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A Comparison of LMX, Communication, and Demographic Differences in Remote and Co-located Supervisor-Subordinate Dyads

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A COMPARISON OF LMX, COMMUNICATION, AND DEMOGRAPHIC

DIFFERENCES IN REMOTE AND CO-LOCATED

SUPERVISOR-SUBORDINATE DYADS

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Doctor of Philosophy

BY

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JUNE, 2012

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VITA

Larisa Belau Niedle (formerly Larisa Belau) was born in Odessa, Ukraine on July 3, 1983. She graduated from Brooklyn Technical High School with a major in Social Science Research in 2001. In 2005 she received her Bachelor of Arts in Psychology from Adelphi University, graduating Summa Cum Laude from the Honors College and receiving several awards for scholarship and service. In 2008 she received her Master of Arts with distinction in Industrial/Organizational Psychology from DePaul University.

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CHAPTER I

INTRODUCTION

A number of social and organizational forces have led to work arrangements in which supervisors are responsible for managing employees who are at a distance (Antonakis & Atwater, 2002; Avolio, Kahai, & Dodge, 2000). Over the last several decades, much of the workforce has shifted from an industrial model to an information-based model (Hill, Ferris, & Martinson, 2003). In the past, the worker had to be in a particular place at a specified time because employees were producing a product (Gajendran & Harrison, 2007). In more recent decades, many employees' output is in the form of services rather than products. This shift in what gets produced, along with advances in technology, has allowed the worker to become independent of time and place (Harrison, Johns, & Martocchio, 2000) and has resulted in employees no longer needing to be in the same location as their managers. This overall work arrangement is referred to as *distributed work* because it allows the employee to be located away from a central office and the work to be performed across settings that are independent of work location (Belanger & Collins, 1998).

There are several forms of distributed work: one is telecommuting and another is working at a remote location away from one's supervisor. Telecommuting, also referred to as remote work or telework, is a work arrangement that allows employees to perform tasks from home or remote offices that are normally done in a central workplace using electronic media to communicate with others inside and outside the organization (Bailey & Kurland,

2002; Baruch, 2001; Feldman & Gainey, 1997). Telecommuting is an increasingly popular work arrangement, with approximately 45 million Americans participating in some form of telecommuting in 2006, up from 41 million in 2003 (WorldatWork, 2007). Worldwide, telecommuting has grown by about 11% per year (Office of National Statistics, 2005; Society for Human Resource Management Foundation, 2001). Many large corporations are institutionalizing companywide programs that allow employees to spend at least a portion of every workweek working remotely (Baruch, 2001; Golden, Veiga & Dino, 2008). The increased use of telecommuting can be attributed to the advancement of technology as well as to the benefits that both organizations and employees can gain from these work arrangements.

By working from home or satellite offices, employees are able to adjust their work schedules to meet family needs, and save money by reducing commuting and professional attire costs (Gajendran & Harrison, 2007). Organizations benefit from telecommuting in a number of ways too. Companies are able to recruit and retain high quality employees who would otherwise live too far away and be unable or unwilling to commute (DiMartino & Wirth, 1990; Hill et al., 2003). By offering distant employees the option of telecommuting, the organization can prevent the loss of talent while substantially saving costs by avoiding the expense associated with turnover (Kirk & Belovics, 2006). Additionally, by allowing remote work arrangements, organizations can benefit from heightened employee satisfaction, less absenteeism, reduced turnover, and lower real estate costs (Di Martino & Wirth, 1990; Kurland & Bailey, 1999;

Kurland & Cooper, 2002; Young, 1991). More flexible work arrangements may also increase productivity, attract more applicants, and allow the organization to comply with the Americans with Disabilities and Clean Air Acts (Di Martino & Wirth, 1990; Gainey & Kelley, 1999; Knight & Westbrook, 1999; Kurland & Bailey, 1999; Kurland & Cooper, 2002; Kurland & Egan, 1999; Potter, 2003).

The second type of distributed work arrangement that has become prevalent is having employees and their supervisors working out of different offices. In addition to the factors described above, this is due in part to organizations expanding their scope. Organizations have become less centralized and have undergone global expansion, mergers, and acquisitions (Wiesenfeld, Raghuram, & Garud, 1999). These changes have led to many corporations having offices scattered across various cities, states, and even countries (Howell et al., 1997). With this expanded scope, organizations with offices in multiple locations can recruit from multiple talent pools. This has resulted in employees being located away from their immediate supervisors and the need for collaboration across geographic boundaries.

Although there is a substantial body of literature on the details of various types of distributed work arrangements, the common feature that all distributed work arrangements share is that employees and their supervisors are no longer in direct contact. This may create a number of potential problems. For example, distributed work arrangements have been linked to social isolation, poor peer relationships, disruptions to teamwork, and limited career advancement (Baruch & Nicholson, 1997; Fay & Kline 2011; Gajendran & Harrison, 2007; Golden et

al., 2008; Tietze & Musson 2010). Because remote employees are not in the same location as their supervisors or team members, they are less likely to be part of the informal political networks that are often key to career advancement (Hill et al., 2003). Remote workers have been shown to receive less pay/benefits and have less job security than their colleagues who work on-site (Rovi, 1997). Working from different locations may also hamper the transmission of the organization's culture (Ashforth, Harrison, & Corley, 2008; Fay & Kline, 2011) and can make scheduling and coordinating work done by off-site employees more difficult (Kurland & Bailey, 1999). In addition, supervisors can be skeptical of this work arrangement because they are no longer able to observe the work directly (Hill & Weiner, 2003).

With distributed work continuing to increase, there is a need to understand the potential consequences of such arrangements. For example, there is a need to examine work arrangements' effect on the relationship quality between supervisors and their subordinates and if this, in turn, impacts performance ratings. While there has been a plethora of research on leadership and on the relationships between supervisors and subordinates, very little work has focused on how these relationships are affected by distance. In fact, most leadership theories assume minimal physical distance between supervisors and subordinates and communication through face-to-face interactions (Bass, 1990; Yukl, 2006). Despite these assumptions, preliminary evidence shows that supervisor-subordinate relationships are affected by context, such as physical distance (Liden et al., 1997). With distributed work arrangements continuing to grow in

popularity, it is important to understand how the supervisor-subordinate relationship is affected when supervisors are forced to communicate with subordinates over distance while using electronic means (Avolio, Sosik, Jung, & Berson, 2003).

The primary concern of this research is distance. Napier and Ferris's (1993) framework for distance posits that distance can be defined in terms of functional, structural, and psychological distance, all of which are of importance for organizations. First, there is functional distance, which refers to the quality of the relationship between a supervisor and subordinate. Napier and Ferris (1993) drew heavily on Leader Member Exchange (LMX) theory when formulating the idea of functional distance. This theory posits that supervisors establish high-quality relationships with a small group of their subordinates (Graen & Uhl-Bien, 1995) who are trusted to perform the most important duties and receive the most attention and support from their supervisor (Dunegan et al., 1992; Sparrowe & Liden, 1997; Wayne et al., 1997). The quality of the LMX relationship is very important as it is correlated with a number of beneficial outcomes, including higher job performance, overall satisfaction, satisfaction with supervisor, and organizational commitment (Gerstner & Day, 1997).

The second type of distance in this framework is structural distance, which is mainly concerned with the amount of interaction in the dyad that is allowed by the constraints of physical structure (e.g., physical distance), organizational structure (e.g., span of management control and management centralization), and supervision structure (e.g., frequency of supervisor-subordinate interaction;

Nappier & Ferris, 1993). Because communication is a key piece of structural distance, it was explored in this research.

Of particular importance is the fact that distributed work arrangements create physical distance between supervisors and subordinates that reduces the likelihood of communication (Allen, 1977; Sorenson & Stuart, 2001). Communication is vital in the development of trust, creating shared meaning, and building cooperative relationships (Staples, Hulland, & Higgins, 1999; Wiesenfeld, Raghuram, & Garud, 1999). Because communication is so critical to building effective relationships, some authors have argued that physical distance would greatly hinder the relationship quality between supervisors and subordinates (Bass, 1990; Kerr & Jermier, 1978).

However, more recent advances in communication technology can facilitate communication between supervisors and subordinates that was previously impossible. The richness of the more modern media can convey greater information and facilitate shared meaning between individuals (Trevino, Daft, & Lengel, 1990). As more managers use email, virtual meetings, and other alternative forms of communication, a key issue is whether the use of these technologies can enhance the supervisor's influence on employees, even across distance (Sosik, Avolio, & Kahai, 1997). It is important to investigate if organizations are able to minimize the effects of distance on interactions between supervisors and subordinates. Research on the working relationship between managers and employees, and the frequency and mode of communication between them is clearly needed (Howell et al., 2005). This study addresses the

gaps in the literature on how remote work arrangements and choice of communication media impact supervisor-subordinate relationship quality and performance ratings.

The third and final type of distance in Nappier and Ferris' (1993) framework is psychological distance. This is the perceived distance between two people and can be displayed through demographic difference, power distance, and differences in values. It is important to note that this is different than Wellens' (1986, 1989) psychological distance theory, which refers to the perceived social influence of a communication medium. This research focuses on the demographic differences aspect of Nappier and Ferris' (1993) psychological distance. The reason for this is that the number of minority and female employees has steadily increased and projections indicate that the next decade will continue to see this rise (Bartsch, 2009). Due to the increased demographic diversity in the workforce, much research has focused on how demographic differences may influence work processes, relationship quality, and performance ratings (e.g., Byrne, 1971; Mayer, Davis, & Scboorman, 1995; Tsui & O'Reilly, 1989). In line with previous research, hypotheses will be put forth relating demographic similarity to LMX quality, physical distance, and performance ratings.

Although much research has focused on diversity, there are still many gaps in the literature that need to be addressed. One such gap is in our understanding of how diversity functions when individuals work in different locations and have to rely on leaner media for communication. This study helps to answer a call to research by examining how the type of communication media

used impact the relationship quality between demographically diverse coworkers (Barsness et al., 2005).

The objectives of this research are to add theoretically to the literature by addressing the growing organizational trends of distributed work, reliance on various media for communication, and increased diversity in the workforce. Several theories are used to inform the hypotheses. Napier and Ferris' (1993) theory of distance, which includes structural, functional, and psychological distance, serves as a framework for much of this research. LMX theory, which is the basis for the idea of functional distance, is used to inform hypotheses on supervisor-subordinate relationships. Theories on communication quantity and quality, particularly media richness and social presence theories are used as a basis for the communication hypotheses. Finally, the diversity theories similarity-attraction paradigm, social identity/social categorization theory, and relational demography theory are used to formulate hypotheses related to diversity. Each of these theories will be discussed in more detail in the subsequent sections.

<div align="center">Distance</div>

Changes in organizational structure, size, complexity, and work arrangements make more supervisors responsible for managing subordinates who are at a distance (Antonakis & Atwater, 2002; Avolio, Kahai, & Dodge, 2000). Physical distance in organizations will become increasingly prevalent as firms internationalize as well as the increasing number of service–sector employees working from home (Howell et al., 1997). Supervisors in companies with employees at remote sites and telecommuters are faced with the challenges of

motivating and evaluating employees who they cannot see. Despite these

organizational changes, most researchers have ignored the role that the

organizational context plays in how supervisors are able to influence their

subordinates (Gerstner & Day, 1997). This research examined how distance

impacts the relationship between supervisors and their subordinates, and in turn,

the effect on performance ratings.

<u>Theory of Distance</u>

The idea of distance extends beyond differences in physical location.

Rather, distance between supervisors and subordinates can be viewed in a number

of ways, including functional, structural, and psychological distance (Napier &

Ferris, 1993). *Functional distance* refers to the quality of the relationship between

a supervisor and subordinate. Functional distance relies heavily on the ideas of the

out-group and in-group outlined in LMX theory (Napier & Ferris, 1993), which

will be discussed in the next section. *Structural distance* refers to differences in

physical structures (e.g., physical distance), organizational structure (e.g., span of

management control and management centralization) and supervision structure

(e.g., frequency of supervisor-subordinate interaction). The primary concept

underlying structural distance is the amount of interaction in the dyad that is

allowed by the constraints of physical structure, organizational structure, and

supervision structure. *Psychological distance* refers to the ''psychological effects

of actual and perceived. . . differences between the supervisor and subordinate''

(Napier & Ferris, pp. 328–329). These differences include: demographic

difference, power distance, and differences in values.

While these types of distance may be related, they are theoretically distinct. That is, it is possible for a supervisor to be co-located and have little structural distance from subordinates, yet to be functionally distant in that the supervisor and subordinate have a low quality relationship. Likewise, it is also possible for supervisors to be physically distant yet have high quality relationships with their subordinates. To see how these types of distance between managers and subordinates interact, all three types of distance were assessed in the present study. Structural distance was assessed via physical distance and communication; functional distance was assessed via LMX quality; and psychological distance was assessed via demographic differences.

<p style="text-align:center"><u>Leader-Member Exchange Theory</u></p>

LMX Theory (Graen & Cashman, 1975; Dansereau, Graen, & Haga, 1975) is focused on the perceived quality of the dyadic relationship between a subordinate and the immediate supervisor. This theory originated as the Vertical Dyad Linkage (VDL) theory and was based on the idea that different exchange relationships between a supervisor and subordinate are developed (Dansereau et al., 1975). Mutual influence in the supervisor-subordinate relationship is central to the theory, and LMX is therefore a social-exchange theory of leadership. This relationship forms because subordinates recognize that their supervisor has access to desirable outcomes such as interesting tasks, more responsibility, or tangible rewards (Graen & Cashman, 1975). Supervisors also seek out high-quality relationships with their subordinates because subordinates in these relationships tend to have increased performance and discretionary effort, engagement, higher

commitment to the supervisor and to the organization, job satisfaction, and reduced turnover (Brunetto, Farr-Wharton, & Shacklock, 2010; Chen, Wang, Chang, & Hu, 2008; Graen & Cashman, 1975; Han & Jekel, 2011; Laschinger, Finegan, & Wilk, 2009; Tangirala, Green, & Ramanujam, 2007). The social exchange arises because recipients of positive actions experience a sense of indebtedness (Uhl-Bien & Maslyn, 2003; Wayne, Shore, & Liden, 1997). By reciprocating with positive actions of their own, individuals can lower their feeling of indebtedness (Greenberg & Westcott, 1983; Settoon, Bennett, & Liden, 1996). Hence, as individuals act in ways that benefit others, an implicit obligation for future reciprocation is created.

Supervisors differentiate among their employees and develop unique relationships with each of them. Because a supervisor must delegate responsibilities to his or her team in order to get all work accomplished, it is in the supervisor's best interest to delegate the most critical tasks to subordinates that can be trusted (Graen & Cashman, 1975). Early in the history of the interaction between a supervisor and a given employee, the supervisor implicitly categorizes the subordinate as belonging to an "in-group" or "out-group." There is strong evidence that supervisors differentiate among subordinates, and that these disparities are not random (Gerstner & Day, 1997). How a subordinate is categorized is determined relatively early in the relationship and this categorization remains fairly stable over time (Liden & Graen, 1980; Liden, Wayne, & Stilwell, 1993). Supervisors differentiate their subordinates in a number of ways. Some of the differentiating factors are skill or job based, such as

competence, dependability, and a subordinate's motivation to assume greater responsibility (Graen & Cashman, 1975). Other differentiating factors are more affective, such as similarity to the supervisor, personal compatibility, and even demographic similarity. Those who are most like the supervisor will be more likely to fall within the in-group (Engle & Lord, 1997; Vecchio & Brazil, 2007; Waismel-Manor, Tziner, Berger, & Dikstein, 2010).

The individuals making up the in-group tend to go beyond formal job duties and take responsibility for completing tasks that are most critical to the success of the work group. These relationships are characterized by respect, mutual trust, influence, and social obligation (Graen & Uhl-Bien, 1995). Supervisors in such relationships rely more heavily on subordinates to act in their stead (Dunegan et al., 1992) and encourage them to take on more important activities than they otherwise would (Graen & Uhl-Bien, 1995). These subordinates perform added duties, play a greater role in meeting workgroup goals, and deliver performance beyond contractual obligations (Chang & Johnson, 2010; Chen et al., 2008; Dunegan et al., 1992; Han & Jekel, 2011; Sparrowe & Liden, 1997; Wayne et al., 1997). In return, these subordinates receive more attention, support, trust, sensitivity, and special privileges from the supervisor. They interact frequently with their supervisors and have their supervisors' support, confidence, encouragement, and consideration (Graen & Uhl-Bien, 1995).

Subordinates who are not part of the in-group form the out-group and have a low quality LMX relationship. These employees perform more mundane tasks and have a more formal relationship with the supervisor. These relationships are

characterized by downward influence, economic exchange, and loosely coupled goals. To exert their influence, supervisors must rely on the formal employment contract and tend to remain emotionally distant from these employees (Dunegan et al., 1992). Members of the out-group also receive less of the supervisor's time and attention, and fewer of the rewards that the supervisor controls. Subordinates in these types of relationships abide by the rules of the employment contract, afford their supervisors the authority of their positions, and are compensated for performance by the organization (not the supervisor) in monetary form (Dunegan et al, 1992; Graen & Uhl-Bien, 1995; Sparrowe & Liden, 1997; Wayne et al., 1997).

The quality of LMX relationship has been positively correlated with various types of performance across a multitude of studies (e.g., Chang & Johnson, 2010; Graen, Novak, & Sommerkamp, 1982; Han & Jekel, 2011; Liden et al. 1993; Vecchio & Gobdel, 1984) and corroborated by meta-analytic findings (Gerstner & Day, 1997). As mentioned earlier, Napier and Ferris (1993) drew heavily on LMX theory when conceptualizing the idea of functional distance. As such, they predicted that functional distance (i.e., low quality LMX) would be a negative predictor of subordinate performance (Napier & Ferris, 1993). Based on the numerous findings that LMX is positively correlated with subordinate performance, the following hypothesis is being proposed:

Hypothesis I. LMX quality will be positively related to supervisors' ratings of subordinate in-role performance.

Because LMX is based on the premise of social exchange, subordinates will likely go beyond required behavior and engage in organizational citizenship behavior (OCB) to maintain a balanced social exchange (Chang & Johnson, 2010; Greenberg & Westcott, 1983; Laschinger et al., 2009; Settoon et al., 1996). OCBs are behaviors that are discretionary, rather than being required or directly recognized by the formal reward system (Organ, 1988). The original conceptualization of OCBs was a five-factor model consisting of altruism, courtesy, conscientiousness/compliance (employees' acceptance and adherence to the rules, regulations, and procedures of the organization), civic virtue (employees taking an active interest in the life of their organization), and sportsmanship (willingness of the employee to tolerate less than ideal circumstances without complaining and making problems seem bigger than they actually are; Organ, 1988). Two additional dimensions, namely, peacekeeping and cheerleading were added later on (Organ, 1990).

While managers can distinguish between the sportsmanship, civic virtue, and conscientiousness dimensions (Bell & Menguc, 2002; Hui, Lee, & Rousseau, 2004; Lam, Hui, & Law, 1999; Podsakoff et al., 1990), they often have a hard time differentiating between the other dimensions (i.e., altruism, courtesy, peacekeeping, and cheerleading) and see them as a general helping dimension (Bachrach, Bendoly, & Podsakoff, 2001; MacKenzie, Podsakoff, & Fetter, 1991; Podsakoff & MacKenzie, 1994).

A later conceptualization of OCBs organizes the behaviors based on the recipient of the behavior (Williams & Anderson, 1991). Specifically, the OCBs are organized as either helping other individuals (OCBI) or helping the organization (OCBO). This conceptualization places Organ's (1988, 1990) altruism, courtesy, peacekeeping, and cheerleading dimensions under the OCBI category and conscientiousness/compliance, civic virtue, and sportsmanship dimensions in the OCBO category (Podsakoff, Whitling, Podsakoff, & Blume, 2009). Because all of Organ's (1988, 1990) OCB dimensions can be explained with Williams and Anderson's (1991) conceptualization in a more parsimonious way and because Organ himself was favorable to this approach (Organ, 1997), William and Anderson's (1991) conceptualization is used in this study.

Although OCBI and OCBO are highly related concepts (Dalal, 2005), they are theoretically and empirically distinct. The results of several recent meta-analyses indicate that OCBI and OCBO have unique antecedents (Ilies, Fulmer, Spitzmuller, & Johnson, 2009) and only share approximately 57% of their variance (Podsakoff et al., 2009). Therefore, to capture a complete picture of performance, one needs to asses in-role performance, OCBI and OCBO.

LMX has been shown to predict both task performance and OCBs (Ilies et al., 2007). In particular, LMX is best able to predict OCBs that are targeted at the supervisor (OCBI) as compared to the organization (OCBO), further supporting the relational or interpersonal focus of LMX. Therefore,

Hypothesis II. LMX quality will be positively related to supervisors'
ratings of subordinate OCB performance. The LMX and OCB relationship
will be stronger with OCBI than with OCBO.

