Spring 5-2022

Assessing the Relationship Between Convergence of Leader-Follower: Motivational Climes and Leader-Member Exchange

Barton Crum

ASSESSING THE RELATIONSHIP BETWEEN CONVERGENCE

OF LEADER-FOLLOWER MOTIVATIONAL CLIMATES

AND LEADER-MEMBER EXCHANGE

by

Barton Crum, B.A., M.A., M.B.A.

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

COLLEGE OF EDUCATION
LOUISIANA TECH UNIVERSITY

May 2022

LOUISIANA TECH UNIVERSITY

GRADUATE SCHOOL

March 25, 2022
Date of dissertation defense

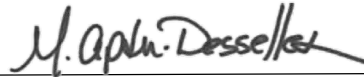We hereby recommend that the dissertation prepared by

Barton Crum B.A., M.A. M.B.A.

entitled   **Assessing the Relationship Between Convergence of Leader-Follower:**
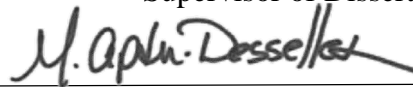
Motivational Climes and Leader-Member Exchange

be accepted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Industrial/Organizational Psychology

Marita Apter-Desselles
Supervisor of Dissertation Research

Marita Apter-Desselles
Head of Psychology and Behavioral Science

Doctoral Committee Members:
Tilman Sheets
Frank Igou

Approved:

Don Schillinger
Dean of Education

Approved:

Ramu Ramachandran
Dean of the Graduate School

ABSTRACT

Leadership involves two or more parties, the influence of at least one party upon the other, and the bi-directional influence towards a mutually agreed upon goal. A notable shortcoming in leadership research is the lack of emphasis on recognizing both the leader and follower in the interdependent relationship and instead measuring perceptions from the viewpoint of only one member. Leader Member Exchange (LMX) theory has emerged as one of the most heavily researched approaches to understanding leadership and explicitly recognizes the centrality of the leader-follower relationship. The congruence between leader and follower perceptions has been found to affect both LMX quality and various leadership and work outcomes (e.g., work engagement, OCBs, job satisfaction, commitment), yet many LMX researchers fail to take congruence into consideration or to accurately measure the construct from the perspectives of both the leader and follower.

Additionally, motivation is inherent to the definition of leadership, but many leadership theories (including LMX) fail to explicitly recognize the important contribution. Reversal theory provides a motivational grounding for exploring the climates (Carter & Kourdi, 2003) created by a leader that allow followers to experience situations in different ways (Apter, 2005). The present study addressed these gaps in LMX research and investigated the convergence on motivational climates as an antecedent to the quality of the LMX relationship at a purely dyadic level of analysis.

The study employed a Within-and-Between Analysis (WABA) which involved 114 matched leader-follower dependent dyads. Results did not find the variables or relationships between them to operate at the dyadic level. Additionally, results supported within-group effects when investigating the variables alone at the group level and results were uninterpretable when investigating the relationship between them at the group level (e.g., either the leader or follower level).

APPROVAL FOR SCHOLARLY DISSEMINATION

The author grants to the Prescott Memorial Library of Louisiana Tech University the right to reproduce, by appropriate methods, upon request, any or all portions of this Dissertation. It was understood that "proper request" consists of the agreement, on the part of the requesting party, that said reproduction is for his personal use and that subsequent reproduction will not occur without written approval of the author of this Dissertation. Further, any portions of the Dissertation used in books, papers, and other works must be appropriately referenced to this Dissertation.

Finally, the author of this Dissertation reserves the right to publish freely, in the literature, at any time, any or all portions of this Dissertation.

Author_____

Date   _____

DEDICATION

I dedicate this dissertation to my family for their endless support, understanding, and interest throughout my many years of school. This accomplishment would not be possible without the many sacrifices from everyone. To Scott, my fiancé, who listened to my endless complaints and never stopped encouraging me along the way. To my parents, Bart and Elizabeth Crum, who supported me from the very beginning and instilled the importance of education and carving your own path for yourself from day one. To my sister and brother-in-law, Betsy and Rob Davis, who provided a roof over my head and lots of encouragement during the intense writing process.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

A huge thank you to the following people who greatly helped me throughout this process and to whom I would not have been able to complete my degree without:

- My advisor, Dr. Mitzi Desselles, for always believing in me and pushing me to be the best from the very beginning of my first year in the IO program. She never stopped encouraging, mentoring, and guiding me throughout graduate school, and I know I would not be where I am in my career without her by my side.

- My committee members, Dr. Tilman Sheets and Dr. Frank Igou, for the countless number of hours they have poured into the program that has enabled all of its graduates to be successful in more ways than just our careers.

My cohort members, Dr. Colin Omori, Dr. Marley Walter, Ms. Reagan Girardot, and Ms. Mallory Wright, for sticking together and providing endless entertainment and encouragement to each other throughout our years on campus.

CHAPTER 1

INTRODUCTION TO LEADERSHIP

Recent Leadership Research

Scholars and practitioners have struggled to reach consensus on what specifically constitutes leadership, as evidenced by the proliferation of models developed since World War I (Lord et al., 2017). Despite the abundance of theoretical models, there appears to be some measure of agreement on an intuitive level about what leadership entails (Rost, 1991). Overall, scholars appear to agree that leadership requires two or more parties (Hollander, 1992; Uhl-Bien et al., 2014), is characterized by a relationship that involves the influence of at least one party on another (Ruben & Gigliotti, 2017), and entails directing energies towards achieving common goals (Rost, 1991). The relationship between the leader and follower is built over time and relies on the transactions or exchanges between them in which both parties give and receive (Hollander & Julian, 1969; Uhl-Bien et al., 2014). Lastly, leadership involves both the leader and the followers; leadership does not exist without both parties and both parties need each other for leadership to exist (Burns, 1978; Heller & Van Til, 1983; Hollander, 1992; Jago, 1982).

Differing theoretical models have influenced how leadership has been researched, as have other factors such as methodological developments (e.g., psychometric advances,

multi-method approaches in assessment centers, meta-analyses), social contextual factors (e.g., war, recession, technology, etc.), and advancements in topics related to leadership (e.g., selection, personality, behaviors; Lord et al., 2017). Lord et al. (2017) described a century of leadership literature as follows. The 1900s began with a research focus on personality characteristics and individual differences of a great leader, the 1930s explored the social climates created by the leader, and the 1950s saw a push to understand the effects of different situational contexts on the leader (Lord et al., 2017). Lord and colleagues (Lord et al., 2017) felt it useful to categorize leadership research into three waves: (a) the focus on explaining leadership in terms of social behaviors in the 1950s and 1960s, (b) the emphasis on gender, situational approaches, transformational leadership, and cognitive explanations for leadership by the mid-1970s, and (c) the usage of meta-analyses and the exploration of understanding individuals, dyads, teams, and leaders as "agents of change" in the 1990s and beyond. The 1990s multi-level approach to understanding leadership and its effects was coupled with the desire to predict leadership perceptions and associated performance outcomes while also recognizing the joint influence of leaders and followers (Lord et al., 2017).

Influence and Dyadic Nature of Leadership

As described above, leadership involves the interactions of both the leader and follower and is effective when the follower actively allows the leader's influence to guide or affect their decisions (Shuell, 1986). Therefore, a leader must be able to persuade the follower to listen and to act upon their direction or guidance to be successful. However, a leader is not effective by merely being influential (Hollander & Julian, 1969), as a leader's function is "to define the ends of group existence, to design an enterprise

distinctly adapted to these ends, and to see that the design becomes a living reality"

(Selznick, 1957, p. 37). Ultimately, the role of the leader is to provide the follower with

an environment that enables them to use beneficial motivational techniques when

engaging in the task at hand (Solmon, 1996). Impactful leadership provides an

environmental setting that encourages favorable behaviors prompting successful

achievements (Carter, 2002; Zhang & Morand, 2014).

