variables, such as age and tenure with the company, were collected in this study but only for generalized use in the reporting of the demographic variables. In future studies, researchers may choose to incorporate these control variables and examine how they influence employee perspectives on LMX, organizational learning culture, organizational commitment, job satisfaction, and turnover intention.

5.5 Concluding Remarks

Organizations strive to keep their key talent and limit turnover as it costs the company both capital and non-capital resources to hire and train new employees (Kazi & Zadeh, 2011; Milbourn, 2012). Thus, determining antecedents to turnover intention and finding related causes that might mitigate the rate of turnover remains an important task. While the Joo model was sufficient for the population of knowledge workers from Korea

and Malysia, the Parker model was the better model for a sample of non-knowledge workers and knowledge workers from the United States. The Parker model incorporates both organizational learning culture and job satisfaction which are important variables to turnover intention (Egan et al., 2004).

Human resources professionals may influence employee voluntary turnover through training supervisors on practices to create high LMX relationships with their employees. Additionally, they may work to foster a culture that is perceived to be synonymous with a learning organization. Focusing on these variables may allow employees to be more committed to the organization and more satisfied with their jobs. In turn, they may be less likely to turnover. With an increased understanding of how organizational learning culture, LMX quality, organizational commitment, and job satisfaction are related to turnover intention, organizations may finally be able to retain key talent and positively impact their business objectives.

APPENDICES

APPENDIX A

Informed Consent Document

Baylor Educational Psychology Department
Principal Investigator: Sonia L. Parker

This form asks for your consent to participate in research concerning the relationship between employee characteristics and organizational outcomes. For this project, you will be asked to answer a series of questions. Your participation is completely voluntary. You may elect to withdraw your participation at any time during the study with no penalty or loss of benefits. None of the questions require a forced response and you may opt out of any questions that you do not wish to answer. The entire survey should take no more than 5-10 minutes.

Upon completion of the survey, you will have the option to click on a link to a separate survey where you can enter your e-mail address. For all respondents who complete the full survey, a $5 gift card to a coffee shop will be sent to the designated e-mail addresses when the survey window closes.

We know of no major risks or dangers in participating in this project. The data will be collected anonymously; however, electronic communication may be subject to interception, legally by your employer or illegally by another party, while the information is in transit. Therefore, it is possible that your information might be seen by another party. Please direct all inquiries about this project to Sonia Parker (Sonia_Lee@baylor.edu) or Dr. Alexander Beaujean (Department of Educational Psychology, Baylor University, One Bear Place # 97301, Waco, TX, 76798).

If you have any questions regarding your rights as a participant, or any other aspect of the research as it relates to you as a participant, please contact the Baylor University Committee for Protection of Human Subjects in Research, Dr. David W. Schlueter, Ph.D., Chair Baylor IRB, Baylor University, One Bear Place #97368 Waco, TX 76798-7368. Dr. Schlueter may also be reached at (254) 710-6920 or (254) 710-3708.

As you may be aware, electronic communication may be subject to interception, legally by your employer or illegally by another party, while the information is in transit. Therefore, it is possible that your information might be seen by another party and I cannot control whether that happens.

I have read and understood this form, am aware of my rights as a participant, and have agreed to participate in this research.

APPENDIX B

Survey Request to Participants

Hi,

We have the unique opportunity to participate in an anonymous electronic survey on employee outcomes within [company name]. Below is a link to the online survey. Your responses will be kept completely confidential. The survey is web-based.

Upon completion, if you choose to provide your e-mail in a separate survey, you will receive a $5 gift card to a coffee shop which will be e-mailed to the address provided upon completion of the survey window.

Our hope is that your voluntary involvement in the research project will aide in gathering information for how to create a great work environment. Hopefully this data will provide new ideas on how we can impact engagement in many specific areas of work.

If you have any questions, please contact [e-mail address].

To begin, please click the survey URL below:

[Survey link]

Thank you for your participation.

APPENDIX C

Instruments

All survey questionnaire items utilize a 5-point Likert-type scale that ranged from 1 (strongly disagree) to 5 (strongly agree). Where referenced, (R) denotes an item that is reverse coded.

C.1 MOAQ– Job Satisfaction Scale (Cammann et al., 1979)

1. All in all I am satisfied with my job.
2. In general, I don't like my job. (R)
3. In general, I like working here.

C.2 Organizational Affective Commitment Scale (Meyer, Allen, & Smith, 1993)

1. I would be very happy to spend the rest of my career in this organization.
2. I enjoy discussing my organization with people outside it.
3 I really feel as if this organization's problems are my own.
4. I think I could easily become as attached to another organization as I am to this one. (R)
5. I do not feel like a member of the family at this organization. (R)
6. I do not feel "emotionally attached" to this organization. (R)
7. This organization has a great deal of personal meaning for me.
8. I do not feel a strong sense of belonging to this organization. (R)

C.3 Organizational Learning Culture (Yang, Watkins, & Marsick, 2004)

1. In my organization, people are rewarded for learning.
2. In my organization, people spend time building trust with each other.
3. In my organization, teams/groups revise their thinking as a result of group discussions or information collected.
4. My organization makes its lessons learned available to all employees.
5. My organization recognizes people for taking initiative.
6. My organization works together with the outside community to meet mutual needs.
7. In my organization, leaders continually look for opportunities to learn.