Leadership in Context

Earlier leadership research focused on the supervisors themselves and has
been criticized for failing to account for situational variables (Kerr, Schriesheim,
Murphy, & Stogdill, 1974). Fiedler (1964), and Hersey and Blanchard (1977)
were among the first authors to introduce situational factors into leadership
research. Their approach emphasized the importance of contextual factors that
influence the leadership process. For example, Fiedler (1964) argued for the
importance of task structure, supervisor-subordinate relations, and position power
in determining the appropriate leadership style for any given situation. Later
research in Path-Goal Theory (House, 1971, 1996) incorporated the need to
consider situational factors in leadership style. With more recent work, Gerstner
and Day (1997) observed that the role of organizational context in the LMX
model requires further examination.

There is some evidence that organizational context, including physical
distance, can affect supervisors' behaviors and the LMX process (Brander &
Mark, 2008; Dierdorff, Rubin, & Morgeson, 2009; Liden et al., 1997). However,
the role that physical distance plays in supervisors' relationships with their
subordinates is relatively unexplored (Howell & Hall-Merenda, 1999; Liden et al.,
1997). Several authors have argued for the need to understand how the

supervisor-subordinate relationship is affected by spread out organizations where supervisors are forced to communicate with subordinates using electronic means (Avolio et al., 2003; Liden et al., 1997).

Although there has been a call to include distance in leadership theory and research (Antonakis & Atwater, 2002; Howell & Hall-Merenda, 1999; Napier & Ferris, 1993), this concept is not prominent in the leadership literature (Waldman & Yammarino, 1999). This is problematic for several reasons. First, most leadership theories falsely assume minimal physical distance between supervisors and subordinates, communication through face-to-face interactions, and control and influence through hierarchical power (Bass, 1990; Yukl, 2006). Second, when distance is considered as a contextual variable, it is often done implicitly or by looking at only one component of distance in isolation (Napier & Ferris, 1993). To overcome this limitation in the literature, this research examines multiple forms of distance, and how these forms of distance between supervisors and their subordinates influences LMX quality and performance ratings. This includes examining employees physically distant from their supervisor, either because they work from a different office or from home.

Various authors have argued that physical distance may negatively impact the quality of interactions between supervisors and subordinates (e.g., Bass, 1998; Bass & Avolio, 1990; Howell & Hall-Merenda, 1999; Yagil, 1998). Their main point is that physically distant supervisors will have less opportunity to build relationships that result in effective subordinate performance. Physical distance decreases the opportunities for direct influence and potentially decreases the

effectiveness of the working relationship between supervisors and subordinates (Bass, 1990; Liden et al., 1997; Napier & Ferris, 1993). Physically distant supervisors may also be seen as less active by subordinates (Antonakis & Atwater, 2002), and less capable of providing timely recognition and rewards, reducing the contingent reward relationships. Some authors went so far as to say that physical distance creates circumstances in which effective leadership may be impossible, as it tends to neutralize both task-oriented and relationship-oriented supervisory behaviors (Kerr & Jermier, 1978).

Distance also lowers the supervisor's ability to establish contingent contracts between performance expectations and rewards, to observe employee performance, and to provide timely rewards on the fulfillment of the performance contract (Podsakoff et al., 1984). This may be due to the supervisor's inability to observe how hard distant employees work, how much they get done, or the amount of time they spend on the job (Kurland & Bailey, 1999). In fact, subordinates' performance ratings are directly correlated with the number of opportunities a supervisor has to observe them (Judge & Ferris, 1993).

One of the reasons that performance ratings may not be perfectly valid or reliable is due to a supervisor's inability to observe behavior (Borman, 1978). This may be especially problematic when supervisors are not co-located with their subordinates, limiting the day-to-day work behaviors that can be observed. Visibility at a central location is thought to be crucial for positive performance evaluations (O'Mahony & Barley, 1999). Regardless of actual outputs, face-time

seems to affect others' perceptions of performance (Elsbach, Cable, & Sherman, 2010).

Additionally, variance in performance ratings depends on context, with certain behaviors being more appropriate within a given context. Both actual subordinate performance and context systematically impact variance in performance ratings (Dierdorff & Surface, 2007; Spence & Keeping, 2010). When employees work at a distance from their supervisors, the context may not be taken into account when making performance ratings, thus leading to lower performance ratings. Therefore,

Hypothesis III. Supervisors will rate physically close subordinates' in-role performance higher than physically distant subordinates.

Researchers have been paying a considerable amount of attention to contextual performance (Hedge & Borman, 1995; Podsakoff, Whiting, Podsakoff, & Blume, 2009). In part, this is because OCBs account for a large portion of the variance in managerial evaluations (MacKenzie, Podsakoff & Fetter, 1993). This is problematic if contextual performance is not readily observed across distance. If managers are not there to witness the extra efforts that distant employees put in, they may not receive the benefits associated with the visibility of extra efforts and may get passed over for important job assignments (Kurland & Bailey, 1999). Therefore,

Hypothesis IV. Supervisors will rate physically close subordinates' OCB performance higher than physically distant subordinates.

Subordinates often feel abandoned by their managers when working from remote locations (Harris, 2003). As the proportion of time spent working remotely from their supervisors increases, subordinates increase their levels of impression management (Barsness, Diekmann, & Seidel, 2005; Walther, 1996). This suggests that remote employees feel the need to create a positive workplace image fearing that unless they inform their supervisors of their efforts and performance, they will not be seen or acknowledged (Barsness et al., 2005). Physical distance from others at work often translates into psychological distance; for distant employees this sometimes means becoming "out of sight, out of mind" (McCloskey & Igbaria, 2003). In fact, some distant employees think that managers that are physically distant are unaware of the amount of time they spend working and would prefer managers to pay closer attention to their hours so that their hard work can be acknowledged (Harris, 2003). Many distant employees also feel that the lack of face-to-face communication does not allow them to find out quickly what is going on. By missing out on the informal conversations that occur at work, distant employees are left out (Harris, 2003). Due to the lack of informal conversations in physically distant supervisor-subordinate dyads, it is hypothesized that:

Hypothesis V. Physically close supervisor-subordinate dyads will communicate more frequently than physically distant dyads.

In contrast, physically close supervisors may be able to deliver individually tailored confidence building communications to employees and serve as personal role models (Yagil, 1998). Physical proximity between supervisors and subordinates facilitates the communication process and quality of exchange between them (Bass, 1990). Supervisors and subordinates communicate more often in high quality relationships than in low quality relationships (Graen & Scandura, 1987). As such, the social exchanges that occur in high quality LMX relationships are more easily fostered when the dyad is physically close and face-to-face interactions are possible (Sparrowe & Liden, 1997). Subordinates who are physically close to their supervisors interact more often, have increased performance (Howell, Neufeld, & Avolio, 2005), and receive more individualized consideration, sensitivity and support (Shamir, 1995) as compared to physically distant subordinates. Due to the greater opportunity to interact directly and engage in relationship building, there is greater trust between supervisors and subordinates that are physically close (Howell & Hall-Merenda, 1999). Therefore,

Hypothesis VI. LMX quality will be higher in physically close supervisor-subordinate dyads as compared to physically distant dyads.

Although much of the research argues that physical distance leads to negative outcomes, some research has shown that this does not always have to be the case. A meta-analysis on telecommuting found that that telecommuting intensity, or how frequently employees worked remotely, did not affect employees' relationship with their supervisor (Gajendran & Harrison, 2007). In fact, the study found that telecommuting was positively related to relationship quality between employees and supervisors and supervisor ratings of performance. The authors proposed two possible explanations for this finding. First, it may have been due to reverse causality. That is, it may not be that telecommuting leads to better relationship quality and performance, but rather that supervisors were more willing to let their best employees work remotely. Alternatively, the authors argued that remote employees were more aware of the potential negative effects of telecommuting, and as a result made greater efforts to communicate frequently with their supervisor. This research assesses if remote employees have worked with their supervisor in the same location in the past and examines the frequency of communication. This examination sheds some insight into the alternative explanations for the relationships between telecommuting and relationship quality between employees and supervisors, and supervisor ratings of performance.

In line with the explanations provided above, there is evidence that LMX positively affects subordinate performance regardless of physical distance (Mukherjee, Lahiri, Mukherjee, & Billing, 2012; Howell & Hall-Merenda, 1999). In fact, with greater distance, the quality of the LMX relationship has a larger

influence on performance ratings. These results go against researchers (e.g., Graen & Uhl-Bien, 1995; Kerr & Jermier, 1978) who state that physical proximity is a requirement for high quality LMX relationships to exist. By internalizing common goals and having the mutual trust, respect, and obligation that characterizes high-quality LMX (Graen & Uhl-Bien, 1995; Liden & Graen, 1980), employees are able to look beyond geographic distance and achieve high performance.

Organizational context, such as physical distance, may place constraints on managers and their employees which can lower employee satisfaction (Green et al., 1996). However, having high quality LMX relationships can be a source of satisfaction that overcomes these organizational obstacles. Physical distance may no longer be a boundary condition for high LMX relationships because more supervisors engage with subordinates on a daily basis using virtual information technology (Antonakis & Atwater, 2002; Avolio et al., 2000). Several authors (e.g., Avolio et al., 2000; Howell, Neufeld, & Avolio, 2005) have argued that more work is needed to investigate leadership at a distance when advanced information technology is used.

<u>Communication</u>

As discussed above, physical distance creates conditions that make it difficult for supervisors and employees to interact with each other. This is because physical distance reduces the likelihood of communication between individuals (Allen, 1977; Sorenson & Stuart, 2001). Communication is important in creating shared meaning (Baker, Dilbeck, & McCroskey, 2010; Fairhurst, 1991; Fairhurst

& Chandler 1993; Wiesenfeld, Raghuram, & Garud, 1999) and is central in the

development of trust (Gibson & Manuel, 2003; Staples, Hulland, & Higgins,

1999) and cooperative relationships (Baker et al., 2010; Gibson & Manuel, 2003).

It is no surprise then that distance has been said to have a negative effect on the

quality of the exchange and to reduce the supervisor's influence (Bass, 1990).

However, advances in communication technology can facilitate

communication that occurs between supervisors and subordinates that previously

was hindered by physical distance. As more managers use email, virtual meetings,

and other alternative forms of communication, a key issue is whether the use of

these technologies can increase the supervisor's impact on employees (Sosik,

Avolio, & Kahai, 1997). It is important to investigate if organizations are able to

minimize any potential negative effects of distance on interactions between

supervisors and subordinates. Research on the working relationship between

managers and employees, and the frequency and mode of communication

between them is clearly needed (Howell et al., 2005).

Communication Quantity

It is important to examine communication between supervisors and their

subordinates because much of the performance feedback that employees receive

comes from their direct supervisor (Andrews & Kacmar, 2001), especially for

those in high-quality LMX relationships. If subordinates have a high-quality

LMX relationship yet have restricted communication with their supervisor, there

may be uncertainty and confusion. This would prevent the LMX relationship from

being translated into improved performance (Kacmar, Witt, Zivnuska & Gully,

2003). In fact, the quality of the LMX relationship is amplified by communication frequency (Kacmar et al., 2003). For subordinates who engage in frequent communication with their supervisor, there is a strong relationship between LMX quality and performance ratings. Employees who do not frequently communicate with their supervisor only have a weak link between LMX quality and performance.

To further elaborate on this, when LMX quality is low, infrequent communication is more likely to result in better performance ratings than more frequent communication (Kacmar et al., 2003). Because communication in low-quality LMX relationships can be confrontational and negative, more frequent interactions of this type exacerbate problems in the relationship. Supervisors in these low quality relationships may view their subordinates negatively and may reduce the usefulness of performance related information that they may share (Fairhurst, 1993). Further, as the information processing literature shows, supervisors with multiple subordinates will not be able to remember every interaction that they have with every subordinate. Supervisors will only store critical incidents in memory and recall them when asked to evaluate their subordinates (DeNisi & Williams, 1988; Feldman, 1981). If only negative incidents are recalled, then the resulting performance ratings are likely to be negative. This would be the case for subordinates in low-quality relationships who interact frequently with their supervisors because their interactions are likely to be negative (Fairhurst, 1993), giving their supervisors more negative critical incidents to store in memory and to give low performance ratings as a result.

The reverse is true for high quality LMX relationships: more frequent communication results in higher performance ratings (Kacmar et al., 2003). Because interactions between the supervisor and subordinate in a high-quality LMX relationship tend to be positive and pleasant (Fairhurst, 1993), frequent communications accentuate this positive relationship. This results in supervisors providing the subordinates with more information that helps to maximize performance (Kacmar et al., 2003). Similarly, because of the positive nature of these interactions, supervisors have many positive critical incidents that are recalled when they make performance ratings (Liden & Graen, 1980). Therefore,

Hypothesis VII. Frequency of communication between supervisors and subordinates will moderate the LMX quality and performance relationship such that when frequency of communication is high, there will be a strong relationship between LMX and performance ratings. Conversely, when frequency of communication is low, there will be a weak relationship between LMX and performance ratings.

Communication Quality

While it is important to examine communication quantity in the supervisor subordinate dyad, communication quality is also important to study. Although there is a relationship between communication frequency and LMX quality (House, 1971; House & Dessler, 1994; House & Mitchell, 1974; Kerr & Jermier, 1978), frequent communications do not necessarily equate to high-

quality relationships. The type of communication that is used is also important to examine.

A variety of studies in the realm of Media Richness Theory conclude that some communication channels (e.g., face-to-face) are richer than others (e.g., telephone conversations). The richness of a communication medium refers to that channel's ability to facilitate shared meaning between individuals (Trevino, Daft, & Lengel, 1990). The richness of a medium is determined by four factors (Carlson & Davis, 1998; Daft & Lengel, 1984; Daft & Lengel, 1986; Daft & Macintosh, 1981; Daft & Wiginton, 1979; Ferry, Kydd, & Sawyer, 2001; Knight, Pearson, & Hinsinger, 2008; Trevino et al., 1990; Webster & Trevino, 1995). The first factor is the medium's capacity to transmit multiple cues through a variety of channels. This means that the richest media can transmit a variety of cues (e.g., facial expressions, body language, tone of voice, rate of speech) through various channels or senses (e.g., sight, sound, touch). The second factor that determines a medium's richness is its capacity for language variety. Media that can convey various spoken language formats (e.g., words and non-word utterances that have meaning) or that can transmit an assortment of symbols in written language (e.g., numbers, letters, and pictures that have meaning) are considered rich. The third factor that determines a medium's richness is how quickly one receives feedback. Media that allow individuals to quickly send and receive messages (e.g., phone) are richer than media that provide slower feedback (e.g., email) or potentially no feedback (e.g., general Internet posts). The former media are often referred to synchronous or real-time communication, while the latter is referred to as

asynchronous or time-lapsed communication (Burgoon, Chen, & Twitchell, 2010; Knight et al., 2008). The fourth and final factor that determines a medium's richness is its capacity for personal or individually tailored communications. Media that have focused communication at one person are richer than those that broadcast the message more generally.

Media richness affects how a message is perceived. For example, employees perceive their bosses as being more charismatic when they can pick up on the visual cues in their message. That is, the way in which a supervisor delivers a message has more impact on employee perceptions than the actual content of the message (Awamleh & Gardner, 1999). While communicating at a distance affects how subordinates perceive supervisors, it is unclear to what extent the reverse would be true. In other words, to what extent do supervisors perceive their subordinates differently when they work remotely and communicate via leaner media sources?

According to social presence theory, media differ in the extent that they make social cues salient (Short, Williams, & Christie, 1976). For example, email communication transmits fewer social cues about the sender and receiver than face-to-face communication. In media that have attenuated social cues, the social presence of the receiver is reduced. In other words, when one receives fewer social cues, as is the case with online communication, there is a feeling that others have less involvement in communication exchanges (Rice, 1993). A lack of social identification cues leads to feelings of anonymity that increases self-absorption and potentially hostile messages known as flaming (Kiesler & Sproull, 1992), all

of which would hinder high-quality LMX relationships from emerging. Likewise, research on long-distance friendships shows that individuals who maintained close friendships used richer media sources (e.g., phone rather than email) as compared to friends who were not as emotionally close (Utz, 2007).

Face-to-face communication is considered the medium with the highest social presence and media richness. Social exchanges and interaction are more easily fostered during face-to-face interactions (Howell & Hall-Merenda, 1999; Knight et al., 2008) and informal communication tends to occur when people find themselves face-to-face (Allen, 1977). Because telecommuting and working from a remote office reduces face-to-face communication and forces reliance on communication technologies, both theories make similar predictions about the quality and frequency of interaction. With the diminished social presence of lean media (Short et al., 1976) remote employees have weakened interpersonal bonds with their supervisors (Golden, 2006; Nardi & Whittaker, 2002). This negative consequence is especially likely for individuals who work remotely for the majority of their work week (Gejendran & Harrison, 2007), as would be the case with high-intensity telecommuters and employees who work from an office that is different from the supervisor.

The literature shows that some of the negative communication and interpersonal effects of remote work can be reduced when employees devote more time to face-to-face interactions (Golden, Veiga, & Dino, 2008). Meeting face-to-face periodically reinforces connectedness and trust between individuals (Burtha & Connaughton, 2004; Kiesler & Cummings, 2002). Even with extensive use of

email, face-to-face conversations seem to be crucial for forming and maintaining common frames of reference (Sarbaugh-Thompson & Feldman, 1998; Zack, 1993). This is because face-to-face interactions allow for the full range of nonverbal and contextual messages (e.g., head nods, gestures) to be displayed. This richer communication facilitates more complete and faster comprehension of the message (Daft & Lengel, 1986), which helps to reduce misunderstanding and facilitates shared interpretations (Crampton, 2001, 2002). Because both media richness and social presence theories argue that interpersonal relationships will be hindered for distant employees, it is hypothesized that:

Hypothesis VIII. Remote employees will communicate with their supervisor via leaner media sources as compared to employees that are co-located with their supervisor.

Hypothesis IX. Supervisor-subordinate dyads that interact via rich media will have better LMX quality than dyads that interact via lean media.

Communication-Enhancing Technologies

Recent decades have seen advances in communications technology, such as email, audio/video conferencing, and web meeting software that can facilitate communication that was previously hindered by physical distance (Golden et al., 2008). Researchers have noted that one of the most important determinants of telework effectiveness is the use of these technologies (Venkatesh & Speier,

2000). Although these technologies should not be considered a replacement for face-to-face communication, remote employees that have extensive access to advanced communication technologies, as compared to employees with little to no access to these technologies, are better able to interpret ambiguous messages (Hinds & Mortensen, 2005), anticipate the needs of others (Kirkman & Mathieu, 2005), and experience greater transparency in interactions that is more typical of those who are co-located (Hertel, Geister, & Konradt, 2005).

With greater access to these technologies, remote employees can not only perform their job more effectively, but are also more likely to perceive more purpose, meaningfulness, connectedness and more work-based social support (Finholt & Sproull, 1990; Wiesenfeld et al., 2001). While some previous research has examined having access to advanced communication technologies, several authors (e.g., Golden et al., 2008; Wiesenfeld et al., 1999) have argued that researchers need to go beyond simply looking at the availability of technology and instead examine actual usage. With an increasing number of manager-subordinate dyads interacting over distance (Drake et al., 2000), it is important to understand how the communication media used affect their relationships and performance. Therefore, the following research questions are being put forth:

Research Question I. How will the richness of media used by supervisor-subordinate dyads impact subordinate performance ratings?

Research Question II. How will the richness of media used by supervisor-subordinate dyads impact the relationship between physical distance and LMX?

Research Question III. How will the richness of media used by supervisor-subordinate dyads impact the relationship between LMX and subordinate performance?

<u>Demographic Differences</u>

As discussed earlier, demographic differences make up what Napier and Ferris (1993) referred to as psychological distance between supervisors and subordinates. With more minority employees entering the workforce and making up a larger proportion of the labor market than in the past (Bartsch, 2009), it is imperative to investigate how demographic differences may impact the manager-subordinate relationship. Several theories try to explain what happens in demographically similar and different dyads. According to the similarity-attraction paradigm (Byrne, 1961; 1971), individuals are attracted to others who are similar to them. For example, demographically similar employees prefer to work with one another rather than with employees who are demographically different (Glaman, Jones, & Rozelle, 1996; Stewart & Garcia-Prieto, 2008). According to social identity/social categorization theory (Ashforth & Mael, 1989; Reynolds, Turner, & Haslam, 2003; Tajfel & Turner, 1986), an individual has several personal selves that correspond to various group memberships. The social

context is expected to trigger a person's attitudes and actions so as to correspond with a particular social identity. According to this theory, one's self-concept is influenced by group membership. In order to maintain a positive self-concept, individuals will evaluate others who are part of their group, and therefore similar to them, in a positive way (Brockner, 1988; Tajfel, 1981; Tajfel & Turner, 1986; Waismel-Manor et al., 2010). As a result of this process, individuals favor in-group members over out-group members.