A serious shortcoming in leadership research has been the failure by many authors

to account for the fact that the leader and follower are in an interdependent relationship

with influence running in both directions (Gooty & Yammarino, 2011; Kim et al., 2020).

All dyadic relationships involve interdependence, exchange, and reciprocity between two

parties (Liden et al., 2016). While leadership involves two parties, exchange, and

reciprocity, and is therefore dyadic, many theories focus on only one player in the

relationship – the leader. Yet, leadership does not exist without both the leader and the

follower (Burns, 1978; Heller & Van Til, 1983; Hollander, 1992; Jago, 1982). Leaders

and followers are essential to "the fulfillment of each other's needs" (Bass, 1990, p. 219),

and must be understood in relation to each other and collectively since without one party

present there is no leadership (Burns, 1978; Hollander, 1992). Unfortunately, much

leadership research tends to theorize and hypothesize at the dyadic level but measure the

construct from only one side of the dyadic partnership through an individual-level

approach (Gooty et al., 2012; Gooty & Yammarino, 2011; Krasikova & LeBreton, 2012;

Tse & Ashkanasy, 2015; Yammarino & Gooty, 2017). However, leadership as a dyadic

model is inherently multi-level (Kozlowski & Klein, 2000), and researchers must

recognize the roles of the leader and follower to fully understand the robustness of the concept (Hackman & Wageman, 2007).

Notably, there are several theories that touch upon the dyadic aspect of leadership but do not explicitly include it in their models. Contingency theory recognizes situational factors that could affect both parties (Lord et al., 2017), transformational leadership seeks to activate followers' social identities without recognizing the effect followers may have on the leaders (Lord et al., 2017), and path-goal theory involves the leader's impact on the follower's motivation levels but not vice versa (House & Mitchell, 1974). Leader-member exchange (LMX) theory is unique in that it adopts the leader-follower relationship as the central construct of leadership, as opposed to the viewpoint of either the leader or follower (Dansereau et al., 1975; Lord et al., 2017). LMX is central to the proposed study and will be discussed further in subsequent sections. Notably, many studies on leadership models hinting at, but not explicitly including, dyadic components have incorporated implicit leadership models into the research design to fill the apparent gap (e.g., Adriasola & Lord, 2019; Lord et al., 1984; MacDonald et al., 2008; Sy, 2010).

Implicit Leadership Theory (ILT), first explored in the 1970s, describes the effect implicit knowledge structures may have on rater's reports of leadership behaviors (Eden & Leviatan, 1975). ILT incorporates the idea of shared mental models and suggests that employees form preferences about the characteristics or behaviors they believe define a leader (Epitropaki & Martin, 2005; Lord, 1985). ILT is a recognition-based approach to leadership that allows followers to categorize their leader based on the perceived match between the leader's current behaviors and attributes of the follower's preexisting leader prototype (Lord, 1985). ILTs serve as "the benchmark employees use to form an

impression of their manager" (Epitropaki & Martin, 2005). Employees match their ILT to their actual manager's behaviors, and any discrepancies identified between the two inform the impression the employee holds of that leader (Epitropaki & Martin, 2005; Maurer & Lord, 1991). Thus, the more alike the ILT and behaviors of the actual leader are, the more likely an employee holds a more favorable opinion of the leader, while the more discrepancies that emerge, the less favorable the opinion of the leader is likely to be.

Maurer and Lord (1991) recognized the importance of understanding the effect of implicit leadership models within the context of manager-subordinate dyadic interactions. The researchers revealed the sizeable impact a subordinate's perception of their leader may have on the power or influence the leader has on them. Congruence of the leader's behavior and character to the ILTs of the employee may subsequently increase employee's acceptance of managerial decisions and guidance (Lord, 1985). Researchers have found ILTs to be an important driver of how a follower evaluates their leader, but also for how the leader evaluates a follower, because ILTs are present for both roles in the leadership dyad (Engle & Lord, 1997; Lord & Maher, 1993).

Leader-Follower Congruence

In ILT, congruence between what followers expect and what the leader delivers plays a central role in understanding the followers' impressions of the leader (Epitropaki & Martin, 2005; Maurer & Lord, 1991). Subsequent authors have expanded on the nature of congruence (i.e., fit, similarity, match, or agreement; Edwards, 1994) and how it applies to dyadic constructs (Kim et al., 2020; Kristof-Brown et al., 2005).

Leader-follower congruence involves matching two conceptually distinct constructs, and, in the case of leadership, the leader as the environment for the follower and/or vice versa (Edwards, 1994; Kristof-Brown et al., 2005). Congruence may be examined from either the subjective (i.e., perceived) or objective (i.e., actual) perspectives, depending upon the measures involved (Caplan, 1987; Kim et al., 2020; Kristof, 1996). Subjective congruence looks at the relationship from one only one viewpoint and explores the beliefs of how well that party thinks they fit in with the environment (Kim et al., 2020). In the context of leadership, subjective congruence could explore how well the follower believes they fit in with their leader (Kim et al., 2020). Objective congruence independently measures the leader and follower's characteristics or perceptions and explicitly compares the two viewpoints (Kim et al., 2020; see Cogliser et al., 2009 and Sin et al., 2009).

The exploration of similarity or dissimilarity of individual perceptions in the dyadic relationship and outcomes at the individual level may reveal how leaders and followers are affected by having a well- or poorly- matched partner (Kim et al., 2020). Kim and colleagues (Kim et al., 2020) called on researchers to appropriately align the notion of leader-follower congruence to the dyadic level of measurement by utilizing dyad-level outcomes instead of individually based outcomes when examining objective and subjective congruence. Studies have indicated that the application of recognition-based processes from a dyadic perspective, such as the congruence of motivational expectancies, are an important determinate of the leader-follower relationship (Lord & Maher, 1993). These authors point to the usefulness of a congruence approach as the basis for interpreting the behaviors of the dyadic partnership.

Leader-Member Exchange (LMX)

LMX, a Pervasive Model

As mentioned earlier, LMX is one of the most frequently studied leadership models (Lord et al., 2017) and takes an explicitly dyadic approach to understanding leadership (Gerstner & Day, 1997). Interestingly, LMX theory was originally known as the vertical dyad linkage (VDL) but was renamed over 40 years ago. LMX as a model provides both guidance for the conceptualization of organizational leadership and tools for how to measure dyadic leader-follower relationships (Dansereau et al., 1975; Lord et al., 2017). It has become an extremely useful approach to studying and understanding the connection between leadership processes and outcomes (Dansereau et al., 1973,1975; Gerstner & Day, 1997; Graen, 1976; Graen & Cashman, 1975; Graen & Uhl-Bien, 1995; Liden et al., 1997). Specifically, the centrality of an explicitly dyadic approach in the LMX model has enabled investigators to examine whether and how leader-follower relationships are associated with other leadership outcomes.

At the heart of the LMX model of leadership is the proposition that the leader may form a different relationship with each follower, that each relationship is dyadic in nature involving both the leader and follower, and that the leader differentiates how they treat and interact with the follower based on their perception of the dyadic relationship (Dansereau et al., 1975; Schriesheim et al., 1999). LMX is distinguished from other leadership theories by its focus on the dyadic relationship and understanding that the developed relationship is unique in terms of its underlying quality (Gerstner & Day, 1997; Lord et al., 2017).