C.4 LMX7(Scandura & Graen, 1984)

1. I often know where I stand with my supervisor and I usually know how satisfied my supervisor is with what I do.

2. My supervisor understands my job problems and needs very well.
3. My supervisor fully recognizes my potential.
4. Regardless of how much formal authority my supervisor has built into his or her position, the chance that my supervisor would use his or her power to help me solve problems at my work is very high.
5. Regardless of the amount of formal authority my supervisor has, the chance that he or she would "bail you out" at his or her expense is very high.
6. I have enough confidence in my supervisor that I would defend and justify his or her decision if he or she were not present to do so.
7. I would characterize my working relationship with my leader as extremely effective.

C.5 Turnover Intention (Mobley, Horner, & Hollingsworth, 1978)

1. I often think about quitting my present job.
2. I will probably look for a new job in the next year.
3. As soon as possible, I will leave the organization.

APPENDIX D

Participant Demographic Information

Table D.1 Participant Demographic Information (n= 192)

Characteristics		*n* (%)
Gender	Male	79 (41.1)
	Female	111 (57.8)
	Chose not to answer	2 (1.0)
Age (years)	<25	9 (4.7)
	25-35	75 (39.1)
	36-45	81 (42.2)
	46-55	20 (10.4)
	>56	6 (3.1)
Tenure (years)	<5	34 (17.7)
	5-10	81 (42.2)
	11-15	51 (26.6)
	16+	42 (21.9)
Average days telecommuting	0	49 (25.6)
	1	25 (13.0)
	2	10 (5.2)
	3	10 (5.2)
	4	10 (5.2)
	5	86 (44.8)
	Prefer not to answer	2 (1.0)
Recent performance rating	Inconsistently meets expectations	4 (2.1)
	Meets expectations	97 (50.5)
	Often exceeds expectations	66 (34.4)
	Consistently exceeds expectations	15 (7.8)
	Prefer not to answer	10 (5.3)
Time working with manager (years)	<1	76 (39.6)
	1-2	42 (21.9)
	2-3	29 (15.1)
	3-5	23 (12.0)
	5+	22 (11.5)
Educational Level	High School/GED	7 (3.7)
	Some College	18 (9.4)
	Associate's Degree	16 (8.3)
	Bachelor's Degree	118 (61.5)
	Some Postgraduate Work	14 (7.3)
	Post Graduate Degree	19 (9.9)

APPENDIX E

R Syntax Used for Current Study

The data was saved in a comma-delimited text file named *zunitdata.csv*.
```
# import data
data <- read.csv("zunitdata.csv")

#descriptive statistics
library(psych)
describe(data)

# missing data patterns
library(mice)
md.pattern(data)

# MCAR tests
library(BaylorEdPsych)
mcar.little <- LittleMCAR(data)

library(MissMech)
TestMCARNormality(data)

#testing multivariate normality
library(MVN)
roystonTest(data)

#testing linear relationships between endogenous and exogenous variables
par(mfrow=c(2,2)
TIJS<-lm(data$TI~data$JS)
summary(TIJS)
plot(TIJS)
abline(TIJS)
TIOC<-lm(data$TI~data$OC)
summary(TIOC)
plot(TIOC)
abline(TIOC)
JSOLC<-lm(data$JS~data$OLC)
summary(JSOLC)
plot(JSOLC)
abline(JSOLC)
JSLMX<-lm(data$JS~data$LMX)
summary(JSLMX)
plot(JSLMX)
```

```
abline(JSLMX)
OCOLC<-lm(data$OC~data$OLC)
summary(OCOLC)
plot(OCOLC)
abline(OCOLC)
OCLMX<-lm(data$OC~data$LMX)
summary(OCLMX)
plot(OCLMX)
abline(OCLMX)

# Joo model specification
library(lavaan)
joomodel<-'
TI~OC
OC~OLC+LMX
LMX~~OLC'

# Parker model specification
parkermodel<-'
TI~JS+OC
OC~OLC+LMX
JS~OLC+LMX
OC~~JS
LMX~~OLC'

#fit models
fit.joo<-sem(joomodel, data=data, estimator = "MLM")
fit.parker<-sem(parkermodel, data=data, estimator ="MLM")
summary(fit.joo, rsquare=TRUE, standardized=TRUE, fit.measures=TRUE)
summary(fit.parker, rsquare=TRUE, standardized=TRUE, fit.measures=TRUE)

#examine residuals and modification indices for Joo model
fitted(fit.joo)
mod<modindices(fit.joo)
mod[order(mod$mi),]

#examine method variable variance for Parker model
parker.cmv.model<-'
OC ~ OLC+LMX
JS ~ OLC+LMX
TI ~ JS+OC
c=~ JS+OC+TI
JS~~a*JS
a>0
'
```

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