Relational demography (Tsui & O'Reilly, 1989), builds on the above two theories and argues that individuals rely on demographic information to judge the similarity of others, which is then used to form reactions about them and influences interpersonal attraction. This occurs because individuals assume that others who are like them will behave in similar ways, which would increase behavioral predictability (Meglino, Ravlin, & Adkins, 1991) and allow for common interpretation of events (Johnson & Swap, 1982; Schein, 1990). Diversity research has emphasized the need to take a multidimensional perspective on relational demography (Pelled, 1996; Tsui & O'Reilly, 1989). This study examines age, gender, and race similarity between a manager and his or her subordinate. As highly visible characteristics, age, gender, and race are the most likely to trigger categorization and attraction processes (Pelled, 1996). Collectively, the above theories argue that demographic similarity in supervisor-subordinate dyads will lead to favorable outcomes. Demographic similarity enhances interpersonal attraction (Byrne, 1971; Liden et al., 1993), trust (Mayer, Davis, & Scboorman, 1995), and increases the frequency and quality of

interaction (Ibarra, 1992; Schneider, 1987; Stewart & Garcia-Prieto, 2008; Tsui & O'Reilly, 1989) between individuals. Demographic similarity may even facilitate the development of high-quality exchange relationships between subordinates and their supervisors by increasing interpersonal liking and reducing role ambiguity (Tsui & O'Reilly, 1989; Vecchio & Brazil, 2007).

Although the research literature for the above theories points to supervisor –subordinate similarity leading to positive outcomes in work settings, research on demographic similarity in conjunction with LMX is not as clear. For example, studies on gender-similarity and LMX have reported no findings (Bauer & Green, 1996; Epitropaki & Martin, 1999; McClane, 1991; Tansky, 1993), interactions where gender-similarity led to higher LMX (Green, Anderson, & Shivers, 1996; Varma & Stroh, 2001; Vecchio & Brazil, 2007), and interactions where gender-dissimilarity led to higher LMX (Murphy & Ensher, 1999). In order to examine if demographic similarity in fact leads to higher LMX quality as predicted by the above theories, the present study tests the hypothesis that:

Hypothesis X. Demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads will be related to LMX quality.

Research on giving higher performance ratings to similar others has also been mixed. Some research indicates that higher performance ratings are given to those who are similar in age, gender, or race (Kacmar et al., 2003; Kraiger & Ford, 1985; Varma & Stroh, 2001; Waismel-Manor et al., 2010). However, other

work has shown that white individuals receive higher ratings from both black and white raters (Sackett & Dubois, 1991). Other work indicates that female subordinates with female superiors are rated as most effective, whereas men and women with male superiors do not significantly differ on performance effectiveness (Tsui & O'Reilly, 1989). Because of the mixed results, the present study tests the hypothesis that:

> Hypothesis XI. Demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads will be related to subordinate performance ratings.

Due to the mixed findings in the demographic-similarity, performance and LMX literatures, more research is needed to clarify the relationship between these constructs (Gerstner & Day, 1997). The categorization-elaboration model (CEM; Van Knippenberg, De Drue, & Homan, 2004) argues that the inconsistencies found in the diversity-performance literature may be due to the specific conditions of various situations. That is, depending on the moderators present, diversity may have a positive, negative, or no effect on performance. For instance, time is one moderator of the diversity-performance relationship, with easily observable differences (e.g., race) being more important early in a relationship and deeper-level differences (e.g., values) becoming more important as individuals get to know each other better (Dienesch & Liden, 1986; Harrison, Price, & Bell, 1998).

Similar temporal results are found when supervisors form LMX relationships with subordinates and make performance evaluations. Demographic similarity is an important determinant of the initial LMX relationship, although other factors become more important over time (Bauer & Green, 1996; Dienesch & Liden, 1986; Graen & Scandura, 1987). When processing performance evaluation information, individuals ascribe different characteristics to similar others than to dissimilar others, regardless of actual observations (Liden et al., 1993). This is especially evident when performance evaluations are done early on in the manager-subordinate relationship, when there is little information to go on (Dienesch & Liden, 1986). For this reason, length of the supervisor-subordinate relationship was assessed.

Demographic Differences and Communication

As discussed above, relational demographic effects result from a combination of a higher level of attraction to people similar to ourselves because of a believed similarity in attitudes, values, and experience (Byrne, 1961; 1971; Byrne, Clore, & Smeaton, 1986). This attraction between demographic similar individuals results in more frequent communication between members of the dyad (Lincoln & Miller, 1979; Roberts & O'reilly, 1979; Stewart & Garcia-Prieto, 2008, Tsui & O'Reilly, 1989; Zenger & Lawrence, 1989). Therefore,

Hypothesis XII. Demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads will be directly related to communication frequency in the dyad.

While face-to-face interactions may be constrained by categorization and attraction processes between demographically dissimilar subordinates and supervisors, these constraints may not be present in leaner communication contexts (Barsness et al., 2005; Weisband & Atwater, 1999). Easily observable demographic differences (e.g., age, gender, race; Pelled, 1996) are less salient when the social presence of others is reduced by lean media (Barsness et al., 2005; Weisband & Atwater, 1999). This may lower the significance of highly visible demographic category memberships, encouraging interaction (Short, Williams, & Christie, 1976). The present study answers the call to research put forth by Barsness et al. (2005) in examining how the use of lean media impacts demographic differences in the workplace.

Based on the literature discussed above, an important question to consider is whether supervisors can see past overt demographic characteristics as quickly if the interactions are done over distance. That is, if physically distant managers interact with their subordinates less frequently, and as a result, do not get to know their subordinates as well, would the demographic differences remain salient for a longer period of time? On the other hand, it might be the case that leaner media sources that do not transmit salient demographic information do not trigger the categorization to the same extent as richer media sources. In this case, demographic differences may have less of an impact to begin with. To better understand how distance interacts with diversity, the following research questions are being put forth:

Research Question IV. How will physical distance impact the relationship between demographic similarity on (a) race, (b) gender, and (c) age and performance ratings in manager-subordinate dyads?
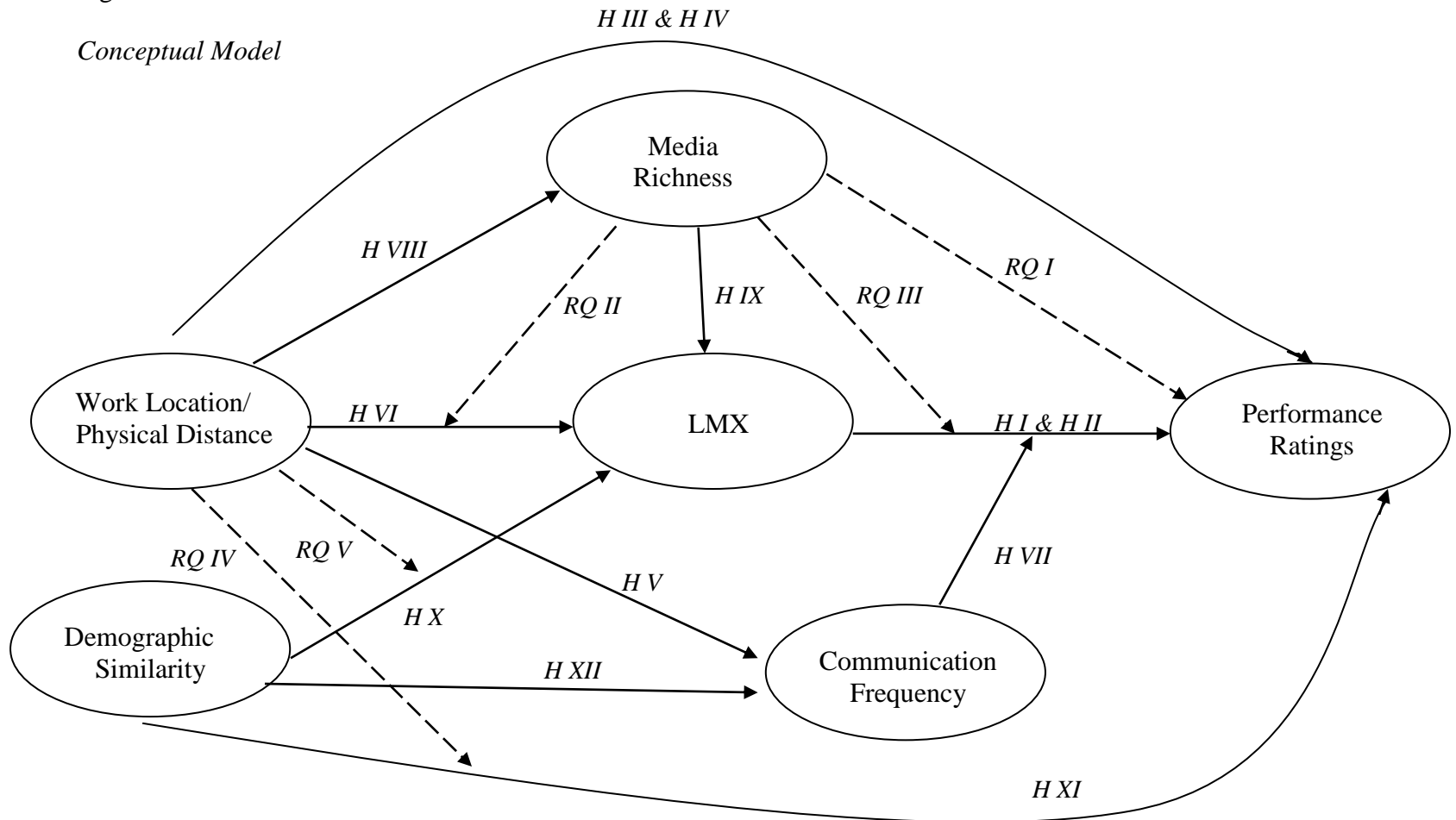
Research Question V. How will physical distance impact the relationship between demographic similarity on (a) race, (b) gender, and (c) age and LMX quality in manager-subordinate dyads?

Figure 1 represents a conceptualization of the hypotheses and research questions proposed.

Figure 1

Conceptual Model

Note. Solid lines represent hypotheses. Dashed lines represent research questions.

Rationale

Distributed work arrangements, like telecommuting and remote offices, are becoming increasingly popular (Antonakis & Atwater, 2002; Avolio et al., 2000; Howell et al., 1997). These remote work arrangements have a number of potential benefits, such as allowing employees to adjust their work schedules to meet family needs, and save money by reducing commuting and professional attire costs (Gajendran & Harrison, 2007). These arrangements also benefit organizations by allowing them to recruit from multiple talent pools, reduce talent loss and turnover costs, and have the benefits of heightened employee satisfaction, less absenteeism, reduced turnover, and lower real estate costs (Di Martino & Wirth, 1990; Kirk & Belovics, 2006; Kurland & Bailey, 1999; Kurland & Cooper, 2002; Young, 1991).

Despite these benefits, distributed work arrangements inevitably result in employees being located away from their immediate supervisors, which creates the need for collaboration across geographic boundaries. This can lead to problems such as, social isolation, poor peer relationships, disruptions to teamwork, and limited career advancement (Baruch & Nicholson, 1997; Fay & Kline 2011; Gajendran & Harrison, 2007; Golden et al., 2008; Tietze & Musson 2010). Remote workers are less likely to be part of the informal political networks that are often key to career advancement and managers can be skeptical of this work arrangement because they are no longer able to observe the work directly (Hill et al., 2003).

Physical distance in organizations will become increasingly prevalent as firms internationalize, and as an increasing number of service–sector employees work from home (Howell, et al., 1997). Because of continued growth of distributed work arrangements, there is a need to examine whether such arrangements affect the relationship quality between supervisors and their subordinates and if this, in turn, impacts performance ratings. While there has been a vast amount of research on leadership and on the relationships between supervisors and subordinates, very little work has focused on how these relationships are affected by distance. In fact, most leadership theories erroneously assume minimal physical distance between supervisors and subordinates and communication through face-to-face interactions (Bass, 1990; Yukl, 2006). Despite the various organizational changes discussed, most researchers have ignored the role that the organizational context plays in how supervisors are able to influence their subordinates (Gerstner & Day, 1997). Some preliminary evidence shows that supervisor-subordinate relationships are in fact affected by context, such as physical distance (Liden et al., 1997). With distributed work arrangements continuing to grow in popularity, it is important to understand how the supervisor-subordinate relationship is affected when supervisors are forced to communicate with subordinates over distance and using electronic means (Avolio et al., 2003).

While some authors have argued that physical distance would greatly hinder the relationship quality between supervisors and subordinates (Bass, 1990; Kerr & Jermier, 1978), more recent advances in communication technology can

facilitate communication in ways that were previously impossible. The richness of the more modern media can convey greater information and facilitate shared meaning between individuals (Trevino et al., 1990). As more managers use email, virtual meetings, and other alternative forms of communication, a key issue is whether the use of these technologies can heighten the supervisor's influence on employees (Sosik et al., 1997). It is important to investigate if organizations are able to minimize the effects of distance on interactions between supervisors and subordinates. Research on the working relationship between managers and employees, and the frequency and mode of communication between them is very much needed (Howell et al., 2005). An area that has been relatively unexplored is how remote work arrangements and choice of communication media impacts supervisor-subordinate relationship quality and performance ratings. This research addresses these gaps in the literature.

Demographic differences are another focal point of this paper. The number of minority and female employees has steadily increased and projections indicate that the next decade will continue to see this rise (Bartsch, 2009). Due to the increased demographic diversity in the workforce, much research has focused on how demographic differences may influence work processes, relationship quality, and performance ratings (e.g., Byrne, 1971; Mayer et al., 1995; Tsui & O'Reilly, 1989). Despite a myriad of studies in this area, there are still many gaps in the literature that need to be addressed. One such gap is in our understanding of how diversity functions when individuals work in different locations and have to rely on leaner media for communication. This study helps to answer a call to

research by examining how the types of communication media used can impact the interactions of demographically diverse coworkers (Barsness et al., 2005).

This study also makes several methodological changes from previous work in this area that have been called for in the literature. Most research on telework has focused on home-based telecommuters and has rarely used a traditional office comparison group (Hill et al., 2003). The present study addresses this by comparing co-located employees with remote employees. Additionally, most studies on distributed work arrangements often do not examine potentially important moderators, such as media of communication used (Gajendran & Harrison, 2007). The present study addresses this limitation. This study aims to add theoretically to the literature by addressing the growing organizational trends of distributed work, reliance on various media for communication, and increased diversity in the workforce.

<p align="center">Statement of Hypotheses and Research Questions</p>

Hypothesis I. LMX quality will be positively related to supervisors' ratings of subordinate in-role performance.

Hypothesis II. LMX quality will be positively related to supervisors' ratings of subordinate OCB performance. The LMX and OCB relationship will be stronger with OCBI than with OCBO.

Hypothesis III. Supervisors will rate physically close subordinates' in-role performance higher than physically distant subordinates.

Hypothesis IV. Supervisors will rate physically close subordinates' OCB performance higher than physically distant subordinates.

Hypothesis V. Physically close supervisor-subordinate dyads will communicate more frequently than physically distant dyads.

Hypothesis VI. LMX quality will be higher in physically close supervisor-subordinate dyads as compared to physically distant dyads.

Hypothesis VII. Frequency of communication between supervisors and subordinates will moderate the LMX quality and performance relationship such that when frequency of communication is high, there will be a strong relationship between LMX and performance. Conversely, when frequency of communication is low, there will be a weak relationship between LMX and performance.

Hypothesis VIII. Remote employees will communicate with their supervisor via leaner media sources as compared to employees that are co-located with their supervisor.

Hypothesis IX. Supervisor-subordinate dyads that interact via rich media will have better LMX quality than dyads that interact via lean media.

Hypothesis X. Demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads will be related to LMX quality.

Hypothesis XI. Demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads will be related to subordinate performance ratings.

Hypothesis XII. Demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads will be directly related to communication frequency in the dyad.

Research Question I. How will the richness of media used by supervisor-subordinate dyads impact subordinate performance ratings?

<u>Research Question II.</u> How will the richness of media used by supervisor-subordinate dyads impact the relationship between physical distance and LMX?

<u>Research Question III.</u> How will the richness of media used by supervisor-subordinate dyads impact the relationship between LMX and subordinate performance?

<u>Research Question IV.</u> How will physical distance impact the relationship between demographic similarity on (a) race, (b) gender, and (c) age and performance ratings in manager-subordinate dyads?

<u>Research Question V.</u> How will physical distance impact the relationship between demographic similarity on (a) race, (b) gender, and (c) age and LMX quality in manager-subordinate dyads?

CHAPTER II

METHOD

One hundred ninety-eight managers from various organizations and industries completed an online survey. Managers of both remote and co-located workers were asked to provide the following information: the quality of the relationship between the supervisor and subordinate, demographic information about both individuals, the frequency and mode of communication, and subordinate performance ratings.

Research Participants

Participants were managers from various organizations and industries. Managers who supervise their subordinates remotely and others who supervise in the same location were surveyed. Thirty-two individuals were emailed by the author. These individuals either had subordinates, could pass the survey along to their managers, or indicated that they knew individuals in remote work arrangements and would pass the survey along to them. Additionally, the author solicited participation via five status updates on Facebook and LinkedIn, and posts to 13 Facebook groups (e.g., Brooklyn Tech Alumni) and nine LinkedIn groups (e.g., I-O Practitioners Network).

One hundred ninety-eight managers completed the online survey. This sample size is appropriate for the type of data analysis used. Specifically, the fit of the proposed model was tested by using the LISREL program to conduct structural equation modeling (SEM). SEM is a statistical technique used to confirm a model consisting of one or more latent variables, and directly models

measurement error (Kline, 2005). Although procedures have been proposed to conduct power analyses specifically for SEM in order to determine the required sample size, in practice these procedures are impractical because they require the researcher to estimate the population values for all parameters in the model, and even just a few poor estimates can invalidate the power analysis (Jaccard & Wan, 1996). Additionally, any non-normality of the data can adversely impact the power estimates (Jaccard & Wan, 1996).

Instead, traditional power analysis for a hierarchical regression can be used to estimate the sample size for a SEM (Jaccard & Wan, 1996). In this method, an effect size estimate is defined for interaction terms as if they were additional predictors added to a main effect regression equation (Jaccard & Wan, 1996). The model tested in this study has seven predictors: work location (physical distance), demographic similarity (based on age, gender, and race), LMX quality, communication frequency, and media richness. In addition, between the hypotheses and research questions, the model tests for nine interactions: media richness as a moderator of the (a) distance and LMX, and (b) LMX and performance relationships, communication frequency as a moderator of the LMX and performance relationship, physical distance as a moderator of the (a) age, gender, and race demographic similarity on LMX, and (b) age, gender, and race demographic similarity on performance relationships.

A sample size calculator indicated the minimum sample size for a hierarchical regression with an alpha of .05, seven predictors, nine interactions, power of .80, and anticipated effect size of $f^2 = .15$ (moderate effect size) for the

interactions, is 120 cases (Soper, 2010). However, because more complex models require larger sample sizes, a sample size closer to 200 was targeted because this is considered to be a large sample (Kline, 2005). The current sample is typical of sample sizes used in organizational research, which are usually under 200 participants (Cortina et al., 2001). A post hoc analysis shows that with 198 cases, alpha of .05, seven predictors, nine interactions, and assumed effect size of $f^2 = .15$ (moderate effect size) the power is .98 (Soper, 2010).

In order to recruit participants for this study, a snowball sampling approach was used (Goodman, 1961; Selganik & Heckathorn, 2004; Vervaeke, Korf, Benschop, & van den Brink, 2007). The first step was to identify a target population (Selganik & Heckathorn, 2004; Vervaeke et al., 2007). For this study, the target population includes two types of individuals: supervisors who manage at least one subordinate remotely and other supervisors who manage at least one subordinate from the same office location. The second step is to identify an initial group of respondents that can start the snowball (Selganik & Heckathorn, 2004; Vervaeke et al., 2007). These respondents were recruited to participate in the study in several ways. First, individuals known to the author were contacted from various industries who either manage someone remotely, or are managed by a remote supervisor and could pass the survey along to him or her. Similarly, individuals who manage someone in the same office location or are managed by someone in the same location and can pass the survey along were contacted. These individuals were emailed by the author. Additionally, posts on Facebook

and LinkedIn were used to solicit individuals to participate in the study. The email instructions and social media posts can be found in Appendix A.

The third step in snowball sampling is seeking new participants with the appropriate characteristics that are part of the initial respondents' social network (Selganik & Heckathorn, 2004; Vervaeke et al., 2007). In order to do this, after participants complete the survey they were asked to forward the survey link to other supervisors, both who manage remote subordinates and others who manage co-located subordinates. In order to facilitate participation in the study, a $25 gift card was raffled off for every 25 individuals that participated and filled out the raffle information form. These individuals' contact information was stored in a database separate from their survey responses to ensure anonymity. The sampling approaches used ensured that an adequate sample was obtained from a variety of industries and professions.