The theory states that within a work unit, different types of leader-employee relationships develop and emerge qualifying as either high- or low-quality (Dansereau et al., 1975; Epitropaki & Martin, 2005). High-quality LMX relationships are characterized by more personal or close attributes, while low-quality LMX relationships are more transactional and role dependent in nature (Epitropaki & Martin, 2005; Sparrowe & Liden, 1997). Researchers believe that leaders tend to give primary and more significant tasks to direct reports with higher-quality relationships and secondary or less important roles to those with less favorable relationships (Bernerth, Armenakis, Feild, Giles, & Walker, 2007b).

High LMX work relationships (i.e., high-quality LMX relationships) tend to exist between a leader and only a few subordinates and involve high-quality exchanges of information and discussion (Epitropaki & Martin, 2005). In these relationships, the leaders demonstrate support and impact beyond the requirements specified in the job description (Epitropaki & Martin, 2005; Sparrowe & Liden, 1997). Both parties involved provide economic and socio-emotional assets that are valued by the other partner (Liden et al., 1997). Relationships with high-LMX quality are characterized as having mutual obligation and reciprocity that tend to be more social in nature with an open exchange of information and are characterized by mutual loyalty, support, honesty, and trust (Banks et al., 2014; Cropanzano & Mitchell, 2005; Gouldner, 1960; Graen & Uhl-Bien, 1995; Liden et al., 1997; Uhl-Bien & Maslyn, 2003). According to the LMX framework, affection, contribution, and loyalty must be present to attain mutuality and reciprocity between both parties, which then allows them to develop high-quality relationships (Dienesch & Liden, 1986). High LMX relationships may be viewed as a mentorship

process in which a small sample of employees are considered to be a part of the leader's "inner circle," and, therefore, receive additional advice, benefits, opportunities, and support beyond other employees in the work unit (Sparrowe & Liden, 1997). Therefore, high-quality leader-member relationships involve greater sharing of information, more positive characteristics, and a mutual understanding of how each party may benefit from the other.

On the other hand, low-LMX relationships, or low-quality LMX relationships, are relationships described as formally agreed upon, immediate, and involving reciprocated tangible assets centered around economic exchange (e.g., a paycheck every two weeks; Blau, 1964). A low-LMX relationship is more likely to have limited exchanges that fall within the expectations set by the job description (Epitropaki & Martin, 2005). Thus, the relationship is centered around the transactional nature of the employment contract (Bernerth, Armenakis, Feild, Giles, & Walker, 2007a). Low-quality relationships may result in followers receiving less support from their leader, more boring assignments and tasks, less opportunities for advancement, less engagement with their work, and decreased organizational commitment (Bolino & Turnley, 2009; Duchon et al., 1986). Low-LMX relationships often do not exceed the boundaries set by a job when one assumes the role of a leader and another as a follower, while high-LMX relationships exceed the typical roles set by job positions and involve more interpersonal characteristics typically found in friendships (Epitropaki & Martin, 2005). In summary, leaders do not develop the same type of relationship with each follower, therefore their interactions with each follower differ which in turn may lead to different outcomes (Dulebohn et al., 2012).

LMX theory also highlights the bi-directional nature of the relationship between leaders and direct reports. For example, positive behaviors by one party may fuel positive behaviors in the other party because of the connected and dependent nature of the dyadic relationship (Van Dierendonck et al., 2004). Although leaders are dominant in determining the nature of the dyadic relationship, followers play a role in the process as well and may perceive the relationship quality differently than the leader does (Dulebohn et al., 2012). This greatly departs from many traditional leadership approaches that often assume leader characteristics and behaviors are responsible for the follower's attitudes and behaviors (Dulebohn et al., 2012). Under the LMX framework, both parties are dependent upon each other for success, requiring them both to be greatly aware of their partner's characteristics and to continually evaluate the quality of the two-way relationship (Dépret & Fiske, 1992). LMX uniquely recognizes the reciprocal nature of the leader-member relationship and the potential effect a dyadic partner's behaviors may have on the other member. While LMX's history will reveal its evolution of trends over time, its central focus on the dyadic relationship present between the leader and follower has remained constant throughout.

History of LMX

LMX was a groundbreaking leadership theory at the time of its introduction, primarily due to the centrality of the relationship between the leader and the follower (as opposed to only how a leader treats a follower) and its recognition that leaders treat followers differently depending on their co-created relationship (Dulebohn et al., 2012). Initial research was primarily focused on the outcomes of the relationship, as opposed to what causes the different relationships to form, but subsequently the range of research has

broadened substantially and now includes efforts to uncover what antecedents determine the nature of the LMX quality relationships (Dulebohn et al., 2012). Additionally, more attention has been given to understanding the reciprocity and exchange involved in the relationship between both the leader and the direct report (Bernerth et al., 2007a). The following paragraphs will trace the history of LMX from its beginnings with a focus on the evolution of research topics addressed over time.

Beginning in the 1970s, LMX was originally called vertical dyad linkage (VDL) and focused on the vertical linkage leaders formed with each follower within the group through informal processes (Dansereau et al., 1975; Dienesch & Liden, 1986; Graen, 1976; Graen & Cashman, 1975; Liden et al., 1997). The foundation of VDL was rooted in role theory which proposed that organizational relationships are developed through informal methods and that leaders have an influential impact on immediate followers (Dienesch & Liden, 1986; Graen, 1976; Liden et al., 1997). The ideas behind VDL were unique to research at the time because they opposed the dominant paradigm suggesting that leaders provided a consistent leadership style across all followers (Dansereau et al., 1975; Graen & Uhl-Bien, 1995).

Two general types of relationships or linkages emerged through VDL studies: the in-group that included relationships reliant on expanded role responsibilities and the out-group that included relationships reliant on the formal, defined employment contract (Dansereau, 1995; Dansereau et al., 1975; Graen & Uhl-Bien, 1995). Followers became a member of one of the groups based on how well they worked with the leader and how well the leader worked with them, although personality and other personal characteristics of both parties also played a role in group membership (Dansereau et al., 1975; Maslyn et

al., 2017; Randolph-Seng et al., 2016). Additionally, researchers found the degree of

follower desire and involvement in expanding their role responsibilities, to those beyond

their basic job requirements, with their leader to also affect group membership (Graen,

1976). Dansereau and colleagues (Dansereau et al., 1975) found in-group followers

receive more information, influence, confidence, and concern from their leaders than out-

group followers and the in-group is more dependable, involved, and communicative than

out-group member followers.

As previously stated, in 1986 the term "LMX theory" replaced the label "Vertical

Dyad Linkage" (VDL) to emphasize the theory's theoretical foundations and to include

the who, what, where, when, and why of the exchange process and role making between

leaders and followers (Dienesch & Liden, 1986; Gottfredson et al., 2020). While initial

research focused on the nature of the relationships and differences between in-groups and

out-groups, a shift in research occurred to understanding how LMX theory was related to

organizational effectiveness and positive outcomes for leaders, followers, teams, and

organizations (Graen & Uhl-Bien, 1995). LMX theory research may be organized into

four stages that have received attention over time: (a) focus on in-groups and out-groups

and the exploration of differentiated dyads, (b) focus on the relationship quality and

outcomes of LMX, (c) an exploration of how dyadic relationship are built, and (d)

adopting a systems-approach to LMX that includes group and network levels beyond the

dyad (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995). LMX research was one of the

first theories to champion and explore the multi-level nature of leadership within

organizations (Lord et al., 2017). Importantly, while the theory has been modified and

expanded throughout the years, the basic concept of analysis at the dyadic level has

remained unchanged (Gerstner & Day, 1997). The examination of antecedents and outcomes of LMX dyadic relationships will be discussed in detail below.