<div align="center">Materials</div>

LMX

LMX-7 developed by Graen and Uhl-Bien (1995) and recommended as a result of a LMX meta-analysis conducted by Gerstner and Day (1997) is a common measure used to assess LMX quality. The measure consists of seven questions that are measured on several 5-point scales, with higher scores indicating a higher quality relationship. As done in previous research (e.g., Cogliser, Schriesheim, Scandura, & Gardner, 2009; Liden et al., 1993), and recommended by Graen and Uhl-Bien (1995) a supervisor-perceived LMX version of the measure was used. Coefficient alpha for scores obtained using this

scale was .81. The wording of the instructions and items was modified slightly in order to make the survey items refer to a specific subordinate in order to make that person more salient to the manager when completing the survey. For example, an original survey item states "I think that I understand my subordinate's problems and needs." This item was modified to read "I think that I understand my best (average, worst) subordinate's problems and needs." The full measure can be found in Appendix B. The items were summed to represent an overall LMX metric for the moderation analyses.

Communication Frequency and Type

A measure of average communication frequency and type was developed based on the measure developed by Kacmar et al. (2003). Items originally asked who initiated the communication (e.g., How frequently do you write memos to your boss?, How frequently do you receive memos from your boss?). To better align the measure with the focus of the present study, sources of communication were collapsed to only represent frequency and communication medium. Additional communication media were added to the scale (i.e., instant messaging, texting, video conferencing, desktop sharing with phone conferencing, and social media communications) to account for newer media. Email was broken out into two categories: email directed at a particular individual and general email that is forwarded for general information purposes or sent as part of a mass mailing. Original response anchors include: Less than once a month, Once or twice a month, Once or twice a week, Once a day, More than once a day. A response anchor of "Never" was added to the scale because some supervisors may be

unfamiliar with the newer technologies listed and may not actually use them.

Overall, higher scores indicate higher frequency of communication. The

directions were modified so that the participant should think of average frequency

of use for each communication medium over the previous year and to refer to a

specific subordinate (i.e., best/worst) in order to make that person more salient to

the manager when completing the survey. For the complete measure, see

Appendix C.

The media richness of each communication channel was coded based on

previous research (e.g., Daft & Lengel, 1986; D'Urso & Rains, 2008) as well as

the four criteria that can be used to judge the richness of a medium (Burgoon et

al., 2010; Carlson & Davis, 1998; Daft & Lengel, 1984; Daft & Lengel, 1986;

Daft & Macintosh, 1981; Daft & Wiginton, 1979; Ferry et al., 2001; Trevino et

al., 1990; Webster & Trevino, 1995). These criteria include the medium's: (a)

capacity to transmit multiple cues through multiple channels, (b) capability of

supporting language variety, (c) ability to provide immediate

feedback/synchronicity, and (d) degree of personal focus. The various media

sources were categorized in the following format:

1. *Highest media richness*- The body of literature on Media Richness

   Theory places face-to-face communication as having the highest media

   richness. This channel is able to transmit multiple verbal and non-

   verbal cues through visual, auditory and tactile channels; can support

   language variety by allowing the communication of words, non-word

   utterances, and gestures; provides immediate feedback between the

sender and receiver; and targets the communication at a particular person.

2. Video conferencing was considered the next richest form of communication. This medium is very similar to face-to-face communication with the exception of conveying touch, physical distance, and precise eye contact.

3. Desktop sharing with phone conferencing (e.g., WebEx, GoToMeeting) was considered the next highest media richness. The phone is able to transmit verbal cues (e.g., tone of voice, rate of speech), targets a single receiver, supports natural language, and provides immediate feedback. The use of desktop sharing is also able to convey some visual cues by allowing the communicator to point to or highlight certain information, which enables the communication parties to view the presentation materials in the same way. However, fewer visual cues are transmitted than in face-to-face or video conferencing media, making this a leaner source.

4. Phone conversations were considered the next highest media richness. The phone is able to transmit only verbal cues (e.g., tone of voice, rate of speech), targets a single receiver, supports natural language, and provides immediate feedback.

5. Instant messaging relies on written communication and therefore is not able to provide as much detail about the communication party as phone conversations. However, it targets a single receiver, provides

immediate feedback, and the use of emoticons adds language variety richness to the communication.

6. Hand-written memos are the next leanest form of media. These text-only communications are targeted at one person and do not provide immediate feedback. Although traditionally considered one of the leanest media forms (Daft & Lengel, 1986), more recent work has shown a higher degree of social presence in hand-written communication than in email (Kurtzberg, Naquin, & Belkin, 2005), making them a richer medium than the following category.

7. Direct email, text messages, and social media messages that are directed at one person do not provide rapid feedback and rely on written language. However, because they are directed at one individual they are not the leanest forms of media.

8. Indirect email messages that are either forwarded for general information or sent as part of a mass email were considered the next leanest form. These communications do not provide rapid feedback, rely on written language, and have very little personal focus.

9. *Lowest media richness*- Social media general posts not directed at one particular person (e.g., Facebook posts, Tweets) were considered the leanest form of communication. This form of communication relies on written language, does not provide immediate feedback, and has no personal focus.

Post hoc analysis indicated a near perfect correlation between communication frequency and media richness ($r = .98$, $p < .01$). Because of this, the two measures were collapsed for all analyses to represent a communication variable. Because media richness accounts for communication frequency – the media richness of each source was multiplied by the frequency of use so that dyads who interact frequently through rich media received a higher score than dyads who use these media infrequently – this measure was used. Using a measure that multiplies communication frequency by media richness of the channel, then creating composites is in line with other research in this area (Johnson & Lederer, 2005). As done with similar communication frequency/richness measures (Johnson & Lederer, 2005; Kacmar et al., 2003) coefficient alpha was used to represent the reliability of the scale. Coefficient alpha for scores obtained using the 11-item scale was .35. To overcome the low alpha of the scores, items were grouped into parcels. Parceling involves summing or averaging two or more items and using the scores as the unit of analysis, such as an indicator in a model (Bandalos & Finney, 2001). Parcels create distributions that are more normally distributed and continuous, reduce the measurement error, and have higher reliability than individual items (Bagozzi & Edwards, 1998; Bandalos & Finney, 2001; Little, Cunningham, Shahar, & Widaman, 2002). Items can be parceled randomly or based on theory (Little et al., 2002).

Items were grouped into three parcels based on their media richness. Three parcels were chosen because that is the preferred number of indicators per latent variable needed for a model to be identified (Kline, 2005). Face-to-face

communication, video conferencing, desktop sharing with phone conferencing

and phone conversations were summed to represent the high media richness

parcel. Instant messaging, hand written memos, direct email, social media

messages that are directed at one person, and text messages were summed to

represent the medium media richness parcel. Indirect email and general social

media messages were summed to form the low media richness parcel. When data

were grouped into parcels, coefficient alpha for scores obtained was .70.

Subordinate Performance

Previous research has demonstrated that ratings generated by supervisors

for use in research often have better psychometric properties than the archival

performance ratings conducted administratively by the organization (Wherry &

Bartlett, 1982). For this reason, supervisors were asked to rate their subordinate's

performance during the study. Williams and Anderson's (1991) measure of in-

role and extra-role performance was used. This is a 20 item scale that measures

three dimensions: in-role behaviors (IRB), OCBs directed at other individuals

(OCBI) and OCBs directed at the organization (OCBO). Responses range from 1

(*strongly disagree*) to 5 (*strongly agree*). A sample item from the IRB subscale is

"Meets formal performance requirements of the job." Coefficient alpha for scores

obtained using the IRB subscale was .91. A sample item from the OCBI subscale

is "Helps others who have heavy work loads." Coefficient alpha for scores

obtained using the OCBI subscale was .90. A sample item from the OCBO

subscale is "Adheres to informal rules devised to maintain order." Coefficient

alpha for scores obtained using the OCBO subscale was .80. For the complete measure, see Appendix D.

Demographics

Diversity can be assessed by measuring actual differences between individuals or by measuring perceived differences (Harrison & Klein, 2007). Unless perceptions of diversity are of interest, diversity is usually best measured in terms of actual diversity (Harrison & Klein, 2007). First, measures of perceived diversity are not likely to be construct valid representations of actual diversity (McGrath, 1984). Second, perceived diversity ratings are more likely to be biased compared to actual ratings of diversity, and these biases may be inconsistent at times (Harrison & Klein, 2007). Due to this, it is recommended that measures of perceived diversity should not substitute for measures of actual diversity (Harrison & Klein, 2007). Keeping with this guideline, diversity was assessed by asking for supervisor and subordinate demographics, rather than perceived demographic differences. In order to prevent demographic similarity from priming the responses to the other measures, the supervisor's demographics were asked before all of the other measures were completed and the subordinate demographics were asked last. For the complete measure, see Appendix E. Demographic similarity variables were created as follows: gender was coded as same or different, race was coded as same or different, the absolute difference between the supervisor's and subordinate's age was created as a metric of age similarity.

Participants (managers) had a mean age of 39.48 (*SD* 10.61), with 55.6% being female. The racial breakdown was as follows: 73.7% White/Caucasian, 9.1% Hispanic/Latino(a), 3.5% Asian, 8.6% Black/African-American, and 3.0% Biracial/Multiracial. The average reported age of subordinates was 38.19 (*SD* 11.84), with 62.6% being female. The reported racial breakdown of subordinates was as follows: 68.2% White/Caucasian, 8.6% Hispanic/Latino(a), 8.1% Asian, 9.1% Black/African-American, and 3.5% Biracial/Multiracial.

The industry backgrounds of participants were as follows: 19.7% Professional Services, 16.7% Media and Telecommunications, 12.6% Academia/Education, 8.6% Health Care, 6.6% Computing and Information Technology, 5.6% Defense and Aerospace, 5.1% Retail and Wholesale trade, 3.5% in both Banking and Government/Public Service, 3% Marketing and Advertising, 2.5% Pharmaceuticals and Biotechnology, 2% in both Manufacturing and Real Estate, 1.5% Travel and Hospitality, Construction, and Nonprofit, and 1% in the following: Energy and Utilities, Entertainment and Arts, Insurance, and Legal. The average company had 38,247.55 (*SD* 75,946.22) employees and on average, respondents had 9.67 (*SD* 14.46) direct reports. Almost half of the respondents (47.5%) indicated that they had at least one remote subordinate, and were prompted to fill out the survey while keeping the best, average, or worst remote subordinate in mind.

Control Variable

The length of time in months that employees reported to their supervisor was used as a control variable because the length of the supervisor-subordinate

reporting relationship moderates employee performance evaluations (Duarte, Goodson, & Klich, 1994). The average reporting relationship was 27.05 (*SD* 29.75) months.

<div align="center">Procedure</div>

All materials were filled out via an online survey by the supervisor. Collecting data at one time point is a common practice in the literature. A meta-analysis on telecommuting indicated that most of the studies in this field involved a single wave of data collection (Gajendran & Harrison, 2007). An email or social media post from the author prompted participants to click on a link that directed them to a webpage. This webpage described the study and prompted participants to click on a link to continue to the survey, if they agreed to participate. When participants clicked on the link, they were randomly assigned to one of six possible survey options. Specifically, one-third of the surveys asked participants to think of their best subordinate, one-third asked participants to think of their average subordinate, and the remaining third asked them to think of their worst subordinate in order to obtain a range of responses. Additionally, to minimize any effects that the LMX and performance measures may have on each other, half of the surveys presented the LMX scale before the performance scale and the other half presented the performance scale before the LMX scale. The conditions and the survey sequence can be found in Appendix F.

Once supervisors were randomly assigned to a survey, they were asked if they manage at least one remote subordinate (i.e., a subordinate that works out of a different office or primarily telecommutes). If they responded that they do, they

were asked to think of a particular subordinate (i.e., best, average, or worst, depending on the randomly assigned survey) and fill out the questionnaire with that person in mind. For participants who indicated that they do not manage at least one remote subordinate, they were asked if they manage at least one co-located subordinate (i.e., a subordinate that primarily works out of the same work location). If they responded that they do, they were asked to think of a particular subordinate (i.e., best, average, or worst, depending on the randomly assigned survey) and fill out the questionnaire with that person in mind. To ensure that participants thought of a specific subordinate, they were asked to indicate that they chose a specific person to keep in mind when answering all questions (e.g., I have a specific person in mind as my best remote subordinate and will think of him/her when completing the rest of the survey). After participants completed the survey, they were asked to forward the survey link to other managers both who manage remote subordinates and others who manage co-located subordinates. For the complete directions, see Appendix A.

Before the study was carried out, a pilot study was used to determine the timing of the protocol and to ensure that the directions were clear. The pilot was carried out according to the procedures listed above with approximately 15 other participants.

<div align="center">Addressing Same Source Bias</div>

Self-reported data may raise concerns about the potential effects of common method variance (CMV). The main issue is that relying on self-report may introduce systematic measurement error because the variance may be

attributed to how data are collected rather than to the constructs indented to be measured (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, some authors argue that CMV is not as widespread as researchers once believed (e.g., Crampton & Wagner, 1994; Lindell & Whitney, 2001; Spector, 1987; 1994) and is generally not severe enough to invalidate research findings (e.g., Doty & Glick, 1998). The severe criticism that cross-sectional studies often receive is generally unfounded (Spector, 2006).

Although same source bias may still be of concern, the present study minimized it in several ways. First, as mentioned above, ratings generated by supervisors for use in research often have better psychometric properties than the archival performance ratings conducted administratively by the organization (Wherry & Bartlett, 1982). Second, most of the people who were rated are knowledge workers and often do not have objective performance metrics. Therefore, their performance is typically evaluated by supervisor ratings anyway. Third, in order to minimize demographic variables (i.e., race, gender and age) from influencing the other ratings, they were asked last. However, to ensure that managers think of a particular subordinate when completing the survey, questions about if the subordinate is remote or co-located and length of reporting relationship were asked at the beginning of the survey. Fourth, ratings of LMX and performance were spread out by the communication frequency / communication type and satisfaction with life (the marker variable) scales. This helped lessen the effects that LMX ratings have on performance ratings, and vice versa. Fifth, half of the surveys presented the LMX scale before the performance

scale and the other half presented the performance scale before the LMX scale so that any influence of one scale on the other canceled out. Participants were randomly assigned to the scale order.

Finally, marker–variable partial correlational analysis (Lindell & Whitney, 2001) was performed post hoc to determine the presence of CMV. This technique uses a theoretically unrelated construct to adjust the correlations among the constructs of interest. Prior to testing the hypotheses, CMV was assessed using the marker–variable technique. The smallest observed correlation between the marker variable and any other variable of interest is assumed to be due to CMV (Lindell & Whitney, 2001). The marker variable was the average of a five-item measure of life satisfaction (Deiner, Emmons, Larsen, & Griffin, 1985). Responses were measured on a five-point Likert scale. This measure met the criteria proposed by Lindell and Whitney (2001) in that it is theoretically unrelated to the other variables of interest, similar in format, novel in content, specific in definition, and possesses high reliability. Coefficient alpha for scores obtained using this scale was .91. A sample item is "In most ways my life is close to my ideal." The complete measure can be found in Appendix G. The smallest observed correlation was between life satisfaction and in-role behavior ($r = .06$, $p = .43$). Because the correlation coefficient was near zero and not significant, indicating common method bias was likely not problematic, analyses were performed without this correction.

CHAPTER III

RESULTS

In order to test the proposed hypotheses and research questions, structural

equation modeling (SEM) and moderated structural equation modeling (MSEM),

were used. SEM was chosen for several reasons. First, the various relationships

proposed can be tested simultaneously. Second, this method allows the researcher

to assess and correct for measurement error. Third, SEM provides measures of the

model(s)' fit under study.

Data Preparation and Cleaning

Data were first screened for missing values, as SEM requires a complete

data set (Kline, 2005). Missing Values Analyses (MVA) in SPSS showed that

data were missing completely at random (MCAR) as Little's MCAR test was not

significant χ^2 (2,771, $N = 198$) = 2,881, $p = .07$. Because the data were MCAR,

the missing data were not related to other variables and do not reduce the

generalizability of the sample (Tabachnik & Fidell, 2007). An Expectation

Maximization (EM) algorithm was used to iteratively impute values for the

missing data. This process determines placeholders for missing data that preserve

the covariances between variables. This allows for a complete data set that raises

power while preserving the variances of the variables (Tabachnik & Fidell, 2007).

An EM algorithm is automatically used in LISREL if any data are missing.

However, when LISREL uses an EM algorithm to impute data, it only includes

the Chi Square and RMSEA fit indices in the output. Therefore, the EM algorithm

was used to impute missing values prior to performing SEM.

Skewness, kurtosis, and outliers were examined next. Z scores of continuous variables were examined to determine the skew and kurtosis indices. Analyses revealed that none of the skewness scores exceeded an absolute value of 3, and none of the kurtosis indices exceeded 10, indicating that the data were distributed normally (Kline, 2005). Outliers were detected in many of the variables. They were examined to ensure that they were not data entry errors. Due to their lack of impact on skew, outliers were not removed. Scatterplots of the residuals were examined for heteroscedasticity. Several of the scatter plots were cone-shaped suggesting the possibility of heteroscedasticity. However, Levene's test was non-significant, not supporting heteroscedasticity.

Multicollinearity was found to be a problem for some of the variables. Specifically, there was a near perfect correlation obtained between the communication frequency and media richness scales ($r = .98$, $p < .01$). These two measures were collapsed to represent an overall communication variable. The modified model and hypotheses are described below. The performance factors of in-role behavior (IRB), organizational citizenship behavior – organization (OCBO), and organizational citizenship behavior – individual (OCBI) had fairly high correlations as well, so they were examined further. However, multicollinearity was not found to be a problem as tolerance values exceeded .10 and VIF values fell below 10. However, there were very high correlations between total performance and IRB, OCBO, OCBI ($r = .86$, $p < .01$; $r = .84$, $p < .01$; $r = .84$, $p < .01$, respectively). For this reason total performance was not

tested as a separate variable. Rather, the IRB, OCBO, and OCBI facets of performance were tested as outcome variables in the model.

<u>Modified Hypotheses and Research Questions</u>

Several hypotheses were modified to account for communication frequency and media richness being collapsed to represent an overall communication frequency/richness variable. Hypotheses that previously referred to communication frequency or media richness were reworded and referred only to communication frequency/richness. Separate hypotheses that proposed relationships between communication frequency and an outcome and media richness and the same outcome were collapsed. Two hypotheses were renumbered as a result of these changes. Hypotheses I – IV, VI, and Research Questions I and II were unchanged. Hypothesis V and VIII were collapsed. The revised hypothesis stated:

> <u>Hypothesis V.</u> Physically close supervisor-subordinate dyads will have higher communication than physically distant dyads.

Hypothesis IX was reworded from media richness to communication frequency/richness and was changed to number VII. The revised hypothesis states:

> <u>Hypothesis VII.</u> Communication frequency/richness will be directly related to LMX quality.

Hypothesis XII was reworded from communication frequency to communication frequency/richness and was changed to number X. The revised hypothesis states:

Hypothesis X. Demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads will be directly related to communication frequency/richness.

Research Questions I and II were reworded from media richness to communication frequency/richness. The revised research questions state:

Research Question I. How will communication frequency/richness impact subordinate performance ratings?

Research Question II. How will communication frequency/richness impact the relationship between physical distance and LMX?

Hypothesis VII and Research Question III were collapsed. The revised research question states:

Research Question III. How will communication frequency/richness impact the relationship between LMX and subordinate performance?

As a result of these changes, two hypotheses were renumbered.

Hypothesis X was renumbered to Hypothesis VIII and Hypothesis XI was

renumbered to Hypothesis IX.

The means, standard deviations, and correlations for all the variables of

interest are presented in Table 1.

Table 1

Descriptive Statistics

	M	*SD*	1	2	3	4	5
1. LMX	3.99	.58					
2. Communication	5.90	2.45	**.29**				
3. Age Difference	9.23	7.48	-.03	.00			
4. IRB	4.04	.74	**.60**	.07	-.04		
5. OCBI	3.56	.75	**.54**	**.23**	.01	**.54**	
6. OCBO	3.80	.74	**.53**	.08	-.01	**.63**	**.55**

Note. LMX = Leader Member Exchange, IRB = In Role Behavior, OCBI =
Organizational Citizenship Behavior – Individual, OCBO = Organizational
Citizenship Behavior – Organization
Correlations over .23 are significant at *p* < .05 (2-tailed).
n = 198 supervisors

Measurement Model

The test of the proposed model proceeded in two steps. The adequacy of

the measurement model was tested first, followed by the test of the proposed

structural model. It is important to retain a good fitting measurement model, as it

sets the upper bound for the fit of the structural model. Using the two-step

approach allows for misspecification errors to be determined more easily before

hypothesized relationships are tested (Kline, 2005).

The measurement model was created by converting direct paths between

latent variables into covariances. The fit of the model was assessed with the

normal theory weighted least squares chi-square, the goodness of fit index (GFI; Joreskog & Sorbom, 1984), and the Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980). Additionally, the ratio of chi-square to degrees of freedom, the incremental fit index (IFI; Bollen, 1989), the comparative fit index (CFI; Bentler, 1990) and the non-normed fit index (NNFI; Marsh, Balla & Hau, 1996) were used because of their reduced sensitivity to sample size (Kline, 2005). Consistent with convention, the chi-square should not be significant, the chi-square to degrees of freedom ratio should be below two (Gefen, Straub & Boudreau, 2000), GFI, IFI, CFI, and NNFI values above .90 indicate acceptable fit and values above .95 indicate good fit (Hoyle, 1995; Hu & Bentler, 1999). RMSEA values between .05 and .08 indicate acceptable fit, and values below .05 indicate a good fit (Kline, 2005).