The Need to Examine Both Dyadic Partners

LMX sets itself apart from other leadership theories through its emphasis on the dyadic relationship as the level of analysis, unlike traditional leadership theories that focus on personal characteristics of the leader or surrounding situational features as their basis (Gerstner & Day, 1997). As previously stated, dyadic constructs, such as LMX, involve relationships, exchanges, or interactions that occur between two members (Krasikova & LeBreton, 2012), and the leader-follower is generally referred to as the key dyad in organizations (Gooty & Yammarino, 2011; Kim et al., 2020; Yammarino & Gooty, 2017). Dyadic phenomena are conceptually and empirically multilevel because they occur between lower-level units (e.g., individuals) but reside within higher level units (e.g., dyads; Krasikova & LeBreton, 2012). Therefore, dyadic constructs must be measured from the perspective of both partners in the relationship to obtain a complete view of the phenomenon of interest and to accurately represent the dyadic relationship (Krasikova & LeBreton, 2012). Furthermore, a recent review article urges researchers to theorize and analyze leader-follower notions related to "interaction process, reciprocity, and/or exchange between a leader and follower" and "the agreement/disagreement between a leader's and a follower's' perceptions" through a dyadic perspective (Kim et al., 2020, p.13). Yet, "the dyad level is known as the most poorly understood level" of organizational research levels (Kim et al., 2020) and is often ignored in multi-level research studies (Gooty & Yammarino, 2011; Yammarino & Gooty, 2017).

In a leader-follower dyad, followers actively interpret their leaders' behaviors and develop their own view of their relationship (Eisenberger et al., 2002; Graves & Luciano, 2013; Rhoades & Eisenberger, 2002). Follower views of the relationship with the leader may differ from their leaders' interpretation and "may be differentially related to employee outcomes" (Gerstner & Day, 1997; Graves & Luciano, 2013; Joseph et al., 2011; Sin et al., 2009). Measuring LMX from only one viewpoint (i.e., solely the leader's or the follower's) presumes that one member's view accurately represents two possibly different views and ignores the other partner in the dyadic relationship (Kim et al., 2020), and therefore would lead to an incomplete view and possible misrepresentation of the dyadic relationship and constructs of interest (Krasikova & LeBreton, 2012). Additionally, the two parties may not agree on their views toward the quality of the current relationship. As a result, the perceptions of one party would then be inaccurately represented by the other partners' viewpoint (Atwater & Yammarino, 1997; Matta et al., 2015). Therefore, when studying a concept involving a dyadic phenomenon, researchers must take both dyadic partners' views and perceptions into account and collect data from both parties to represent the dyadic partnership perceptions accurately and validly (Dansereau et al., 1984; Krasikova & LeBreton, 2012; Schriesheim et al., 2001; Tse & Ashkanasy, 2015; Yammarino et al., 2005; Yammarino & Gooty, 2017). Dyadic conceptualizations not only require information to be collected from both parties but also require analyses conducted at the dyadic level.

Writers on dyadic supervisory relationships investigating constructs other than leadership or LMX specifically, have noted that accurate testing of a dyadic model requires concurrent, paired perceptions matched between the leader and associated

follower (Markham et al., 2010). Dyadic research findings suggest that the organizational environment, supervisors, and co-workers may all have a positive or negative effect on one's well-being while in the workplace, including how that person feels about their own work and self (Danna & Griffin, 1999; House, 1981). A leader's behavior and personality characteristics directly influence the subordinate's well-being, stress levels, and feelings about both themselves and their workplaces, including the level of support provided by the work environment (Cherniss, 1995; Van Dierendonck et al., 2004). It is widely accepted that supervisor support and leadership greatly influence direct reports, including their levels of stress (Offermann & Hellmann, 1996). Cartwright and Cooper (1994) found that below-standard or poor supervisor-direct report relationships may reduce individual well-being (i.e., feelings about oneself and the settings in which they live and work) and increase stress. These poor relationships are typically characterized by low supervisor supportiveness, low quality of communication, and a lack of feedback (Cartwright & Cooper, 1994). Although many studies inaccurately measure and analyze dyadic phenomenon, studies conducted appropriately (i.e., with dyadic level data collection and analyses) have uncovered the important influence one partner may have upon the other (e.g., Cartwright & Cooper, 1994; Offermann & Hellmann, 1996; Van Dierendonck et al., 2004).

LMX and Dyadic Relationship Findings

Returning to leader-follower dyads research employing the LMX model, numerous studies have continued to measure the theory at the individual level (see Dionne et al., 2014; Gooty et al., 2012; Kim et al., 2020; Yammarino et al., 2005). However, it is likely that the perception of LMX quality by one partner in the dyad is not

reciprocated by the other partner (Epitropaki & Martin, 2005). Notably though, several

researchers have found LMX to operate as a dyadic phenomenon when accurately

measured and analyzed to include both dyadic partners' perspectives (Gooty &

Yammarino, 2011; Markham et al., 2010; Schriesheim et al., 2001).

      Available empirical research on the dyadic nature of LMX relationships has not

supported the proposition of balanced reciprocity between the leader and follower

described by early researchers (Emerson, 1962; Smircich & Morgan, 1982). Balanced

reciprocity is the idea that the quality of LMX is perceived similarly by both leaders and

followers. It was believed that over time the relationship will reach an equilibrium

defined by a lack of differentiation between a leader's and follower's measure of the

quality of exchange (Emerson, 1962; Smircich & Morgan, 1982). However, evidence has

been found to refute this proposition, further strengthening the case for examining LMX

quality from both perspectives (Brower et al., 2000; Gerstner & Day, 1997). Descriptions

of LMX quality reported by the leader and follower have been found to differ

significantly (Gerstner & Day, 1997; Schriesheim et al., 1999b). One study uncovered

relatively poor agreement between leaders and followers on the reported LMX quality as

evidenced by variance explained (R^2) ranging from .16 to .50 (Schriesheim et al., 1998).

Furthermore, a meta-analysis of LMX quality ratings involving 27 studies found a .29

average correlation between leaders and followers that increased to .37 when corrected

for measurement error of unreliability through the application of correction formulas

(Gerstner & Day, 1997). A follow-up analysis to the original metanalytical study by

Gerstner and Day (1997) examined 64 independent samples (including the 27 they

previously studied) and again found a correlation of .37 between leaders and followers

when reporting on their relationship quality (Sin et al., 2009). One may conclude from this research that leaders and followers do not appear to exhibit balanced reciprocity and, therefore, one member's viewpoint may not accurately represent the view of the other member.

The direction taken by researchers to include perceptions of both members of the dyadic relationship has been expanded to incorporate the leader characteristics preferred by followers as well as their implicit models for what makes a good leader. For example, Epitropaki and Martin (2005) measured and analyzed both the leader and follower's perceptions of the current LMX relationship quality as well as followers' preferences for certain managerial styles. They found that the more distant the leader's style was perceived to be from the style the follower prefers in a leader (when looking at positive managerial traits such as sensitive, strong, intelligent etc.), the lower the quality of LMX relationship. However, these impacts were not found when exploring negative managerial traits such as manipulative and obnoxious (Epitropaki & Martin, 2005). These findings support the notion that a follower desires certain characteristics in their leader and the lack (or confirmation) of these attributes then influences their perception of the quality of relationship.

Additionally, implicit leadership schemas (taken from ILT) seem to play an important role in determining followers' perceptions of the quality of the existing LMX relationship (Lord & Maher, 1993). The leader's perception of their dyadic relationship with a follower is more greatly influenced by the follower's performance on the job than their developed relationship quality (Lord & Maher, 1993). Engle and Lord (1997) also found this to be true, furthering the idea that ILTs and their associated leadership

schemas or recognition-based processes might be more explanatory for interpreting the quality of LMX from the followers' perspective than the leaders. Therefore, both the quality of the LMX relationship and the presence of ILTs and their impact should be considered through the lens of both dyadic partners, requiring the measurement of perceptions and preferences to be provided by both members.

Measurement Considerations

LMX was one of the first theories in organizational science to embrace and explore the multi-level nature of its constructs (Lord et al., 2017). While researchers and theoreticians in the LMX domain were early adopters of a multi-level perspective, the approach to measurement of LMX constructs has not been without shortcomings. Specifically, most measures of the theory fail to measure exchange quality in relative and dynamic terms (Lord et al., 2017).

In writings on the theory, the authors recognize that relationship quality may differ between a leader and their multiple followers (i.e., specific dyads under the same leader may have relatively different relationships) and that each of those relationships may change over time (i.e., are dynamic in nature; Schriesheim et al., 1999). A criticism raised by Lord and his colleagues is that the measurement models utilized by LMX researchers often do not recognize how relationships may change in quality throughout a specified timeframe and across followers (Lord et al., 2017).

These theoretical distinctions set LMX apart from more traditional leadership theories (Lord et al., 2017). Traditional theories tend to assume an average leadership style is present across all followers for a given leader and that each follower is treated with the same level of directness, consideration, structure, etc. over time (Lord et al.,

2017). Additionally, LMX is unique in that it emphasizes the leader-follower relationship as the central level of analysis, "rather than the locus of leadership being either the leader or follower" (Lord et al., 2017, p. 442). These reviewers also point out that LMX is among the first and few models to examine "aggregation of dyads into larger collectives and the links between each and relevant outcomes" (Lord et al., 2017, p. 442).

As envisioned by its authors, the LMX model operates at multiple levels of analysis, including leaders and followers within a dyad, leaders with multiple followers across a group, and multiple dyads within groups and organizations, etc. (Yammarino et al., 2005). Dyads may be considered either dependent or independent due to the nature and number of relationships present amongst the leaders and followers being analyzed (Jackson & Johnson, 2012). Independent dyads include a leader with only one follower, while dependent dyads involve a leader with multiple followers and are most typical in organizational settings (Jackson & Johnson, 2012). Notably, members of dyads within groups constantly compare their quality of relationship (between the leader and a particular follower) to other parallel dyads within the same group (e.g., Hu & Liden, 2013; Vidyarthi et al., 2010) and sometimes outside of the organization or group boundaries (Vidyarthi et al., 2014).

While LMX theoreticians and some LMX researchers recognize the different types of dyads and levels at which they may operate, many studies still fail to appropriately examine dyads involving LMX. Of particular concern is the absence of the dyad from most research studies examining LMX, with the focus instead on only one partner of the relationship (Matta et al., 2015). According to a meta-analysis conducted in 2009 (Sin et al., 2009), about 90% of the identified LMX studies examined the

antecedents and consequences of LMX quality from only one side of the relationship

(i.e., from only the leader or the follower's point of view). This is problematic because

LMX quality perceptions between leaders and followers only share 8-13% of the variance

(Gerstner & Day, 1997; Sin et al., 2009) and viewing the relationship from only one point

of view ignores "whether (and why) disagreement may theoretically and empirically

impact important work outcomes" (Matta et al., 2015).

Need to Examine LMX Agreement

The modest agreement on LMX quality between the leader and follower reported

in the literature is important for theoretical and practical reasons (Matta et al., 2015).

Theoretically, the interaction between LMX agreement and quality of the LMX

relationship may influence how leader-follower relationships develop and how and

whether they lead to desired outcomes (Matta et al., 2015). One may not assume that the

perspective of one party in the dyad represents the perspective of both. Furthermore,

when the two parties in the dyad do not agree on the quality of the relationship this may

be a source of tension and lead to negative outcomes. The impact of such misalignment

may be moderated by whether the relationship is poor or high quality and by which party

sees the relationship as higher quality (Kim et al., 2020; Krasikova & LeBreton, 2012;

Matta et al., 2015).

Disagreement in perceptions of LMX quality seem to be common (Gerstner &

Day, 1997; Schyns & Day, 2010; Sin et al., 2009), systematic, and important as opposed

to "random noise" (Matta et al., 2015). Typically, members of the dyad do not recognize

the discrepancies in the perceptions of relationship quality, which may argue in favor of

using outside observers with access to information from both parties to determine LMX quality (Graen, 1976, p.1207; Matta et al., 2015).

Prior to 2010, few researchers had examined the effects of convergent leader-follower LMX relationships (i.e., relationships that are marked by high leader-follower agreement about the nature of the relationship) on follower behaviors (Markham et al., 2010). Many appeals were made to encourage researchers to examine LMX agreement as a substantive variable, and researchers have begun to expand their studies to include exploration of convergence using LMX measures (e.g., Dulebohn et al., 2012; Erdogan & Bauer, 2014; Matta et al., 2015; Matta & Van Dyne, 2015; Scandura, 1999). Broadening LMX research protocols to include agreement measures requires collecting information from both the leader and follower to build a meaningful convergence construct and assess its influence on work outcomes (Schriesheim et al., 2011).

The few studies that have examined LMX quality agreement have yielded findings that support the importance of agreement as a construct of interest in the study of leadership. Matta and colleagues (Matta et al., 2015) found the higher the congruence between a leader and follower's perceptions of LMX, the higher the follower's work engagement levels. Additionally, the study found follower work engagement to be higher when a follower agrees with a leader regarding perceptions of high LMX quality than when a follower agrees with a leader regarding perceptions of low LMX quality (Matta et al., 2015). Lastly, LMX agreement explained additional variance in employee engagement and organizational citizenship behaviors in the organization (OCBO) over and beyond the effects of LMX quality, further strengthening the importance of examining the effects of LMX agreement (Matta et al., 2015).

Jackson and Johnson (2012) found LMX agreement to be higher when leaders and followers have similar relational identity levels. Relational identity encompasses the study of self-identity and explores how one defines themselves in comparison to other people and groups (Jackson & Johnson, 2012). Follower relational identity (i.e., self-definitions based on people's dyadic connections with specific others; Brewer & Gardner, 1996) positively relates to leader-rated LMX (Jackson & Johnson, 2012; Johnson & Saboe, 2011), and leader relational identity positively relates to follower-rated LMX (Chang & Johnson, 2010; Jackson & Johnson, 2012). Similar relational identity levels between the leader and follower also positively relate to LMX quality (Jackson & Johnson, 2012).

Therefore, it is to be expected that leaders and followers who have similar insights regarding their position in comparison to others might also have similar perceptions of LMX relationship quality. Research also indicated that LMX agreement between the two parties is related to leader ratings of work performance and follower attitudes (Cogliser et al., 2009). The study explored four combinations of leader and follower LMX ratings: (a) both low LMX: low leader and follower LMX; (b) both high LMX: high leader and follower LMX; (c) follower overestimation: low leader LMX but high follower LMX; and (d) follower underestimation: high leader LMX but low follower LMX (Cogliser et al., 2009). Consistent with earlier findings, their results indicated that when both are high LMX (i.e., high leader and follower LMX reports) levels of follower job performance, organizational commitment, and job satisfaction also tend to be high (Cogliser et al., 2009). Furthermore, follower underestimation was related to high levels of follower job performance, but follower overestimation was related to high levels of follower

satisfaction and organizational commitment (Cogliser et al., 2009). In conclusion, similar agreement between leaders and followers on LMX perceptions affects resulting workplace outcomes.