The initial measurement model was a moderately good fit to the data (χ^2 = 853.83, p < .001; χ^2/df = 2.16; GFI = .78; RMSEA = .08; IFI = .95; CFI = .95; NNFI = .95). However, examination of the modification indices indicated that the model fit could be improved by allowing errors of several indicators to covary. Correlated errors may have several causes including redundant content of two items, common social desirability of items, or omission of an exogenous factor/common cause of both items not present in the model (Kline, 2005). Using the modification index may capitalize on chance (Hoyle, 2000). To prevent this, a more stringent p-value of .01 was set for the chi-square difference test. Corrections to the model were made one at a time so as not to misspecify the model. The error indicators that contributed to the greatest chi-square drop were

chosen one at a time and fit indices were reexamined at each step. The chi-square

difference was calculated after each parameter was freed to test for significance

(Kline, 2005). Using this method, 16 indicator errors were allowed to covary.

Although chi-square was still significant, other fit indices suggest that the final

measurement model is a good fit to the data ($\chi^2 = 505.50$, $p < .001$; $\chi^2/df = 1.33$;

GFI = .85; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .98). All indicator

loadings on corresponding latent variables were significant, demonstrating

support for the construct validity of the measurement model. Indicator loadings

for the measurement model can be found in Table 2.

Table 2

Measurement Model Coefficients

Path	SPC	*SE*	UPC	*t*
Communication to:				
Parcel – high	.49	.19	1.31	6.91 ***
Parcel – medium	.94	.31	3.98	12.74 ***
Parcel – low	.69	.15	1.39	9.40 ***
LMX to:				
LMX 1	.53	.06	.45	7.48 ***
LMX 2	.56	.05	.38	7.96 ***
LMX 3	.57	.04	.35	8.05 ***
LMX 4	.60	.05	.43	8.72 ***
LMX 5	.44	.08	.47	5.88 ***
LMX 6	.77	.06	.77	12.08 ***
LMX 7	.69	.06	.60	10.31 ***
IRB to:				
IRB 1	.89	.05	.80	15.94 ***
IRB 2	.91	.05	.80	16.58 ***
IRB 3	.89	.05	.74	15.90 ***
IRB 4	.86	.05	.68	15.01 ***
IRB 5	.61	.05	.49	9.39 ***
IRB 6	.61	.07	.67	9.18 ***
IRB 7	.64	.0	.65	9.92 ***
OCBI to:				
OCBI 1	.67	.06	.65	10.18 ***
OCBI 2	.80	.06	.78	12.88 ***

	SPC	SE	UPC	
OCBI 3	.79	.07	.87	12.76 ***
OCBI 4	.61	.07	.60	9.10 ***
OCBI to:				
OCBI 5	.78	.06	.74	12.66 ***
OCBI 6	.66	.06	.59	9.99 ***
OCBI 7	.68	.06	.62	10.50 ***
OCBO to:				
OCBO 1	.67	.07	.73	9.88 ***
OCBO 2	.62	.06	.56	8.87 ***
OCBO 3	.62	.07	.65	8.94 ***
OCBO 4	.42	.08	.43	5.56 ***
OCBO 5	.62	.08	.75	8.88 ***
OCBO 6	.63	.06	.54	9.07 ***

Note. LMX = Leader Member Exchange, IRB = In Role Behavior, OCBI = Organizational Citizenship Behavior – Individual, OCBO = Organizational Citizenship Behavior – Organization
SPC = Standardized Path Coefficient, SE = Standard Error, UPC = Unstandardized Path Coefficient
n = 198 supervisors
* *p* < .05. ** *p* < .01. *** *p* < .001.

A model was also tested with general performance as a higher order factor of IRB, OCBO, and OCBI. This model was not significantly better than having IRB, OCBO, and OCBI as separate outcome variables ($\Delta\chi^2 = 9.21$, $\Delta df = 4$, *p* = .06). For this reason, the original model, which had more degrees of freedom (i.e., where IRB, OCBO, and OCBI are separate outcome variables) was retained.

<u>Structural Model</u>

After all corrections to the model were made, a structural equation model that included single item indicators (i.e., length of reporting relationship, age difference, gender similarity, race similarity, work location), the correlated error terms that were identified in the measurement model, and direct paths between latent variables was estimated. To ensure model identification, latent variables were created for the single item indicators, the indicator variables' loadings were

fixed to one, and error variances were set to zero (Bell & Kozlowski, 2008).

Gender similarity, race similarity, and work location were each represented by a

dummy code. Same gender, same race, and same work location received a code of

one, while different genders, races, and locations received codes of zero and

served as the comparison group. The same goodness of fit indicators as described

above were be used to test the adequacy of the structural model. Path coefficients

for the initial structural model can be found in Table 3.

Table 3

Proposed Structural Model Coefficients

Path	SPC	*SE*	UPC	*t*
Work location to:				
Communication	-.11	.15	-.22	-1.50
LMX	-.25	.16	-.49	-3.08 ***
IRB	.00	.12	.01	.06
OCBI	.00	.13	.01	.06
OCBO	.05	.14	.10	.70
Age Similarity to:				
Communication	-.01	.01	.00	-.13
LMX	-.02	.01	.00	-.31
IRB	-.01	.01	.00	-.11
OCBI	.05	.01	.01	.74
OCBO	.00	.05	.00	.05
Gender similarity to:				
Communication	.07	.15	.14	.95
LMX	.07	.15	.15	1.00
IRB	-.03	.11	-.06	-.56
OCBI	-.03	.13	-.05	-.41
OCBO	-.09	.13	-.19	-1.43
Race similarity to:				
Communication	.15	.16	.33	2.03 *
LMX	.07	.16	.15	.94
IRB	-.15	.12	-.32	-2.63 **
OCBI	.01	.14	.01	.09
OCBO	-.04	.14	-.09	-.67
Communication to:				
LMX	.30	.09	.30	3.24 ***
IRB	-.21	.07	-.21	-3.09 ***
OCBI	-.06	.07	-.06	-.81

OCBO	-.15	.07	-.15	-2.01 *
LMX to:				
IRB	.89	.13	.89	6.78 ***
OCBI	.81	.14	.81	5.80 ***
OCBO	.94	.16	.94	5.98 ***

Note. LMX = Leader Member Exchange, IRB = In Role Behavior, OCBI = Organizational Citizenship Behavior – Individual, OCBO = Organizational Citizenship Behavior – Organization

SPC = Standardized Path Coefficient, SE = Standard Error, UPC = Unstandardized Path Coefficient

n = 198 supervisors

* $p < .05$. ** $p < .01$. *** $p < .001$

Hypothesis I suggested that LMX quality would be positively related to supervisors' ratings of subordinate in-role performance. This hypothesis was supported as there was a direct relationship between LMX quality and in-role performance ($\beta = .89, p < .001$). Hypothesis II suggested that LMX quality would be positively related to supervisors' ratings of subordinate OCB performance. Specifically, it suggested that the LMX and OCB relationship would be stronger with OCBI than with OCBO. This hypothesis was partially supported as LMX was positively related to both OCBI ($\beta = .81, p < .001$) and OCBO ($\beta = .94, p < .001$). However, the relationship between LMX and OCBI was weaker than the relationship between LMX and OCBO.

Hypothesis III suggested that supervisors would rate physically close subordinates' in-role performance higher than physically distant subordinates. This hypothesis was not supported as supervisors of co-located and remote subordinates did not differ in their ratings of the subordinates' IRB performance ($\beta = .00, p = .95$). Hypothesis IV suggested that supervisors would rate physically

close subordinates' OCB performance higher than physically distant subordinates. This hypothesis was not supported as supervisors of co-located and remote subordinates did not differ in their ratings of the subordinates' OCBI ($\beta = .00$, $p = .95$) or OCBO performance ($\beta = .05$, $p = .48$). Hypothesis V suggested that physically close supervisor-subordinate dyads would have higher communication than physically distant dyads. This hypothesis was not supported as communication did not significantly differ between co-located and remote supervisor-subordinate dyads ($\beta = -.11$, $p = .13$). Hypothesis VI suggested that LMX quality would be higher in physically close supervisor-subordinate dyads as compared to physically distant dyads. Contrary to what was hypothesized, supervisors and subordinates who worked from different work locations had higher LMX than those who worked from the same office ($\beta = -.25$, $p < .001$). Hypothesis VII suggested that communication would be directly related to LMX quality. This hypothesis was supported ($\beta = .30$, $p < .001$).

Hypothesis VIII suggested that demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads would be related to LMX quality. This hypothesis was not supported as LMX quality between supervisors and subordinates did not differ based on race similarity ($\beta = .07$, $p = .35$), gender similarity ($\beta = .07$, $p = .32$), or age similarity ($\beta = -.02$, $p = .76$). Hypothesis IX suggested that demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads would be related to subordinate performance ratings. This hypothesis received little support as only the path between race similarity and IRB was significant ($\beta = -.15$, $p < .01$), with supervisors rating

racially dissimilar subordinates higher than those of the same race. IRB ratings did not differ based on gender similarity ($\beta = -.03$, $p = .58$), or age similarity ($\beta = -.01$, $p = .91$). OCBI ratings did not differ based on race similarity ($\beta = .01$, $p = .93$), gender similarity ($\beta = -.03$, $p = .68$), or age similarity ($\beta = .05$, $p = .46$). Similarly, OCBO ratings did not differ based on race similarity ($\beta = -.04$, $p = .50$), gender similarity ($\beta = -.09$, $p = .15$), or age similarity ($\beta = .00$, $p = .96$).

Hypothesis X suggested that demographic similarity on (a) race, (b) gender, and (c) age in supervisor-subordinate dyads would be directly related to communication. This hypothesis was partially supported as supervisor-subordinate dyads of the same race had higher communication than those of different races ($\beta = .15$, $p < .05$). However, communication did not differ based on gender similarity ($\beta = .07$, $p = .34$), or age similarity ($\beta = -.01$, $p = .90$). Research Question I asked how communication would impact subordinate performance ratings. Results indicate that communication was significantly inversely related to subordinate performance for IRB ($\beta = -.21$, $p < .001$) and OCBO ($\beta = -.15$, $p < .05$). No significant results were found for the communication and OCBI relationship ($\beta = -.06$, $p = .42$).

Moderated Structural Equation Modeling

The MSEM procedure proposed by Mathieu, Tannenbaum, and Salas (1992), as described by Cortina, Chen, and Dunlap (2001) was used, which models all latent variables, including the interaction terms, as latent factors with one indicator. This procedure was chosen because it is easier to compute, produces values similar to those generated by other available procedures for

MSEM (e.g., Ping, 1995), recovers parameters equally as well as other available procedures, and has been used by other studies (e.g., Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Bell & Kozlowski, 2008; Demerouti, 2006; Zoogah, 2010). This procedure is especially useful when testing complex theoretical models with moderated relationships, such as the model proposed in this study (Cortina et al., 2001).

There are several steps to Mathieu et al.'s (1992) procedure. First, composites were created for each of the latent variables that make up the latent products in the hypotheses and research questions. For example, Research Question III asked how communication impacts the relationship between LMX and subordinate performance. To test this research question, an interaction term (communication*LMX) was created. The first step in Mathieu et al.'s (1992) procedure was to create composites by summing the indicators of the communication variable and summing the indicators of the LMX variable. These two composites were mean centered in order to reduce nonessential multicollinearity (Cohen, Cohen, West, & Aiken, 2003; Cortina et al., 2001; Mathieu et al., 1992). An exception was made with binary variables (e.g., remote v. co-located subordinates) because mean centering would make interpretation difficult. Second, the composites of communication and LMX were multiplied together to form the latent product term (communication*LMX). This product term was then be used as the single indicator of the latent interaction variable. A similar process was used to create the composites and interaction terms of the other variables.

Third, the scale reliabilities of the original observed variables (communication and LMX) were used to fix the relationships between the observed scale scores and their corresponding latent constructs (communication and LMX composites), as well as the error variances for each variable. Observed scores can be used to estimate latent variables in a structural model tested using a covariance matrix. Specifically, the path from a latent variable to its corresponding observed variable (λ) is equal to the square root of the reliability of the observed score. In addition, the associated amount of random error variance (θ) is equal to one minus the reliability of the observed score times the variance of the observed score (Joreskog & Sorbom, 1993). With these values fixed, the next step in the Mathieu et al. (1992) procedure was to test an additive model (i.e., a model not containing latent product of communication*LMX) to determine the correlation between the latent variables (communication and LMX composites) representing the components of the product term (communication*LMX).

Fourth, the values from the analysis of the additive model were used to compute the reliability for the product terms using the formula created by Bohrnstedt and Marwell (1978). Their formula takes into account the reliabilities of both variables that constitute the product term and the correlation between the latent variables. The resulting values were then used to fix the path from the latent products to their indicators (λ) in the analysis of the structural model. As with the main effect indicators, the θ value for the indicator of the latent product was set equal to the product of its variance and one minus its reliability. For variables measured with a single item (e.g., working out of the same or different work

location), reliability scores are not available. The paths of these variables were fixed to one, and error variances were set to zero (Bell & Kozlowski, 2008).

The final step was to compare models with and without the interaction term. A significant interaction effect is evident when the path coefficient from the interaction variable (communication*LMX) to the endogenous variable (performance) is statistically significant. The models with and without the interaction effects were compared using the chi-square difference test. A significant difference test along with a drop in chi-square in the moderated model would confirm the interaction effect (Mathieu et al., 1992). All hypotheses and research questions with interactions were tested this way. The same steps were taken to test for the other proposed interactions, with a separate model tested for each proposed interaction (Bakker et al., 2010).

Research Question II asked how communication impacts the relationship between physical distance and LMX. The communication*distance moderation term did not significantly predict LMX ($\beta = .14$, $p = .11$). Additionally, the model with a path from communication*distance to LMX ($\chi^2 = 717.74$, $p < .001$; $\chi^2/df = 1.52$; GFI = .82; RMSEA = .05; IFI = .97; CFI = .97; NNFI = .96) and the model without this path ($\chi^2 = 717.96$, $p < .001$; $\chi^2/df = 1.51$; GFI = .82; RMSEA = .05; IFI = .97; CFI = .97; NNFI = .96) did not significantly differ ($\Delta\chi^2(1) = .22$, $p = .64$). In the case of a nonsignificant change in chi-square, the more parsimonious model is preferred (Kline, 2005). For these reasons, the model without the communication*distance moderation term was retained. In sum, the results of

MSEM show that communication does not moderate the relationship between physical distance and LMX.
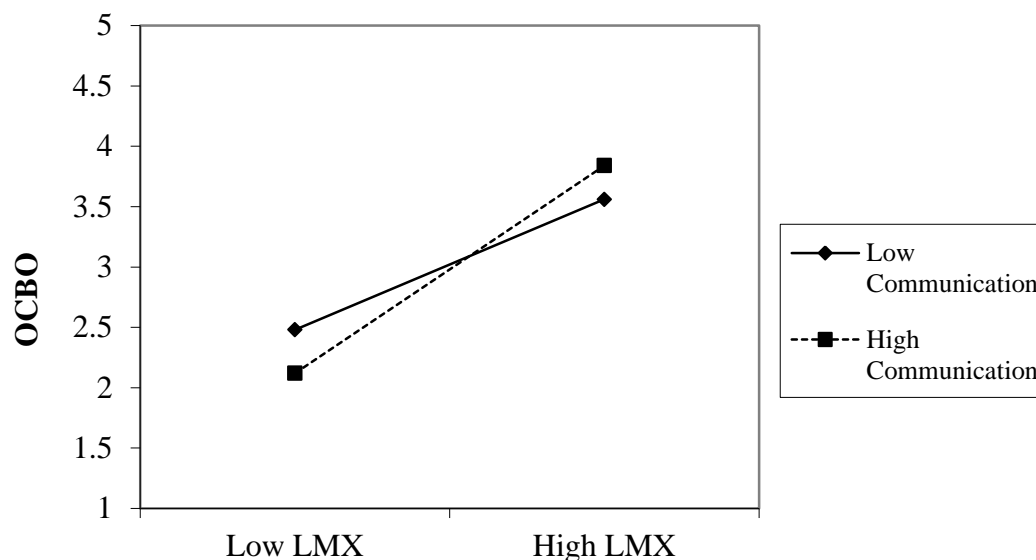
Research Question III asked how communication impacts the relationship between LMX and subordinate performance. First, MSEM was used to test the communication*LMX moderation term predicting IRB. Results indicated that the communication*LMX moderation term did not significantly predict IRB ($\beta = .06$, $p = .37$). Additionally, the model with a path from communication*LMX to IRB ($\chi^2 = 553.49$, $p < .001$; $\chi^2/df = 1.83$; GFI = .84; RMSEA = .07; IFI = .96; CFI = .96; NNFI = .95) and the model without this path ($\chi^2 = 551.92$, $p < .001$; $\chi^2/df = 1.82$; GFI = .84; RMSEA = .07; IFI = .96; CFI = .96; NNFI = .95) did not significantly differ ($\Delta\chi^2(1) = 1.57$, $p = .21$). For these reasons, the model without the communication*distance moderation term was retained. In sum, communication did not moderate the relationship between LMX and IRB.

Next, MSEM was used to test the communication*LMX moderation term predicting OCBI. Results indicated that the communication*LMX moderation term did not significantly predict OCBI ($\beta = -.13$, $p = .10$). Additionally, the model with a path from communication*LMX to OCBI ($\chi^2 = 548.89$, $p < .001$; $\chi^2/df = 1.82$; GFI = .84; RMSEA = .06; IFI = .96; CFI = .96; NNFI = .95) and the model without this path ($\chi^2 = 551.92$, $p < .001$; $\chi^2/df = 1.82$; GFI = .84; RMSEA = .07; IFI = .96; CFI = .96; NNFI = .95) did not significantly differ ($\Delta\chi^2(1) = 3.03$, $p = .08$). For these reasons, the model without the communication*distance moderation term was retained. In sum, communication did not moderate the relationship between LMX and OCBI.

Finally, MSEM was used to test the communication*LMX moderation term predicting OCBO. Results indicated that the communication*LMX moderation term significantly predicted OCBO (β = -.16, p < .05). Additionally, the model with a path from communication*LMX to OCBO (χ^2 = 548.05, p < .001; χ^2/df = 1.81; GFI = .84; RMSEA = .06; IFI = .96; CFI = .96; NNFI = .95) was a better fit to the data than the model without this path (χ^2 = 551.92, p < .001; χ^2/df = 1.82; GFI = .84; RMSEA = .07; IFI = .96; CFI = .96; NNFI = .95, $\Delta\chi^2$ (1) = 3.87, p < .05). For these reasons, the model with the communication*LMX moderation path to OCBO was retained. The simple slopes for this interaction were graphed and can be found in Figure 2. Results indicated a stronger positive relationship for LMX and OCBOs when communication was high and a weaker positive relationship when communication was low.

Figure 2

Impact of Communication on the LMX and OCBO Relationship

Research Question IV asked how physical distance impacts the

relationship between demographic similarity on (a) race, (b) gender, and (c) age

and performance ratings in manager-subordinate dyads. Analyses were conducted

to test if physical distance moderated the relationship between demographic

differences on race and performance. First, MSEM was used to test the Physical

Distance*Race Difference moderation term predicting IRB. Results indicated that

the Physical Distance*Race Difference moderation term did not significantly

predict IRB ($\beta = .08$, $p = .24$). Additionally, the model with a path from Physical

Distance*Race Difference to IRB ($\chi^2 = 721.92$, $p < .001$; $\chi^2/df = 1.34$; GFI $= .83$;

RMSEA $= .04$; IFI $= .98$; CFI $= .98$; NNFI $= .97$) and the model without this path

($\chi^2 = 723.29$, $p < .001$; $\chi^2/df = 1.34$; GFI $= .83$; RMSEA $= .04$; IFI $= .98$; CFI $=$

.98; NNFI $= .97$) did not significantly differ ($\Delta\chi^2(1) = 1.37$, $p = .24$). In sum, the

results of MSEM showed that physical distance did not moderate the relationship between demographic differences on race and IRB.

Second, MSEM was used to test the Physical Distance*Race Difference moderation term predicting OCBI. Results indicated that the Physical Distance*Race Difference moderation term did not significantly predict OCBI (β = .04, p = .70). Additionally, the model with a path from Physical Distance*Race Difference to OCBI (χ^2 = 723.79, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) and the model without this path (χ^2 = 723.29, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) did not significantly differ ($\Delta\chi^2$ (1) = .50, p = .48). In sum, the results of MSEM showed that physical distance did not moderate the relationship between demographic differences on race and OCBI.