Interestingly, agreement between the leader and follower on non-LMX constructs has also been found to affect both LMX and various leadership outcomes. For example, reports from matched leader-follower pairs on work value congruence were found to affect leader-rated perceptions of LMX, such that the higher the congruence the higher the quality of the relationship as perceived by the leader (Minsky, 2002). As defined by the researcher, work values "represent the beliefs an individual has about the ideal ways one should behave at work" and were thought to be congruent when leaders and followers agree on what behaviors are appropriate for the workplace (Minsky, 2002). However, no significant associations were found between work value congruence and follower rating of LMX quality and leader-follower similarity of rating LMX quality (i.e., the examined congruence of leader-follower perceptions; Minsky, 2002). The role of leader-follower values-linkages in the development of LMX relationships has also been explored (Kemelgor, 1982). The value-linkage approach examined the similarity in value systems, structures of life directions that guide psychological behaviors, and found followers who are highly satisfied with their leaders are more likely to be satisfied with other aspects of their work environment (Kemelgor, 1982). Notably, the study did not utilize an LMX-centric scale but instead focused on factors that affect leader-follower relationships. Value congruence between the leader and follower has been found to relate to LMX, as well as directly to performance of both members of the dyad (e.g., Camarillo, 2003; Jung & Avolio, 2000; Markham et al., 2010). Additionally, high values agreement

between leaders and followers has been found to affect both job satisfaction and commitment levels (Meglino et al., 1989; O'Reilly et al., 1991).

Finally, Engle and Lord (1997) explored the relationships between cognitive factors (e.g., ILTs, implicit performance theories (IPTs), self-schemas, and perceived similarity), LMX quality, and liking in an organizational setting. The authors placed greater emphasis on the congruence between leaders and followers on cognitive factors as a predictor of the quality of LMX and liking (Engle & Lord, 1997). Both members' reported liking of each other was positively and significantly related to their ratings of LMX quality, as well as perceived attitudinal similarity (PAS; Engle & Lord, 1997). Interestingly, this study conducted 25 years ago did not find a significant relationship between ILT congruence and follower perceptions of LMX quality or liking but found IPT congruence related to leader perceptions of LMX quality and liking (Engle & Lord, 1997). This study has become a pivotal study for recognizing the need to explore leader-follower congruence in relation to LMX quality and other characteristics.

As this brief review indicates, the degree of congruence or agreement between the leader and follower on a range of organizationally relevant variables affects LMX perceptions (both those of individual leaders as well as agreement between leaders and followers). Furthermore, the degree of convergence appears to be associated with a number of positive outcomes (e.g., work engagement, organizational citizenship behaviors, job satisfaction, and commitment levels). These findings support the exploration of dyadic congruence on both the motivational antecedent and the outcome of LMX proposed in this research (see the section below on "A New Motivational Model Extended to Leadership: Reversal Theory" for discussion).

Instruments

Several psychometric instruments have been developed to assess LMX quality. Versions of the instruments have ranged in length from two to 25 items (Dansereau et al., 1975; Graen, Liden, et al., 1982; Graen, Novak, et al., 1982; Graen & Schiemann, 1978; Liden & Graen, 1980; Scandura & Graen, 1984; Schriesheim et al., 1999; Wakabayashi & Graen, 1984). The most widely utilized scales are the LMX-6, LMX-MDM, and LMX-7, and all are rooted in the early LMX and VDL theoretical groundings (Gottfredson et al., 2020). Importantly, Schriesheim and coauthors called attention to the "use [of] many different LMX scales, without providing clear rationale for the use of a particular measure and without much (if any) psychometric support for the soundness of the measures employed" (Schriesheim et al., 1999). This statement seems to stand true even for LMX research conducted since then.

The LMX-6 measure is a six-item measure intended to portray a multi-dimensional conceptualization of LMX to include the subdimensions of loyalty, positive affect, and perceived contribution with two items for each theoretical dimension (Schriesheim et al., 1992). The original confirmatory factors analysis utilizing two separate samples (N=281, $x^2 = 11.17$, $df = 6$, $p < .05$ and N=115, $x^2 = 17.31$, $df = 6$, $p < .01$) was conducted during the scale's creation and found a three-dimensional structure to exist for each sample (Schriesheim et al., 1992). Reliability was established through test-retest procedures of two additional samples (.77 and .82) and acceptable internal-consistency estimates were found for all four samples ($\alpha = .79$, .81 and $\alpha = .81$, .84) used for psychometric testing (Schriesheim et al., 1992). However, critics argued that the scale actually represented a single-dimension construct of LMX, which led other researchers to

develop a new, more accurate multi-dimensional measure a few years later (Gottfredson et al., 2020).

The Multidimensional Measure of Leader-Member Exchange (LMX-MDM) was designed to replace the LMX-6 by providing an accurate representation of LMX as a multi-dimensional construct (Liden & Maslyn, 1998). Validation on the scale further supported the dimensions of affect, loyalty, and contribution identified by Dienesch and Liden (1986), as well as a fourth dimension, professional respect (Liden & Maslyn, 1998). The measure contains 12 items meant to measure the "subordinate's attitudes toward their immediate supervisor and perceptions of leadership" (Duncan & Herrera, 2014, p. 14). Original development and validation involved item analysis (N=302) and construct and criterion-related validation (N=249; Liden & Maslyn, 1998). An original confirmatory factor analysis revealed a four-factor model (x^2 = 59.40, CFI = .986, GFI = .960, AGFI = .930; Liden & Maslyn, 1998). Coefficient alphas were .90, .76, .59, .91 respectively for affect, loyalty, contribution, and professional respect with test-retest correlations of .83, .66, .56, and .79 for a subsample of students (N=126; Liden & Maslyn, 1998).

The seven-item scale (e.g., LMX-7) is unidimensional in nature (Gerstner & Day, 1997) and measures the characteristics of the working relationship to determine the quality of leader-member exchange (Graen & Uhl-Bien, 1995). Graen and Uhl-Bien (1995) found the expanded measures of LMX (including those with more items) to be highly correlated with the more concise LMX-7 version and to produce the same effects in studies. These researchers also reported that the Cronbach alphas for the scale were consistently in the .80 to .90 range (Graen & Uhl-Bien, 1995). Additionally, Gerstner and

Day (1997)'s meta-analysis found the scale to have the soundest psychometric properties of all instruments investigated, with higher average alphas than the other LMX measures and higher correlations with outcomes than other measures used in studies.

A 2012 meta-analysis was conducted using 204 different studies utilizing LMX measures published between 1980 and 2009 (Dulebohn et al., 2012). Gottfredson et al. (2020) analyzed the studies used in that meta-analysis and found 145 studies (61%) used LMX-7 while 45 studies (19%) used a measure derived from LMX-7 or developed by Graen and colleagues prior to the development of that measure. Lastly, Mumtaz and Rowley (2020) recently conducted a review of LMX and outcomes utilizing 85 articles, 69 of which relied on quantitative analysis, and found 90% of the quantitative articles to use the LMX-7 scale. In conjunction with those reviews, LMX-7 has become the most widely used measure in LMX research (Gottfredson et al., 2020; Graen, Novak, et al., 1982; Graen & Uhl-Bien, 1995; Mumtaz & Rowley, 2020; Scandura & Graen, 1984).

A recent review article identified limitations associated with all three primary LMX measures. The measures were criticized for a) not being developed with a clear a priori definition of LMX; b) not clearly assessing exchanges between the two parties; and c) not being measured in dyads (Gottfredson et al., 2020). Despite these concerns, most researchers still employ the LMX-7 because of its validity and reliability evidence and widespread use in most LMX-related research (Joseph et al., 2011). The LMX-7 instrument will be adapted with a double-barreled item split into two items for use in the proposed study (See Method section).

Antecedents to LMX

The search for what drives the development of a high-quality relationship between a leader and follower began over twenty years ago (Gerstner & Day, 1997). Scholars have investigated a range of precursors to LMX quality, including perceived similarity and personality factors, and they have sometimes employed longitudinal designs to address how LMX develops over time.

Researchers found perceived similarity, expectations each has for the other, and early indicators of liking between a leader and follower (i.e., in the first five days of the relationship) to each predict LMX ratings as much as six months later (Dienesch & Liden, 1986; Liden et al., 1993; Lord et al., 2017; Wayne & Ferris, 1990). These findings highlighted the notion that LMX quality develops early on between leaders and followers (Dansereau et al., 1975; Liden et al., 1993; Lord et al., 2017). Another study on LMX development over time found certain aspects of leaders' and followers' personality to influence initial levels of LMX (Nahrgang et al., 2009). Specifically, agreeableness and follower extraversion elevated LMX quality early in the relationship. The authors also examined whether leader and member performance affects the development of the dyadic relationship over the first year (Nahrgang et al., 2009). They found the performance of the dyadic partners became more important for the relationship quality as time unfolded (Nahrgang et al., 2009). Thus, any leader and follower dyad may have either a high- or low-quality relationship, but the LMX quality is typically determined early in the relationship and remains steady over time. Taken together, these studies using repeated-measure designs provide evidence that the development of LMX occurs early and tends

to remain steady for at least a year, and the characteristics and performance of those involved also affects the quality of the relationship.

Characteristics of the leader, such as their behaviors and perceptions, have also been found to influence the leader's perception of the dyadic relationship. The leader's contingent rewards behavior, transformational leadership style, expectations of follower success, extraversion, and agreeableness are all positively related to follower perceptions of LMX quality (Dulebohn et al., 2012). Bernerth and colleagues (Bernerth et al., 2007b) found the leader's conscientiousness and agreeableness to positively relate to followers' perceived LMX quality. Interestingly, in that same study, a leader's extraversion and openness to experience were not found to positively affect direct reports' perceived LMX quality, while a leader's neuroticism was also not found to negatively relate to direct reports' perceived quality of LMX (Bernerth et al., 2007b). Leader sincerity (vs. insincerity) when giving an apology was found to lead to higher LMX quality as reported by followers (Basford et al., 2014), while emotional regulation strategies when dealing with others have also been found to relate to follower's perceptions of LMX (Little et al., 2016). In conclusion, leader characteristics affect the follower's perceptions of LMX, but one must also consider the characteristics of the follower when evaluating both the leader and follower's perceptions.

Additionally, characteristics of followers influence the follower's perception of LMX quality present between the follower and leader (Dulebohn et al., 2012). For instance, the follower's competence, agreeableness, conscientiousness, extraversion, locus of control (defined as the belief that control is outside of oneself; Rotter, 1966), and positive affectivity (defined as the extent to which the follower felt positive, enthusiastic,

engaged, and optimistic; Watson et al., 1988) all positively relate to the follower's perceptions of LMX quality present between the follower and leader (Bernerth et al., 2007b; Dulebohn et al., 2012). Unlike positive affectivity, a follower's experience of negative affectivity (defined as including fear, anxiety, irritability, hostility, fatigue, and lethargy; Watson et al., 1988) was found to negatively relate to their perception of LMX (Dulebohn et al., 2012). Follower competence and personality (e.g., Day & Crain, 1992; Gerstner & Day, 1997; Liden et al., 1993; Nahrgang et al., 2009; Phillips & Bedeian, 1994) also relate to the quality of the relationship found between the two parties as reported by both members.

Furthermore, antecedents related to the relationship between the leader and follower that describe the leader and follower's perceptions of each other have also been found to influence LMX (Dulebohn et al., 2012). Follower perceived similarity, follower affect or liking, follower self-promotion tactics, and trust in the leader are all positively related to follower perceptions of LMX (Dulebohn et al., 2012). Both leaders' and members' perceptions of value similarity and perceived similarity in problem solving predict LMX quality as well (Engle & Lord, 1997; Liden et al., 1993). Additionally, a leader's liking of the follower was found to influence performance ratings, expectations, and LMX exchanges (Turban et al., 1990). Lastly, strong and positive connections were found between LMX quality and the attitudinal outcomes of satisfaction with supervision, overall job satisfaction, organizational commitment, and role clarity (Dulebohn et al., 2012; Gerstner & Day, 1997).

Therefore, characteristics of the leader, characteristics of the follower, and each member's perception of the other member's characteristics all affect the quality of the

dyadic relationship. While most of the studies summarized above were limited to LMX perceptions of just one member, those that included both leader and follower perceptions showed a similar pattern in findings.

The similarity between leader and follower characteristics also affects the quality of LMX as reported by both parties (e.g., Bauer & Green, 1996; Dose, 1999; Nahrgang et al., 2009; Phillips & Bedeian, 1994; Tsui & O'Reilly, 1989; Turban & Jones, 1988). Fit based on demographic characteristics has been inconsistent throughout the literature while fit based on affect and personality variables has remained stable over time (Jackson & Johnson, 2012). Similarity for positive affectivity (Bauer & Green, 1996) and extraversion (Phillips & Bedeian, 1994) have been found to influence LMX. Several other studies have also supported the notion that followers evaluate LMX through social comparisons to their peers' dyadic relationships with their shared leader (e.g., Graen, Novak, et al., 1982; Hu & Liden, 2013; Vidyarthi et al., 2010).

Researchers have also repeatedly found links between emotional intelligence (EI) and LMX quality as the outcome (Ashkanasy & Daus, 2005; Chen et al., 2007; Dahling et al., 2012; Huang et al., 2010). Interestingly, two studies used EI as a covariate and found no relationship with LMX as reported by followers (Newcombe & Ashkanasy, 2002; Zacher et al., 2014). Lastly, a meta-analysis explored leader-follower fit using both subjective and objective congruence and found it to positively relate to individual outcomes such as job satisfaction, supervisor satisfaction, and LMX as measured by leaders (Kristof-Brown et al., 2005).

Outcomes of LMX

The quality of the relationship formed between the leader and follower predicts outcomes at the individual, team, and organizational levels of analysis (Gerstner & Day, 1997). LMX quality has repeatedly been found to have a positive relationship with overall job satisfaction (e.g., Seers & Graen, 1984; Wayne & Ferris, 1990) and well-being (e.g., Epitropaki & Martin, 1999; Nelson et al., 1998) for both leaders and followers. Additionally, researchers have found high-quality LMX relationships to lead to less employee turnover, more participation between parties in the workplace, higher number of promotions, higher organizational commitment, more desirable work assignments, improved job attitudes, organizational citizenship behaviors (OCBs), negotiating latitude, desired resources, better work characteristics and more support from the leader (Basu & Green, 1997; Graen & Scandura, 1987; Graen & Uhl-Bien, 1995; Ilies et al., 2007; Liden et al., 1993; Malik et al., 2015; Wilson et al., 2010). Furthermore, a meta-analysis examining results from 50 different studies found a moderately strong, positive relationship (p=.37) between LMX and OCBs as reported by both the leaders and followers (Ilies et al., 2007). LMX has a positive effect on many desired outcomes in the workplace, most notably job satisfaction, well-being, organizational commitment, safety climates, OCBs, job performance and decreased job turnover.

Three meta-analyses found significant relationships between LMX as reported by both leaders and followers and outcomes that include actual turnover, job performance, turnover intentions, and organizational citizenship behaviors (Dulebohn et al., 2012; Gerstner & Day, 1997; Ilies et al., 2007). Specifically, LMX quality is associated with a decrease in behavioral outcomes such as actual turnover, turnover intentions, role

ambiguity, and role conflict (Dulebohn et al., 2012; Gerstner & Day, 1997). Follower

perceptions of LMX quality have also been found to positively relate to affective and

normative commitment, satisfaction with pay, procedural and distributive justice, and

psychological empowerment (Dulebohn et al., 2012). While LMX quality affects both

leader and follower outcomes, it also operates at other levels of analysis.