Finally, MSEM was used to test the Physical Distance*Race Difference moderation term predicting OCBO. Results indicated that the Physical Distance*Race Difference moderation term did not significantly predict OCBO (β = -.16, p = .17). Additionally, the model with a path from Physical Distance*Race Difference to OCBO (χ^2 = 722.34, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) and the model without this path (χ^2 = 723.29, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) did not significantly differ ($\Delta\chi^2$ (1) = .95, p = .33). In sum, the results of MSEM show that physical distance did not moderate the relationship between demographic difference on race and OCBO. Therefore, a model without these interaction terms was retained. In total, the results of MSEM showed that physical

distance did not moderate the relationship between demographic differences on race and performance.

Analyses were conducted to test if physical distance moderated the relationship between demographic differences on gender and performance. First, MSEM was used to test the Physical Distance*Gender Difference moderation term predicting IRB. Results indicated that the Physical Distance*Gender Difference moderation term did not significantly predict IRB ($\beta = -.14$, $p = .12$). Additionally, the model with a path from Physical Distance*Gender Difference to IRB ($\chi^2 = 717.81$, $p < .001$; $\chi^2/df = 1.33$; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) and the model without this path ($\chi^2 = 720.85$, $p < .001$; $\chi^2/df = 1.34$; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) did not significantly differ ($\Delta\chi^2 (1) = 3.04$, $p = .08$). In sum, the results of MSEM showed that physical distance did not moderate the relationship between demographic differences on gender and IRB.

Second, MSEM was used to test the Physical Distance*Gender Difference moderation term predicting OCBI. Results indicated that the Physical Distance*Gender Difference moderation term did not significantly predict OCBI ($\beta = -.09$, $p = .42$). Additionally, the model with a path from Physical Distance*Gender Difference to OCBI ($\chi^2 = 720.60$, $p < .001$; $\chi^2/df = 1.34$; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) and the model without this path ($\chi^2 = 720.85$, $p < .001$; $\chi^2/df = 1.34$; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) did not significantly differ ($\Delta\chi^2 (1) = .25$, $p = .62$). In sum,

the results of MSEM showed that physical distance did not moderate the relationship between demographic differences on gender and OCBI.

Finally, MSEM was used to test the Physical Distance*Gender Difference moderation term predicting OCBO. Results indicated that the Physical Distance*Gender Difference moderation term did not significantly predict OCBO (β = -.05, p = .65). Additionally, the model with a path from Physical Distance*Gender Difference to OCBO (χ^2 = 720.86, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) and the model without this path (χ^2 = 720.85, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) did not significantly differ ($\Delta\chi^2$ (1) = .01, p = .92). In sum, the results of MSEM showed that physical distance did not moderate the relationship between demographic differences on gender and OCBO. Therefore, a model without these interaction terms was retained. In total, the results of MSEM showed that physical distance did not moderate the relationship between demographic differences on gender and performance.

Analyses were conducted to test if physical distance moderated the relationship between demographic differences on age and performance. First, MSEM was used to test the Physical Distance*Age Difference moderation term predicting IRB. Results indicated that although the Physical Distance*Age Difference moderation term to IRB was significant (β = -.19, p < .05), the model with the interaction term (χ^2 = 735.18, p < .001; χ^2/df = 1.37; GFI = .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI = .97) fit the data significantly worse ($\Delta\chi^2$ (1) = -14.94, p < .001) than the model without this path (χ^2 = 720.24, p < .001; χ^2/df =

1.37; GFI = .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI = .97). In sum, the results of MSEM showed that physical distance did not moderate the relationship between demographic differences on age and IRB.

Second, MSEM was used to test the Physical Distance*Age Difference moderation term predicting OCBI. Results indicated that the Physical Distance*Age Difference moderation term did not significantly predict OCBI (β = .07, p = .45). Additionally, the model with a path from Physical Distance*Age Difference to OCBI (χ^2 = 740.88, p < .001; χ^2/df = 1.38; GFI = .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI = .97) was a worse fit to the data ($\Delta\chi^2$ (1) = -20.64, p < .001) than the model without this path (χ^2 = 720.24, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI = .97). In sum, the results of MSEM showed that physical distance did not moderate the relationship between demographic differences on age and OCBI.

Finally, MSEM was used to test the Physical Distance*Age Difference moderation term predicting OCBO. Results indicated that the Physical Distance*Age Difference moderation term did not significantly predict OCBO (β = -.09, p = .38). Additionally, the model with a path from Physical Distance*Age Difference to OCBO (χ^2 = 738.98, p < .001; χ^2/df = 1.37; GFI = .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI = .97) was a worse fit to the data ($\Delta\chi^2$ (1) = -18.74, p < .001) than the model without this path (χ^2 = 720.24, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI = .97). In sum, the results of MSEM showed that physical distance did not moderate the relationship between demographic difference on age and OCBO. Therefore, a model without

these interaction terms was retained. In total, the results of MSEM show that physical distance did not moderate the relationship between demographic difference on age and performance. Overall, when examining the analyses for Research Question IV, results of MSEM show that physical distance did not moderate the relationship between demographic similarity on (a) race, (b) gender, and (c) age and performance ratings on IRB, OCBI, or OCBO.

Research Question V asked how physical distance impacts the relationship between demographic similarity on (a) race, (b) gender, and (c) age and LMX in manager-subordinate dyads. Analyses were conducted to test if physical distance moderates the relationship between demographic differences on race and LMX. First, MSEM was used to test the Physical Distance*Race Difference moderation term predicting LMX. Results indicated that the Physical Distance*Race Difference moderation term did not significantly predict LMX (β = -.03, p = .84). Additionally, the model with a path from Physical Distance*Race Difference to LMX (χ^2 = 723.79, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) and the model without this path (χ^2 = 723.29, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) did not significantly differ ($\Delta\chi^2$(1) = .12, p = .73). In sum, the results of MSEM show that physical distance did not moderate the relationship between demographic differences on race and LMX.

Next, MSEM was used to test the Physical Distance*Gender Difference moderation term predicting LMX. Results indicated that the Physical Distance*Gender Difference moderation term did not significantly predict LMX

(β = -.07, p = .58). Additionally, the model with a path from Physical

Distance*Gender Difference to LMX (χ^2 = 720.87, p < .001; χ^2/df = 1.34; GFI =

.83; RMSEA = .04; IFI = .98; CFI = .98; NNFI = .97) and the model without this

path (χ^2 = 720.85, p < .001; χ^2/df = 1.34; GFI = .83; RMSEA = .04; IFI = .98;

CFI = .98; NNFI = .97) did not significantly differ ($\Delta\chi^2$ (1) = .02, p = .89). In sum,

the results of MSEM show that physical distance does not moderate the

relationship between demographic differences on gender and LMX.

Finally, MSEM was used to test the Physical Distance*Age Difference

moderation term predicting LMX. Results indicated that although the Physical

Distance*Age Difference moderation term to LMX was significant (β = -.29, p <

.05), the model with the interaction term (χ^2 = 736.28, p < .001; χ^2/df = 1.36; GFI

= .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI = .97) fit the data significantly

worse ($\Delta\chi^2$ (1) = -16.04, p < .001) than the model without this path (χ^2 = 720.24, p

< .001; χ^2/df = 1.36; GFI = .83; RMSEA = .04; IFI = .97; CFI = .97; NNFI =

.97). In sum, the results of MSEM showed that physical distance did not moderate

the relationship between demographic differences on age and LMX. Therefore, a

model without these interaction terms was retained. Overall, when examining the

analyses for Research Question V, results of MSEM showed that physical

distance did not moderate the relationship between demographic similarity on (a)

race, (b) gender, and (c) age and LMX.

After all hypotheses and research questions were tested, a final, modified

model that included only supported relationships was created. Variables that were

not significant predictors (e.g., gender similarity) were removed. Coefficients for

the modified model can be found in Table 4. The complete list of model analyses

can be found in Table 5. A graphic depiction of the final model can be found in

Figure 3.

Table 4

Modified Structural Model Coefficients

Path	SPC	*SE*	UPC	*t*
Work location to:				
LMX	-.24	.15	-.49	-3.26 [**]
Race similarity to:				
Communication	.14	.16	.31	1.97 [*]
IRB	-.13	.11	-.28	-2.68 [**]
Communication to:				
LMX	.31	.09	.31	3.35 [***]
IRB	-.19	.06	-.19	-3.08 [**]
OCBO	-.14	.07	-.14	-2.02 [*]
LMX to:				
IRB	.86	.13	.86	6.86 [***]
OCBI	.78	.13	.78	5.93 [***]
OCBO	.93	.15	.93	6.16 [***]
Communication*LMX to:				
OCBO	-.15	.02	-.04	-1.99 [*]

Note. LMX = Leader Member Exchange, IRB = In Role Behavior, OCBI =
Organizational Citizenship Behavior – Individual, OCBO = Organizational
Citizenship Behavior – Organization
SPC = Standardized Path Coefficient, SE = Standard Errors, UPC =
Unstandardized Path Coefficient
n = 198 supervisors
[*] $p < .05$. [**] $p < .01$. [***] $p < .001$

Table 5

Model Results

Model	χ^2	χ^2/df	df	GFI	RMSEA	IFI	CFI	NNFI	$\Delta\chi^2$	Δdf	
Measurement – initial	853.83	2.16	395	.78	.08	.95	.95	.95			
Measurement – refined	505.50	1.33	379	.85	.04	.98	.98	.98	348.33	16	***
Structural – no interactions	697.98	1.37	509	.83	.04	.98	.97	.97			
Outcome: LMX											
Communication*Dist – Additive	717.96	1.51	474	.82	.05	.97	.97	.96			
Communication*Dist – Interaction	717.74	1.52	473	.82	.05	.97	.97	.96	.22	1	
Phys Dist * Race – Additive	723.29	1.34	539	.83	.04	.98	.98	.97			
Phys Dist * Race – Interaction	723.17	1.34	538	.83	.04	.98	.98	.97	.12	1	
Phys Dist * Gender – Additive	720.85	1.34	539	.83	.04	.98	.98	.97			
Phys Dist * Gender – Interaction	720.87	1.34	538	.83	.04	.98	.98	.97	-.02	1	
Phys Dist * Age – Additive	720.24	1.34	539	.83	.04	.97	.97	.97			
Phys Dist * Age – Interaction	736.28	1.36	538	.83	.04	.97	.97	.97	-16.04	1	
Outcome: IRB											
Communication*LMX – Additive	551.92	1.82	303	.84	.07	.96	.96	.95			
Communication*LMX – Interaction	553.49	1.83	302	.84	.07	.96	.96	.95	-1.57	1	
Phys Dist * Race – Additive	723.29	1.34	539	.83	.04	.98	.98	.97			
Phys Dist * Race – Interaction	721.92	1.34	538	.83	.04	.98	.98	.97	1.37	1	

	χ^2	χ^2/df	df	GFI	RMSEA	IFI	CFI	NNFI	$\Delta\chi^2$	Δdf	
Phys Dist * Gender – Additive	720.85	1.34	539	.83	.04	.98	.98	.97			
Phys Dist * Gender – Interaction	717.81	1.33	538	.83	.04	.98	.98	.97	3.04	1	
Phys Dist * Age – Additive	720.24	1.34	539	.83	.04	.97	.97	.97			
Phys Dist * Age – Interaction	735.18	1.37	538	.83	.04	.97	.97	.97	-14.94	1	
Outcome: OCBI											
Communication*LMX – Additive	551.92	1.82	303	.84	.07	.96	.96	.95			
Communication*LMX – Interaction	548.89	1.82	302	.84	.06	.96	.96	.95	3.03	1	
Phys Dist * Race – Additive	723.29	1.34	539	.83	.04	.98	.98	.97			
Phys Dist * Race – Interaction	723.79	1.35	538	.83	.04	.98	.98	.97	-.50	1	
Phys Dist * Gender – Additive	720.85	1.34	539	.83	.04	.98	.98	.97			
Phys Dist * Gender – Interaction	720.60	1.34	538	.83	.04	.98	.98	.97	.25	1	
Phys Dist * Age – Additive	720.24	1.34	539	.83	.04	.97	.97	.97			
Phys Dist * Age – Interaction	740.88	1.38	538	.83	.04	.97	.97	.97	-20.64	1	
Outcome: OCBO											
Communication*LMX – Additive	551.92	1.82	303	.84	.07	.96	.96	.95			
Communication*LMX – Interaction	548.05	1.81	302	.84	.06	.96	.96	.95	3.87	1	*
Phys Dist * Race – Additive	723.29	1.34	539	.83	.04	.98	.98	.97			
Phys Dist * Race – Interaction	722.34	1.34	538	.83	.04	.98	.98	.97	.95	1	

	χ^2	χ^2/df	df	GFI	RMSEA	IFI	CFI	NNFI	$\Delta\chi^2$	Δdf
Phys Dist * Gender – Additive	720.85	1.34	539	.83	.04	.98	.98	.97		
Phys Dist * Gender – Interaction	720.86	1.34	538	.83	.04	.98	.98	.97	-.01	1
Phys Dist * Age – Additive	720.24	1.34	539	.83	.04	.97	.97	.97		
Phys Dist * Age – Interaction	738.98	1.37	538	.83	.04	.97	.97	.97	-18.74	1
Final Model	743.68	1.50	496	.82	.05	.97	.97	.96		

Note. Communication*Dist = Communication by Distance, Communication *LMX = Communication by LMX

χ^2 = Normal theory weighted least squares chi-square, GFI = goodness of fit index, RMSEA = root-mean-square error of approximation, IFI = incremental fit index, CFI = comparative fit index, NNFI = non-normed fit index

For $\Delta\chi^2$ and Δdf, the change represents the comparison of the additive model and interaction model. Negative values represent a worse fitting model with the interaction term. For Measurement – initial, variables with multiple indicators included. All direct paths turned into covariances. For measurement – refined, 16 error terms allowed to covary. For structural – no interactions, single item indicators, correlated error terms identified in the measurement model, and direct paths between latent variables were specified. For the final model, significant interaction term retained and non-significant variables and paths removed.

n = 198 supervisors

$^*p < .05.$ $^{**}p < .01.$ $^{***}p < .001$

Figure 3

Final Model
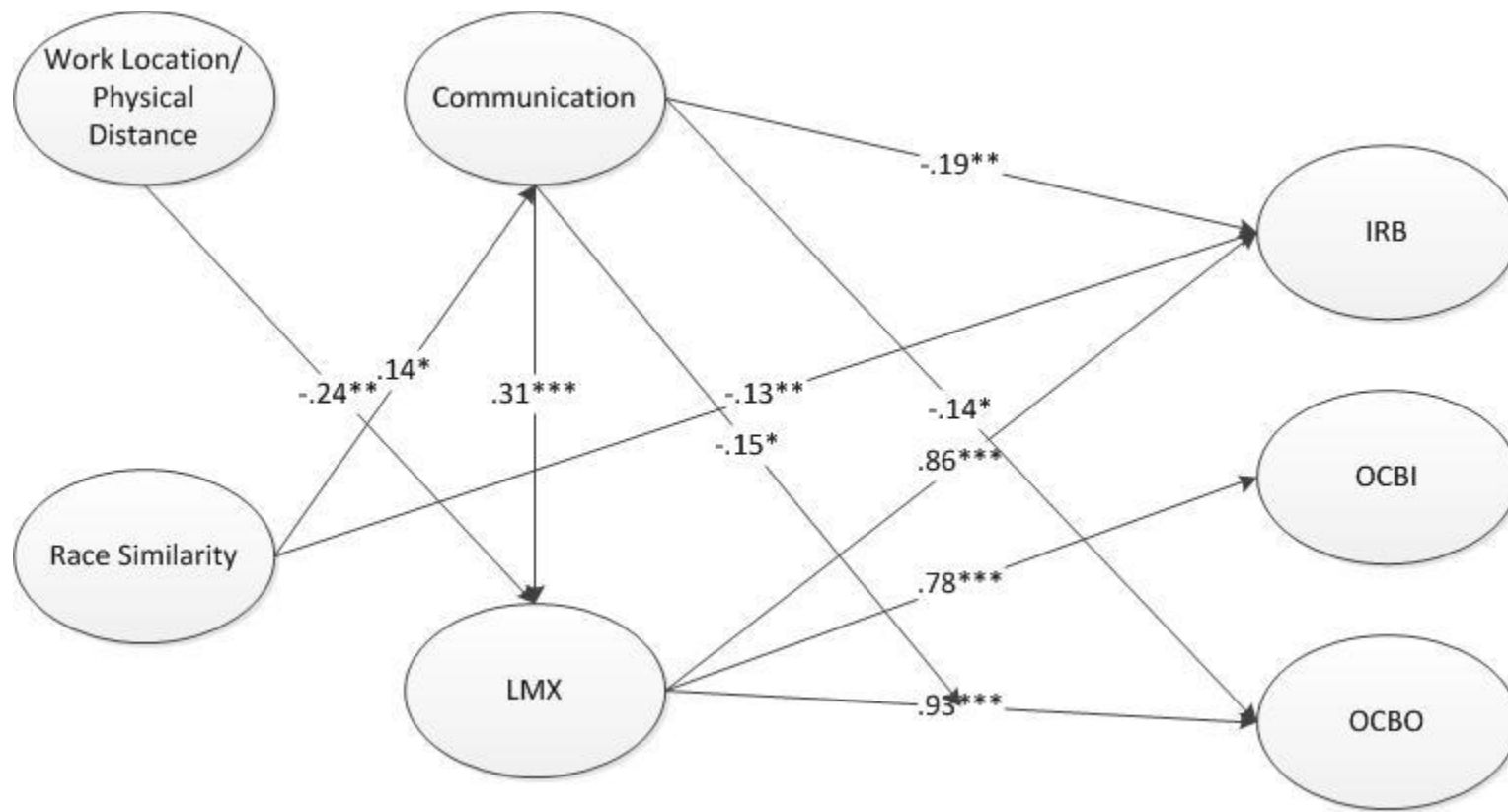
CHAPTER IV

DISCUSSION

The primary goal of the present study was to address the growing

organizational trends of distributed work, communication via various media, and

increased diversity in the workforce. Napier and Ferris's (1993) framework for

distance was used as the basis for the hypothesized relationships, which defines

distance as functional, structural, and psychological. Functional distance refers to

the quality of relationship between a manager and a subordinate and was

measured as LMX quality. Structural distance refers to the amount of interaction

allowed by physical constraints, such as physical distance, and was measured by

communication frequency/richness and being located in the same or different

offices. Finally, psychological distance refers to the perceived distance between

individuals and was measured by demographic differences in race, age, and

gender.

Relationship quality between managers and subordinates, as measured by

LMX, has been linked to a number of positive outcomes in the literature. As was

hypothesized, LMX was positively related to IRB, OCBI, and OCBO

performance ratings. This is in line with other work on LMX, which has shown a

consistent link between LMX and various types of performance (Chang &

Johnson, 2010; Gerstner & Day, 1997; Graen et al., 1982; Graen & Cashman,

1975; Graen & Uhl-Bien, 1995; Han & Jekel, 2011; Ilies et al., 2007; Liden et al.,

1993). Because LMX is based on the premise of social exchange, subordinates go

beyond required behavior and engage in discretionary behaviors that are not

explicitly required or formally rewarded to maintain a balanced social exchange (Greenberg & Westcott, 1983; Laschinger et al., 2009; Settoon et al., 1996).

Contrary to what was hypothesized, the relationship between LMX and OCBO was stronger than the relationship between LMX and OCBI. This might be because the OCBO behaviors measured have a more direct impact on the supervisor and are therefore more directly related to the relationship between supervisors and their employees, than the OCBI behaviors measured. For example, the OCBO behaviors of giving advance notice when not coming to work, not taking undeserved work breaks, and adhering to informal rules devised to maintain order may be perceived as being more directly related the mutual trust and respect that characterizes high quality LMX relationships (Graen & Uhl-Bien, 1995). On the other hand, the OCBI behaviors of listening to coworkers' problems, taking personal interest in others, and passing along information to co-workers, while beneficial, are more directed at co-workers and not the supervisor. Therefore, the high quality relationship between the supervisor and subordinate may have less of an impact on these behaviors. However, it is noteworthy that although the relationship was not a strong as the LMX and OCBO relationship, a high quality relationship with one's supervisor is directly related to positive behaviors that do not directly impact that supervisor. This highlights the importance and far reaching effects that high quality relationships between managers and subordinates can have. Overall, these findings are consistent with Napier and Ferris's (1993) theory that lower functional distance (i.e., higher

quality relationships) in supervisor-subordinate dyads leads to higher performance ratings.

Previous research shows that communication is vital in development of trust, creating shared meaning, and building cooperative relationships (Staples et al., 1999; Wiesenfeld et al, 1999). Not surprisingly, communication frequency/richness was positively related to LMX. This is consistent with previous research, which has found that supervisors and subordinates communicate more often in high quality relationships than in low quality relationships and in-group members receive more of the manager's time (Gerstner & Day, 1997; Graen & Scandura, 1987). Because of the importance of communication in building relationships, older leadership theories proposed that leadership was impossible at a distance because it would render communication impossible. They went on to assert that being unable to build effective relationships with supervisors at a distance, subordinate performance would suffer (Bass, 1990; Kerr & Jermier, 1978).

However, these theories were formulated before modern media allowed for rich communication. The richness of more modern media transmits multiple cues (e.g., facial expressions, body language, tone of voice, rate of speech) through a variety of channels (e.g., sight, sound, touch), has a greater capacity for language variety (e.g., words and non-word utterances, numbers, letters, and pictures that have meaning), allows synchronous communication by being able to send messages and receive feedback quickly, and allows personal and individually tailored communications (Carlson & Davis, 1998; Daft & Lengel,

1984; Daft & Lengel, 1986; Daft & Macintosh, 1981; Daft & Wiginton, 1979; Ferry et al., 2001; Trevino et al., 1990; Webster & Trevino, 1995). As a result, more modern media can convey greater information and facilitate shared meaning between supervisors and subordinates (Trevino et al., 1990).

Although these technologies should not be considered a replacement for face-to-face communication, remote employees that have extensive access to advanced communication technologies, as compared to employees with little to no access to these technologies, are better able to interpret ambiguous messages (Hinds & Mortensen, 2005), anticipate the needs of others (Kirkman & Mathieu, 2005), and experience greater transparency in interactions that is more typical of those who are co-located (Hertel, Geister, & Konradt, 2005).With greater access to these technologies, remote employees can not only perform their job more effectively, but are also more likely to perceive more purpose, meaningfulness, connectedness and more work-based social support (Finholt & Sproull, 1990; Wiesenfeld et al., 2001).

Additionally, the social environment influences attitudes about and usage of communication media (Carlson & Davis, 1998). According to social information processing theory, the richness of media may not be an inherent property of a medium (Fulk & Boyd, 1991; Walther, 1992; Walther & Burgoon, 1992). Instead, the richness of a medium is in part socially constructed (Dennis, Fuller, & Valacich, 2008) and social influence has a direct impact on media usage (Carlson & Davis, 1998). With more modern media becoming more prevalent and accepted in organizations, communicating via newer media forms, such as instant

messaging, has become the norm. Therefore, not only can newer media transmit more information than was previously possible, but because these media are accepted, using them as the primary source of communication is seen as natural and does not detract from performance (Koo, Wati, & Jung, 2011).

This study addressed a call to research to determine if the use of these alternative communications can enhance supervisors' influence on employees that might be hindered by distance (Sosik, Avolio, & Kahai, 1997). Results showed no significant differences in communication frequency/richness between co-located and remote supervisor-subordinate dyads. As supervisors engage with their subordinates on a regular basis using virtual communications (Antonakis & Atwater, 2002), shared meaning can be established even across physical distance.

Results indicated that of the remote supervisor-subordinate dyads examine, 89% use the telephone, 70% use instant messaging, and 64% use desktop sharing with phone conferencing (e.g., WebEx, GoToMeeting). These media transmits multiple cues, allow for language variety, synchronous communication, and communications that are targeted. Because communication frequency/richness is no longer hindered by physical distance, it can facilitate high quality relationships (Staples et al., 1999; Wiesenfeld et al, 1999), which in turn, contribute to high performance (Gerstner & Day, 1997; Graen et al., 1982; Graen & Cashman, 1975; Graen & Uhl-Bien, 1995; Ilies et al., 2007; Liden et al., 1993). Results showed that physical distance does not prevent high quality relationships from emerging, and in turn, no performance rating differences were found between co-located and remote employees on IRB, OCBI, or OCBO.

Looking back at the definition of structural distance, this aspect of distance was concerned with the amount of interaction in the dyad that is allowed by the constraints of physical structure (e.g., physical distance; Napier & Ferris, 1993). Therefore, while physical distance may increase structural distance, the increased communication made possible by modern media seems to minimize this effect. As stated earlier, results indicated that LMX was positively related to communication frequency/richness. Previous research suggests that remote subordinates may feel abandoned by their managers (Harris, 2003) and fear that their efforts will not be seen or acknowledged (Barsness et al., 2005). Some remote employees may also feel that the lack of face-to-face communication does not allow them to find out quickly what is going on. By missing out on the informal conversations that occur at work, distant employees may feel left out (Harris, 2003; Tietze & Musson 2010). LMX may act as a buffer and offset some of the negative effects of distance (Howell & Hall-Merenda, 1999). By having high quality LMX relationships and the increased communication frequency/richness associated with them, physical distance no longer has to equate with psychological distance and becoming "out of sight, out of mind" (McCloskey & Igbaria, 2003). This is in line with other research that increased communication that results from quality relationships with one's coworkers can buffer against the negative effects of distance (Fay & Kline 2011). With more employees working remotely from their managers, the relationship quality between them may be more important than ever (Howell & Hall-Merenda, 1999). By internalizing common goals and having the mutual trust, respect, and

obligation that characterizes high-quality LMX relationships (Graen & Uhl-Bien, 1995; Liden & Graen, 1980), employees are able to look beyond geographic distance and achieve high performance ratings.

Although the more modern media described above allow for greater transmission of information, they are not a complete substitute for face-to-face interactions. Even with extensive use of other media, face-to-face conversations seem to be crucial for forming and maintaining common frames of reference (Sarbaugh-Thompson & Feldman, 1998; Zack, 1993). This is because face-to-face interactions allow for the full range of nonverbal and contextual messages to be displayed. This richer communication facilitates more complete and faster comprehension of the message (Daft & Lengel, 1986), which helps to reduce misunderstanding and facilitates shared interpretations (Crampton, 2001, 2002). The current findings support these notions. Even though remote supervisors may see their subordinates less frequently, only 28% indicated that they never met face-to-face with their subordinate in the past year. Supervisors who occasionally met face-to-face with their subordinates had higher LMX quality ($M = 4.22$, $SD = .47$) than those who never saw their subordinates in person ($M = 3.95$, $SD = .67$; t [92] $= 2.23$, $p < .05$, $d = .47$). By occasionally meeting face-to-face, some of the potential negative consequences of remote work may have been mitigated by reinforcing connectedness and trust between individuals (Burtha & Connaughton, 2004; Golden et al., 2008; Kiesler & Cummings, 2002). Employees tend to engage in more informal communications when meeting face-to-face (Reinsch, 1997). Informal interactions are an important component of establishing social

identities and establishing meaningful relationships (DeSanctis & Monge, 1998; Sias & Cahill, 1998; Thatcher & Zhu, 2006). Therefore, it is recommended that remote supervisors and subordinates periodically meet in person.

Another finding that further refutes the older leadership theories' claims that leadership is impossible at a distance (Bass, 1990; Kerr & Jermier, 1978) found that supervisors of remote subordinates rated their LMX quality higher than supervisors of co-located subordinates. These findings are in line with Gajendran and Harrison's (2007) research, which found that telecommuting was positively related to LMX. These authors provided two possible explanations for the results. The first possibility is that remote workers are more aware of the negative effects of working remotely, and as a result, make more of an effort to communicate with their managers. This explanation was not supported by the current study, as testing of Hypothesis V showed that work location was not related to communication frequency/richness. The second alternative provided by Gajendran and Harrison (2007) is that there is reverse causality, with supervisors letting their best employees work remotely, rather than supervisors developing high quality relationships with remote workers, which would be in line with other research on remote work arrangements (Reinsch, 1997). There is some support for this explanation. Remote supervisor-subordinate dyads who have worked in the same office in the past, displayed higher LMX ($M = 4.26$, $SD = .47$) than those who have never worked from the same office ($M = 4.07$, $SD = .57$). However, this difference was not significant (t [91] $= 1.67$, $p = .10$, $d = .36$), perhaps due to the low power (.41) to test this effect after the various segmentations of the data

(Soper, 2010). Another possible explanation for the increased LMX in remote workers is that supervisor-subordinate dyads in remote work arrangements change their work and interaction styles. Specifically, when working remotely, individuals are more task-oriented and engage in more cognitive work. They plan their interactions with supervisors so that all necessary information is exchanged during allotted meetings (Reinsch, 1997). In contrast, when visiting a central office, they engage in more "social work" and engage in more informal conversations that are not directly related to the job (Reinsch, 1997). Perhaps this heightened focus on task-oriented behaviors makes supervisors see remote workers as more reliable and goal-oriented and therefore, more likely to be part of the in-group.

In line with the above explanation, the social information processing theory (Walther, 1992; Walther & Burgoon, 1992) argues that individuals are motivated to connect with others. However, this motivation is mitigated by the realization that computer mediated communications reduce the amount of social information available because of the lack of nonverbal and contextual cues. To compensate, the individuals use any available social information and adjust messages accordingly in order to acquire and provide information needed to develop impressions and relationships. In text-based environments, as would be the case in remote work arrangements, individuals focus on language features (e.g., style, word choice, content) when forming social connections. Because information is exchanged at a slower rate in computer mediate communications,

relationships take a longer time to form than in face-to-face interactions (Walther, 1992; Ramirez, 2007).

Social information processing theory assumes any negative effects due to the leaner media will be limited to the initial stages of impression and relationship formation. As messages accumulate over time, relationships formed through these lean media should approximate those formed face-to-face (Chidambaram, 1996; Parks & Roberts, 1998; Walther, 1993; Walther & Burgoon, 1992). However, in some cases, relationships formed via computer mediated communications are of a higher quality than those formed face-to-face (Walther, 1996), as was the case with the present findings. These findings may be due to a "hyperpersonal perspective" or the idea that certain characteristics of computer mediated communication may allow individuals to experience heightened levels of social presence beyond those of face-to-face communication (Walther, 1996). The hyperpersonal perspective proposes that leaner modes of communication, particularly text-only forms, allow individuals increased control over several important aspects of the communication process. Specifically, senders engage in "strategic self-presentation" by highlighting positive characteristics and diverting attention from negative ones. Text-only formats allow messages to be edited, decreasing the chance of sharing undesirable information or providing contradictory information through nonverbal sources. This allows message senders greater control over what content is voluntarily shared by using receiver feedback to strategically construct messages and selectively revealing themselves over time (Walther, 1996).

Because text-based media supply only a limited amount of social information per message, according to the hyperpersonal perspective, receivers are likely to overattributing the edited positive characteristics to their communication partner (Walther, 1996). Message receivers compensate for structural limitations in the communication medium by elaborating on and filling in missing or ambiguous information. In this way information exchanged becomes magnified and serves as the basis for feedback, which in turn is utilized by senders to tailor messages to create exceedingly positive, or negative, impressions. The result is a reciprocal process of influence between the individuals communicating that creates idealized expectations (Walther, 1996). Future research should investigate the causal direction of the LMX and performance relationship further. Is it that supervisors allow their best employees to work remotely or do aspects of the remote environment and communication via leaner media lead to increased LMX?

Communication frequency/richness was negatively related to performance. This was an unexpected finding as communication frequency/richness had a direct positive effect on LMX, which in turn, had a direct positive effect on to performance. In other words, communication frequency/richness had an indirect positive effect on performance when mediated through LMX, yet the direct effect on performance was negative. On average, subordinates had been reporting to the managers for over two years. Over the course of a reporting relationship of this duration, subordinates should have a relatively good understanding of the work and managers' expectations. It might

be that the increased communication frequency/richness was required in order to coach or correct problem, slow, or confused subordinated. In contrast, those in high quality LMX relationships may have many frequent and positive communication as managers rely on subordinates in their in-group with their most important tasks and communicate more often with them (Graen & Uhl-Bien, 1995). Therefore, when the indirect effects of communication frequency/richness on performance are examined through LMX, the effect is positive. In sum, the communications occurring with poorly performing subordinates may be qualitatively different than those occurring with subordinates who have high quality relationships with the supervisor. Future research should examine communication valence to address these findings. Overall, the structural distance component of Napier and Ferris's (1993) framework was not supported.

Results of moderation analyses revealed a stronger positive relationship for LMX and OCBOs when communication frequency/richness was high and a weaker positive relationship when communication frequency/richness was low. These results are in line with previous research which shows that subordinates who engage in frequent communication with their supervisor have a strong relationship between LMX quality and performance ratings and employees who communicate infrequently with their supervisor have a weak link between LMX quality and performance (Kacmar et al., 2003). Much of the performance feedback that employees receive comes from their direct supervisor (Andrews & Kacmar, 2001), especially for those in high-quality LMX relationships. If subordinates have a high-quality LMX relationship yet have restricted

communication with their supervisor, there may be uncertainty and confusion. This would prevent the LMX relationship from being translated into improved OCBO ratings as efficiently (Kacmar et al., 2003).

Additionally, when LMX quality is high, frequent communication is more likely to result in better performance ratings than infrequent communication because interactions in these relationships are positive and pleasant (Fairhurst, 1993). On the other hand, when LMX quality is low, frequent communications do not have this beneficial impact because the communications are more likely to be negative (Fairhurst, 1993). Further, supervisors with multiple subordinates will not be able to remember every interaction that they have with every subordinate and will only recall critical incidents when asked to evaluate their subordinates (DeNisi & Williams, 1988; Feldman, 1981). If mainly positive incidents are recalled, then the resulting performance ratings are likely to be high. This would be the case for subordinates in high-quality relationships who interact frequently with their supervisors because their interactions are likely to be positive (Fairhurst, 1993), giving their supervisors more positive critical incidents to store in memory and to give high performance ratings as a result. Alternatively, because communication in low-quality LMX relationships can be more confrontational and negative, more frequent interactions do not have the same positive effect. An important note though is that regardless of communication frequency/richness, higher LMX quality was positively related to OCBO ratings. This implies that even if communication is hindered in some way, the high quality LMX relationship acts as a buffer and contributes to OCBO.

Finally, the psychological distance component Napier and Ferris's (1993) framework was examined. Demographic differences on race, gender, and age, were examined. These are highly visible characteristics that are most likely to trigger categorization and attraction processes (Pelled, 1996). As the number of female and minority employees has increased in the workforce (Bartsch, 2009), there has been increased research on diversity. This study answered a call to research in order to address some of the gaps in our understanding of how diversity functions when individuals work in different locations (Barsness et al., 2005).

According to the similarity-attraction paradigm (Byrne, 1961; 1971), individuals are attracted to others who are similar to them. For example, demographically similar employees prefer to work with one another rather than with employees who are demographically different (Glaman et al., 1996) and demographic similarity increases the frequency and quality of communication between individuals (Ibarra, 1992; Schneider, 1987; Stewart & Garcia-Prieto, 2008, Tsui & O'Reilly, 1989). Some support was found for this theory, and in turn, the psychological distance component of Napier and Ferris's (1993) model, as supervisor-subordinate dyads of the same race had higher communication frequency/richness than those of different races, although no differences were found for gender and age similarity.

However, this increased communication frequency/richness between racially homogeneous dyads did not translate into increased relationship quality, as there were no differences in LMX quality and demographic similarity. This

goes against theoretical assertions that demographic similarity facilitates the development of high-quality exchange relationships between subordinates and their supervisors by increasing interpersonal liking and reducing role ambiguity (Tsui & O'Reilly, 1989). However, findings on the relationship between LMX and demographic differences have been inconsistent in the literature (e.g., Bauer & Green, 1996; Green et al., 1996; Murphy & Ensher, 1999). Perhaps the increased communication that occurred in racially similar dyads was non-work related and therefore, did not contribute to increased LMX. These findings suggest that supervisors are able to form high quality relationships with their subordinates, regardless of demographics. Future research should examine types of communications that occur in supervisor-subordinate dyads to determine if positive work-related communications contribute to increased LMX quality.

The effects of demographic differences on performance ratings were also examined. Age and gender differences were not related to performance ratings. The increased communication between racially similar dyads described earlier did not lead to increased performance ratings. In fact, racially dissimilar subordinates were rated higher on IRB, with no differences on OCBI and OCBO ratings. This is contrary to previous research which has found that supervisors give higher performance ratings to subordinates of the same race (Kraiger & Ford, 1985; Waismel-Manor et al., 2010). However, other work has shown that white individuals receive higher ratings from both black and white raters (Sackett & Dubois, 1991). A follow up analysis was conducted to determine if higher IRB ratings were given to white subordinates, regardless of supervisor's race (Sackett

& Dubois, 1991). No significant differences were found when examining IRB ratings based on race of subordinates ($F[4, 192] = .39$, $p = 0.81$) or race of supervisor ($F[4, 193] = 1.03$, $p = 0.39$). A possible explanation is that with increased diversity training and awareness in organizations, supervisors of racially different subordinates may be overcompensating for any potential discrimination by increasing performance ratings for racially dissimilar subordinates. Future research should investigate this possibility further.

To address the call to research of how diversity functions when individuals work in different locations (Barsness et al., 2005), physical distance was examined as a moderator of the demographic similarity and LMX relationships. No interactions were found. A possible explanation for the lack of moderation may be the length of reporting relationships between the managers and subordinates, which was over two years, on average. Time has been shown to moderate the diversity-performance and diversity-LMX relationships (Bauer & Green, 1996; Dienesch & Liden, 1986; Graen & Scandura, 1987; Harrison et al., 1998), with easily observable differences (e.g., race) being more important early in a relationship and deeper-level differences (e.g., values) becoming more important as individuals get to know each other better (Harrison et al., 1998). These findings suggest that physical distance does not prevent the shift of surface-level diversity to deep-level diversity from occurring. Because there were also no direct effects of demographic similarity on LMX, managers are able to form high quality relationships with subordinates regardless of demographics or location.

Physical distance was also examined as a moderator of the demographic similarity and performance ratings relationships. No interactions were found. Together, these findings imply that physical distance does not impact the effects of demographic diversity on relationship quality or performance ratings. These research questions were examined to better understand whether supervisors can see past overt demographic characteristics if the interactions are over distance via lean media. The purpose was to determine if demographic differences are more salient because of reduced communication across physical distance or less salient because of the leaner media used. However, as results from Hypothesis V demonstrated, physical distance does not impact communication frequency/richness between managers and subordinates. In other words, supervisors are interacting just as frequently via rich media when they are physically distant from their subordinates as when they are co-located. This implies that any effects of demographic differences are invariant across location as well. The welcome news is that being physically remote from one's employee will not prevent the shift in focus from surface-level diversity to deep-level diversity from occurring. Future research is needed to examine if this shift from surface to deep level diversity occurs at the same rate across physical distance. Overall, findings from these research questions suggest that supervisors do not need to tailor their management style based on who the subordinates are or where they work.

Limitations

A limitation is that communication valence was not examined. While communication frequency and type was measured, it is unclear if the nature of these communications was generally positive or negative. Directions for future research are proposed to address this limitation. Another potential limitation is that objective performance or behaviors were not assessed. However, knowledge workers often do not have objective performance metrics, so their performance is typically evaluated by supervisor ratings anyway. It was justified to collect the data via survey, as ratings generated by supervisors for use in research often have better psychometric properties than the archival performance ratings conducted administratively by the organization (Wherry & Bartlett, 1982). Another limitation was that certain information was only collected from the managers' perspective. For example, demographic information was collected from the manager, rather than assessing actual demographic differences. It might be the case the managers indicated an incorrect age or race for subordinates. However, indications of age that are too high or too low would have cancelled out and age similarity was unrelated to any of the outcome variables. In the instance that managers selected the wrong race, in most cases this would not have impacted results as only race similarity or differences were examined, not actual race. In other words, a white manager indicating that a subordinate is black rather than Hispanic would not have impacted the results as both cases would have been coded as the dyad being racially dissimilar. Similarly, LMX data were only collected from the managers' point of view. Future research should replicate and

extend these findings by evaluating the LMX relationship from the point of view of both the supervisor and subordinate.

A potential limitation of the current study is that all data were collected via a single survey administration. Potential same source bias was minimized by asking for demographic variables at the end so as not to prime other measures, ratings of LMX and performance were spread out by the communication frequency/communication type and satisfaction with life (the marker variable) scales, and the order of the LMX and performance measures was randomized so that any influence of one scale on the other were cancelled out. Additionally, prior to testing the hypotheses, common method variance was assessed using the marker–variable technique (Lindell & Whitney, 2001). It was concluded that common method bias was likely not problematic.

<u>Implications</u>

Despite the limitations, there are applied and theoretical implications that can be drawn from the results. As more organizations move to remote work arrangements, they can have confidence in knowing that physical distance will not harm the relationship quality between managers and subordinates. This relationship quality is related to both in-role and OCB performance ratings, regardless of physical location. Because subordinates in high quality relationships receive the most positive attention and support from their managers (Dunegan et al., 1992; Sparrowe & Liden, 1997; Wayne et al., 1997), LMX may be acting as a buffer and offsetting some of the potential negative effects of physical distance (Howell & Hall-Merenda, 1999). With more organizations moving to distributed

work arrangements, it is advised that high quality relationships are in place for employees in distributed work arrangements.

Another important implication is that moving to remote work arrangements will not impact employee in-role or OCB performance ratings. This is an important consideration as remote work arrangements can still make some managers skeptical of employees' performance when they cannot see them (Hill & Weiner, 2003). However, in order to make the most these work arrangements succeed, employees should have access to rich communication media that allow for shared meaning to emerge (Trevino et al., 1990). Remote employees that have extensive access to advanced communication technologies, as compared to employees with little to no access to these technologies, are better able to interpret ambiguous messages (Hinds & Mortensen, 2005), anticipate the needs of others (Kirkman & Mathieu, 2005), and experience greater transparency in interactions that is more typical of those who are co-located (Hertel, Geister, & Konradt, 2005).

It is important to note however, that these technologies are not a complete substitution for face-to-face interaction. Face-to-face communication is still ideal for facilitating complete and faster comprehension of messages (Daft & Lengel, 1986), which helps to reduce misunderstanding and facilitates shared interpretations (Crampton, 2001, 2002). Therefore, it is recommended that managers and subordinates meet face-to-face occasionally in order to reinforce bonds and offset any potential negative effects of working remotely (Burtha & Connaughton, 2004; Kiesler & Cummings, 2002).

Finally, no relationship was observed between LMX and demographic differences, and physical distance was not found to moderate the relationship. As supervisor-subordinate dyads become more demographically diverse, it is reassuring to know that supervisors are able to form high quality relationships with their subordinates, regardless of demographics or physical distance.

The current findings also have several theoretical implications. This study answered several calls to research to address gaps in the literature. While there has been a vast amount of research on leadership and on the relationships between supervisors and subordinates, very little work has focused on how these relationships are affected by distance. In fact, most leadership theories erroneously assume minimal physical distance between supervisors and subordinates and communication through face-to-face interactions (Bass, 1990; Yukl, 2006). It was important to address how distributed work arrangements affect the supervisor-subordinate relationship when supervisors are forced to communicate with subordinates over distance and using electronic means (Avolio et al., 2003). While certain contextual variables may still be important considerations for leaders (Fiedler, 1964; Hersey & Blanchard, 1977; Kerr et al., 1974), it is reassuring to know that physical distance does not diminish communication frequency/richness or relationship quality. With newer media technologies available to employees, the assertion that physical distance makes leadership and relationship quality impossible (Bass, 1990; Kerr & Jermier, 1978) is no longer applicable.

Another research gap addressed was in our understanding of how diversity functions when individuals work in different locations and have to rely on leaner media for communication. This study helped to answer a call to research by examining how the types of communication media used impact the interactions of demographically diverse coworkers (Barsness et al., 2005). It is reassuring to know that physical distance does not moderate the relationship between demographic diversity and LMX, IRB, or OCBs.

<p style="text-align:center">Directions for Future Research</p>

Supervisors who communicated more frequently/via richer media with their subordinates had higher LMX but rated their subordinates lower on IRB and OCBO. This was an unexpected finding because LMX was positively related to performance ratings. It might be that the communications in the dyads examined were qualitatively different, with communication valence moderating the communication frequency and performance rating relationship. Future research should delve deeper into communication valence to better understand these relationships. Similarly, future research should examine types of communications (i.e., work related v. not work related). Examining the type of communication that is occurring might explain why the heightened communication frequency/richness in racially similar dyads did not translate to increased LMX quality or performance ratings. It is important to examine if positive work-related communications contribute to increased LMX and performance.

Another direction for future research is examining the reverse causality hypothesis that managers let their best employees work remotely, rather than

higher LMX relationships developing with remote subordinates as compared to co-located ones (Gajendran & Harrison, 2007). Results were in the direction proposed by Gajendran and Harrison (2007) but did not reach significance, perhaps because of low power after various data segmentation. As an alternative to Gajendran and Harrison's (2007) proposed explanation, future research should examine if managers engage in different behaviors with remote subordinates as compared to co-located ones that might explain the higher LMX found in remote supervisor-subordinate dyads as suggested by Reinsch (1997) and Walther (1996). If in fact managers are allowing their best co-located employees to start work remotely, research needs to examine how effective LMX relationships can be established when managers and subordinates start off in remote offices. With more organizations internationalizing and recruiting from talent pools around the globe (Howell et al., 1997), being able to establish high quality LMX relationships regardless of where one works is critical. In line with this, future research should extend these findings by assessing the LMX relationship from both the supervisors' and subordinates' point of view in order to fully understand the supervisor-subordinate relationship.

Additional research is needed in the diversity space to address some of the findings. Longitudinal research is needed to determine if the shift from surface to deep-level diversity occurs at the same rate for co-located and remote subordinates. Other research has demonstrated that surface-level diversity impacts LMX and performance ratings early in a relationship when there is little other information to go on (Bauer & Green, 1996; Dienesch & Liden, 1986; Graen &

Scandura, 1987; Harrison et al., 1998). As individuals get to know each other better, deep-level diversity, such as values, becomes more important (Harrison et al., 1998). It is important to determine if employees in a particular location are at a disadvantage by having their surface level diversity focused on for a longer period of time rather than their actual performance. Similarly, because individuals can categorize others into in-groups and out-groups based on various characteristics, (Ashforth & Mael, 1989; Reynolds et al., 2003; Tajfel & Turner, 1986), it is important to determine if co-located employees are initially characterized into the in-group and given more attention or privileges while supervisors get to know remote employees better. Longitudinal research is needed to address these gaps.

Similarly, it is important to further investigate the finding of supervisors giving higher performance ratings to racially dissimilar others. A possible explanation was given that with increased diversity training and awareness in organizations, supervisors of racially different subordinates may be overcompensating for any potential discrimination by increasing performance ratings for racially dissimilar subordinates. If this is the case, more emphasis needs to be placed on rating actual performance, regardless of any demographic similarities or differences.

CHAPTER V

SUMMARY

The objectives of this research were to examine the growing

organizational trends of distributed work, reliance on various media for

communication, and increased diversity in the workforce. Napier and Ferris'

(1993) theory of distance, which includes structural, functional, and psychological

distance, served as a framework for much of this research. Leader-Member

Exchange theory (LMX), which Napier and Ferris (1993) translated into the

functional distance component of their theory, was used to inform hypotheses on

supervisor-subordinate relationships and performance ratings. Communication

theories of media richness and social presence were used as a basis for the

hypotheses involving communication. Finally, the similarity-attraction paradigm,

social identity/social categorization theory, and relational demography theory

were used to formulate hypotheses involving diversity.

One hundred and ninety-eight managers of remote and co-located

subordinates from various organizations provided the following information via

online survey: LMX quality, demographic information about both individuals,

frequency and mode of communication, and subordinate in-role and OCB

performance. The proposed model was tested using SEM.

LMX was positively related to communication frequency/richness, IRB,

OCBI, and OCBO performance ratings, lending support for the functional

distance component of Napier and Ferris's (1993) theory. However, the structural

distance component of their framework was not supported. Results indicated that

physical distance did not impact communication frequency/richness and did not prevent high quality relationships from emerging. Supervisors who occasionally met face-to-face with their subordinates had higher LMX than those who never saw their subordinates in person. LMX was found to be higher in remote dyads than in co-located ones. A reverse causality hypothesis was tested that supervisors allow their best subordinates to work remotely. Results were in the expected direction, but did not reach statistical significance.

LMX was positively related to communication frequency/richness. Communication frequency/richness was invariant across location and LMX seemed to act as a buffer and offset some of the negative effects of distance. Although communication frequency/richness was directly related to LMX, it was inversely related to performance ratings. This relationship may be better understood by examining the content of communications. Thus, communication valence and type should be examined in future research. MSEM indicated communication frequency/richness moderated the LMX and OCBO relationship. LMX and OCBO had a stronger, positive relationship when there was high communication and a weaker, positive relationship when there was low communication.

Little support was found for the psychological distance component of Napier and Ferris's (1993) theory when examining age, race, and gender differences. Gender and age similarity were not related to communication frequency/richness. Racially homogeneous dyads had higher communication frequency/richness than heterogeneous dyads but this did not translate into

increased LMX or performance ratings. Age and gender differences were not related to performance ratings. Racially different subordinates received higher IRB ratings than racially similar ones. Follow-up analyses indicated that this was not due to actual race of subordinates or supervisors. Physical distance was examined as a moderator of the demographic similarity and LMX relationships and demographic similarity and performance ratings relationships, but no support was found for the moderation.

Several implications can be drawn from the results. As organizations move to distributed work arrangements, they can have confidence that physical distance will not impact performance ratings. It is recommended that managers and subordinates have access to rich media and meet face-to-face occasionally to reinforce bonds and offset any potential negative effects of working remotely. Quality of the supervisor-subordinate dyad impacts both in-role and OCB performance ratings, regardless of physical location, and may act as a buffer to offset any potential negative effects of distance. In conclusion, high quality relationships and performance can be maintained regardless of physical distance and demographic differences.

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Appendix A

Participant Instructions

<u>Email Instructions</u>

You are being asked to complete an online survey for a data collection effort for my doctoral dissertation. I am trying to learn more about communication between supervisors and their subordinates and how this relates to subordinate performance. Please fill out this survey if you either:

- supervise at least one subordinate who works remotely from you (i.e., out of a different office or from home) or

- you supervise at least one subordinate who works primarily in the same office location as you.

The survey should take about 10-15 minutes to complete and can be accessed at www.dissertationstudy.com. All information that you provide will be kept anonymous and only summary level statistics will be reported. As a token of appreciation for your participation, a $25 gift card will be raffled off for every 25 individuals that participate.

After you have completed the survey, please help me collect more data for my dissertation by forwarding this email to your colleagues who:

- manage remote subordinates (i.e., subordinates who work out of a different office or from home) or

- manage subordinates in the same office location

Remember that by getting more people to participate, the 25 person limit for each gift card raffle will be reached faster, meaning that you will be entered in the raffle sooner!

If you have any questions, please contact me at larisaniedle@gmail.com. Thank you in advance for your help!

Larisa Belau Niedle

Doctoral Candidate

Industrial/Organizational Psychology Program

DePaul University

Status Update on Social Media Sites

PLEASE help me collect data for my dissertation by completing this survey if you supervise at least 1 person or passing it along to others

http://www.dissertationstudy.com

Survey Instructions

Landing Page

You are being asked to complete an online survey for a data collection effort for a doctoral dissertation. I am trying to learn more about communication between supervisors and their subordinates and how this relates to subordinate performance. Please fill out this survey if you either:

- supervise at least one subordinate who works remotely from you (i.e., out of a different office or from home) or

- supervise at least one subordinate who works primarily in the same office location as you.

The survey should take about 10-15 minutes to complete. All information that you provide will be anonymous and only summary level statistics will be presented. You may choose not to participate. There will be no negative consequences if you decide not to participate. By filling out the survey below, you are indicating that you understand these instructions and are giving your consent to participate. As a token of appreciation for your participation, a $25 gift card will be raffled off for every 25 individuals that participate. You will be provided a link at the end of the survey in which you can enter your information for a chance to win the gift card. Your information for the raffle will be stored in a completely different database from the answers to the survey to maintain the anonymity of your responses. If you have any questions, please contact Larisa Belau Niedle at larisaniedle@gmail.com. Thank you in advance for your help!

Subordinate Information Page

1. Do you manage at least one subordinate remotely (i.e., subordinate who works out of a different office or from home)?

    a. Yes (logic skip to #2)

    b. No (logic skip to # 3)

2. When completing this survey, think of <u>your best (worst) remote subordinate</u> and answer the questions with this individual in mind.

3. Do you manage at least one subordinate who works in the same office location?

    a. Yes (logic skip to #4)

    b. No (exit survey to Thank You Page)

4. When completing this survey, think of <u>your best (worst) co-located subordinate</u> and answer the questions with this individual in mind.

Supervisor Information Page

Thank you for completing the survey. Please complete the contact information below. This information will stored in a separate database and will not be linked to your responses to the survey. The information will only be used to contact winners of the $25 gift card raffles.

Name _____

Email _____

Phone _____

Thank You Page

Thank you for completing the survey. Please help this data collection effort by forwarding this survey to your colleagues who:

- manage remote subordinates or

- manage subordinates in the same office location

Remember that by getting more people to participate, the 25 person limit for each gift card raffle will be reached faster, meaning that you will be entered in the raffle sooner! Thank you for your help!

Appendix B

LMX-7- Revised for Use by Supervisors

Directions: For the following, keep in mind your best (worst) subordinate. Please

select the number that best matches your response on each question.

(1)---------------(2)--------------(3)---------------(4)---------------(5)

Strongly   Disagree   Neither Agree   Agree   Strongly

Disagree   nor Disagree   Agree

1. I usually let my best (worst) subordinate know where he or she stands with

    me.

2. I think that I understand my best (worst) subordinate's problems and

    needs.

3. I think that I recognize my best (worst) subordinate's potential.

4. Regardless of how much power I have built into my position, I would be

    personally inclined to use my power to help my best (worst) subordinate.

5. I would be willing to "bail out" my best (worst) subordinate, even at my

    own expense, if he or she really needed it.

6. I have enough confidence in my best (worst) subordinate that I would

    defend and justify his or her decisions if he or she were not present to do

    so.

7. How would you characterize your working relationship with your best

    (worst) subordinate?

1	2	3	4	5
Extremely	Worse than	Average	Above Average	Extremely
Ineffective	Average			Effective

Appendix C

Communication Frequency and Type

Directions: Think about how you and your best (worst) subordinate

communicated **during the past year**. **On average**, how frequently do you and

your subordinate use the following media to communicate?

(0)----------------(1)----------------(2)--------------(3)----------------(4)----------------(5)

Never   Less than   Once or twice   Once or twice   Once   More than

once a month   a month   a week   a day   once a day

1. Direct email (sent between you and your subordinate)

2. Indirect email (forwarded as general information or sent as mass email)

3. Hand-written memos or notes

4. Face-to-face conversations

5. Phone or audio-only Skype

6. Desktop sharing with phone conferencing (e.g., WebEx, GoToMeeting)

7. Instant messaging

8. Text messages

9. Video conferencing (e.g., Video Skype, TelePresence)

10. Messages direct at one person on social media sites (e.g., Facebook wall

    post)

11. General messages not directed at a particular person on social media sites

    (e.g., Twitter Tweet, Facebook status update)

Appendix D

Subordinate Performance Measure

(1)----------------(2)--------------(3)----------------(4)----------------(5)

Strongly   Disagree   Neither Agree   Agree   Strongly

Disagree   nor Disagree   Agree

In Role Behavior

1. Adequately completes assigned duties.

2. Fulfills responsibilities specified in job description.

3. Performs tasks that are expected of him/her.

4. Meets formal performance requirements of the job.

5. Engages in activities that will directly affect his/her performance evaluation.

6. Neglects aspects of the job he/she is obligated to perform.*

7. Fails to perform essential duties. *

Organizational Citizenship Behavior – Individual

8. Helps others who have been absent.

9. Helps others who have heavy work loads.

10. Assists supervisor with his/her work (when not asked).

11. Takes time to listen to co-workers' problems and worries.

12. Goes out of way to help new employees.

13. Takes a personal interest in other employees.

14. Passes along information to co-workers.

Organizational Citizenship Behavior – Organization

15. Attendance at work is above the norm.

16. Gives advance notice when unable to come to work.

17. Takes undeserved work breaks. *

18. Great deal of time spent with personal phone conversations.*

19. Complains about insignificant things at work.*

20. Adheres to informal rules devised to maintain order.

*Denotes reverse keyed items.

Appendix E

Demographic Information

The following question will be asked at the beginning of the survey

1. In which industry do you work? (from Hoovers.com)

    o   Agriculture, Forestry, Fishing & Hunting

    o   Automotive

    o   Banking & Finance

    o   Chemicals

    o   Computing & Information Technology

    o   Construction

    o   Defense & Aerospace

    o   Electronics

    o   Energy & Utilities

    o   Entertainment & Arts

    o   Fashion & Apparel

    o   Food & Beverage

    o   Health Care

    o   Insurance

    o   Manufacturing

    o   Marketing & Advertising

    o   Media & Telecommunications

    o   Mining & Extraction

    o   Paper & Packaging

- o Personal & Business Support Services

- o Pharmaceuticals & Biotechnology

- o Professional Services

- o Real Estate

- o Retail & Wholesale Trade

- o Transportation & Warehousing

- o Travel, Hospitality, & Tourism

- o Waste Management & Remediation Services

- o Other (Please Specify) _____

2. Approximately how many employees work for your company? _____

3. In total, how many individuals directly report to you? _____

4. How old are you? ____

5. What is your gender?

    - o Male

    - o Female

6. What is your race?

    - o African American/Black

    - o Asian

    - o American Indian/Alaskan Native

    - o Caucasian/White

    - o Hispanic/Latino(a)

    - o Native Hawaiian/Other Pacific Islander

    - o Two or More Races

The following question will be asked at the beginning of the subordinate survey

1. Does your subordinate work primarily out of the same office location as you?

    o   Yes

    o   No (logic skip)

        ▪   Have you worked in the same office location in the past?

            •   Yes (logic skip)

                o   How long did you and this subordinate work, in any capacity, from the same office location? __years __months

                o   How long did this subordinate report to you while working out of the same office location? __years __months

            •   No

2. How long has this subordinate been directly reporting to you? __months __years (question was moved earlier in test sequence to make a particular subordinate more salient to the manager).

The following questions will be asked at the end of the subordinate survey

1. How old is this subordinate? _____

2. Are you certain of the age or is this your best guess?

    o   Certain

    o   Best guess

3. What is your subordinate's gender?

    o   Male

    o   Female

4. What is your subordinate's race?

    o   African American/Black

    o   Asian

    o   American Indian/Alaskan Native

    o   Caucasian/White

    o   Hispanic/Latino(a)

    o   Native Hawaiian/Other Pacific Islander

    o   Two or More Races

5. Are you certain of the race or is this your best guess?

    o   Certain

    o   Best guess

Appendix F

Survey Types and Sequence

Survey 1

1. Landing page – randomly assigns participant to think of **best** subordinate and will present LMX questions before performance questions.

2. Supervisor demographic information

3. Subordinate information page (if supervisor manages remote/co-located subordinates, length of reporting relationship)

4. Specific person in mind check

5. LMX questionnaire

6. Satisfaction with life scale

7. Communication frequency and type

8. Performance measure

9. Subordinate demographics

10. Supervisor information page for $25 raffle. Information to be stored in separate database.

11. Thank you page

Survey 2

1. Landing page – randomly assigns participant to think of **average** subordinate and will present LMX questions before performance questions.

2. Supervisor demographic information

3. Subordinate information page (if supervisor manages remote/co-located subordinates, length of reporting relationship)

4. Specific person in mind check

5. LMX questionnaire

6. Satisfaction with life scale

7. Communication frequency and type

8. Performance measure

9. Subordinate demographics

10. Supervisor information page for $25 raffle. Information to be stored in separate database.

11. Thank you page

Survey 3

1. Landing page – randomly assigns participant to think of **worst** subordinate and will present LMX questions before performance questions.

2. Supervisor demographic information

3. Subordinate information page (if supervisor manages remote/co-located subordinates, length of reporting relationship)

4. Specific person in mind check

5. LMX questionnaire

6. Satisfaction with life scale

7. Communication frequency and type

8. Performance measure

9. Subordinate demographics

10. Supervisor information page for $25 raffle. Information to be stored in

    separate database.

11. Thank you page

Survey 4

1. Landing page – randomly assigns participant to think of **best** subordinate

   and will present performance questions before LMX questions.

2. Supervisor demographic information

3. Subordinate information page (if supervisor manages remote/co-located

   subordinates, length of reporting relationship)

4. Specific person in mind check

5. Performance measure

6. Satisfaction with life scale

7. Communication frequency and type

8. LMX questionnaire

9. Subordinate demographics

10. Supervisor information page for $25 raffle. Information to be stored in

    separate database.

11. Thank you page

Survey 5

1. Landing page – randomly assigns participant to think of **average** subordinate and will present performance questions before LMX questions.

2. Supervisor demographic information

3. Subordinate information page (if supervisor manages remote/co-located subordinates, length of reporting relationship)

4. Specific person in mind check

5. **Performance measure**

6. Satisfaction with life scale

7. Communication frequency and type

8. **LMX questionnaire**

9. Subordinate demographics

10. Supervisor information page for $25 raffle. Information to be stored in separate database.

11. Thank you page

Survey 6

12. Landing page – randomly assigns participant to think of **worst** subordinate and will present performance questions before LMX questions.

13. Supervisor demographic information

14. Subordinate information page (if supervisor manages remote/co-located subordinates, length of reporting relationship)

15. Specific person in mind check

16. Performance measure

17. Satisfaction with life scale

18. Communication frequency and type

19. LMX questionnaire

20. Subordinate demographics

21. Supervisor information page for $25 raffle. Information to be stored in

separate database.

22. Thank you page

Appendix G

Satisfaction with Life Scale

Please indicate your level of agreement for each question.

(1)----------------(2)--------------(3)---------------(4)---------------(5)

Strongly   Disagree   Neither Agree   Agree   Strongly

Disagree   nor Disagree   Agree

1. In most ways my life is close to my ideal.

2. The conditions of my life are excellent.

3. I am satisfied with my life.

4. So far, I have gotten the important things I want in my life.

5. If I could live my life over, I would change almost nothing.