LMX quality has repeatedly been studied in relation to affect at the within-person,

between-persons, interpersonal, team, and organizational levels (Tse et al., 2017). A

repeated-measures lab design study found that employee's perceived LMX quality with a

leader connects to their affective reaction after the leader departs and their trust in the

new leader or successor (Ballinger et al., 2010). Additionally, LMX quality is often

viewed as an antecedent to individual followers' affect, mood states, affective

commitment, or affect-driven behavior (Tse et al., 2017). LMX has often been found to

positively relate to followers perceived affective commitment (e.g., Brunetto et al., 2012;

Dulac et al., 2008; Eisenberger et al., 2010; Graves & Luciano, 2013).

When the interplay between LMX quality and safety climates is examined, LMX

quality appears to motivate followers to engage in increased levels of safety

communication and commitment to safety but only when a positive safety climate is

present (Hofmann et al., 2013). A separate meta-analysis of literature found a positive

relationship to exist between LMX quality and work engagement (Christian et al., 2011).

Additionally, two of the most studied dynamic correlates and outcomes of LMX are job

performance and organizational justice (Dulebohn et al., 2012; Park et al., 2015).

High LMX positively relates to job performance in the workplace using different

conceptualizations and measurements of the construct (Banks et al., 2014; Dulebohn et

al., 2012; Gerstner & Day, 1997; Ilies et al., 2007; Martin et al., 2016). Lastly, a 1997 meta-analysis found LMX reported by both leaders and followers to repeatedly lead to satisfaction with supervision, overall job satisfaction, commitment, role conflict, role clarity, member competence, turnover intentions, and job performance (Gerstner & Day, 1997).

LMX's Relationship to Job Performance

As previously mentioned, many meta-analyses (e.g., Banks et al., 2014; Dulebohn et al., 2012; Gerstner & Day, 1997; Ilies, et al., 2007; Martin et al., 2016) have found LMX quality to relate to job performance significantly and positively. This has held constant across many different organizational contexts and participant locations across the world. Additionally, LMX quality has been found to positively relate to both subjective performance ratings (Bauer et al., 2006; Dunegan et al., 2002; Janssen & Van Yperen, 2004; Kacmar et al., 2003; Liden et al., 1993; Schriesheim et al., 1998; Wang et al., 2005) and objective performance ratings (Duarte et al., 1994).

A study looked at the effects of an intervention of LMX leadership training for followers on their own job performance (measured both in the quantity and quality of production; Graen, Novak, et al., 1982). This study stands out as particularly interesting because of its use of an intervention, something typically not used in relation to LMX because of its tendency to be measured using surveys in an organizational context. The authors found that LMX leadership training for followers was positively and significantly related to their own job performance and that employee growth needs moderated the relationship (Graen, Novak et al., 1982). Those who reported high growth needs outperformed those reporting lower growth needs, which makes sense because according

to their self-ratings they had farther to improve in terms of productivity, but it is important to note that researchers did not find a statistically significant moderating effect for leaders in terms of their perceived growth needs of the follower and their reported LMX quality (Graen, Novak, et al., 1982). Interestingly, leader performance ratings collected for each follower also failed to agree with the productivity objectively measured for that same employee (Graen, Novak, et al., 1982). This study was groundbreaking for not only for utilizing an intervention and pre-and-post measurement but also for measuring LMX and other variables according to both the leaders and the followers.

Additionally, a more recent meta-analysis explored how LMX leads to performance when conceptualized multi-dimensionally into task, citizenship, and counterproductive performance (Martin et al., 2016). LMX, reported by either the leader or follower, was found to positively relate to follower task and citizenship performance and negatively to follower counterproductive performance (Martin et al., 2016). Not surprisingly, higher quality relationships between the leader and follower lead to task and citizenship behaviors that typically propel the organization forward in a positive direction, while lower quality relationships lead to counterproductive behaviors which negatively affect the organization and workplace (Martin et al., 2016). These relationships between LMX and citizenship and task performance were found to be positively affected by mediators such as role clarity, trust, job satisfaction, organizational commitment, motivation, and empowerment (Martin et al., 2016). Interestingly, the mediating effect was stronger for citizenship performance than task performance leading one to believe this occurs because citizenship behaviors are outside of the required job role and more likely to be influenced by other constructs (Martin et al., 2016). As seen in

previous studies, the researchers did not find the type of LMX measurement tool used to moderate the LMX-performance relationship, furthering the idea that the different types of measurements created for LMX are all assessing the same overall construct (Martin et al., 2016).

Lastly, while LMX is recognized as a social exchange process between two individuals (the leader and the follower), researchers have now begun researching team-member exchange (TMX) that describes the quality of social exchange relationships within work groups and teams (Banks et al., 2014). Banks and fellow researchers (Banks et al., 2014) explored both LMX and TMX and found that TMX does not significantly contribute to explaining individual job performance above and beyond LMX. It appears that TMX is a better predictor of outcomes such as organizational commitment and job satisfaction that are more likely influenced by other members in the workplace and team contexts, while LMX is a better predictor of job performance and turnover intentions which seems to be more individually driven (Banks et al., 2014).

Mediators and Moderators of LMX Relationships

Having briefly summarized several antecedents and outcomes to LMX quality, one may also consider the role of variables that mediate or moderate the antecedents of LMX or the impact LMX has on outcomes. A brief summary of studies that examined the role of mediators and moderators in the relationship between LMX and outcomes and between antecedents and LMX is below.

Mediators of Antecedent – LMX Relationships

A study conducted by Sears and Hackett (2011) explored the relative influence of both leader and follower personality on the quality of the LMX relationship and whether

that relationship was mediated by other variables. Interestingly, the influence of leader and follower personality traits on LMX quality was mediated by follower role clarity and follower affect toward their leader (Sears & Hackett, 2011). Furthermore, more of the variance in follower's LMX ratings was explained by their affect toward their leader than by their perceptions of role clarity (Sears & Hackett, 2011).

Moderators of Antecedent – LMX Relationships

A comprehensive meta-analysis investigating the relationship between antecedents and LMX explored cultural dimensions and power distance as possible moderating influences (Dulebohn et al., 2012). The results suggested that the relationship between trust and LMX is moderated by the dimension of the culture (i.e., whether the culture was high or low in individuality; Dulebohn et al., 2012; Hofstede, 2001). The same results were found for the relationship between transformational leader behaviors and LMX where the relationship was weaker when individuality was low than when individuality was high (Dulebohn et al., 2012). As for power distance as a possible moderator, results indicated power distance to moderate the relationships between trust and LMX and transformational leader behaviors and LMX (Dulebohn et al., 2012). Another study found leader's competence as reported by the leader's supervisor rating to moderate the relationship between the leader's trust in the follower and LMX as reported by the follower (Byun et al., 2017).

Mediators of LMX - Outcome Relationships

Matta and colleagues found work engagement mediated the relationships between LMX leader-follower agreement and (a) organizational citizenship behaviors that benefit the organization in general (OCBO) and (b) organizational citizenship behaviors that

benefit specific individuals in the organization (OCBI; Matta et al., 2015). Trust has also been found to mediate the relationship between LMX and follower performance (Martin et al., 2016). LMX's relationship with citizenship behaviors and task performance was also found to be positively affected by mediators such as role clarity, trust, job satisfaction, organizational commitment, motivation, and empowerment (Martin et al., 2016).

Moderators of LMX - Outcome Relationships

The positive relationship between LMX and follower safety citizenship role is moderated by safety climate, such that high-quality LMX relationships lead to enlarged safety citizenship role definitions only when a positive safety climate is present (Hofmann et al., 2013). Additionally, the positive relationship between LMX and OCBs has been reported as moderated by the role of the intended target for the behaviors, with LMX more strongly predicting individual-targeted OCBs than organization-targeted OCBs (Ilies et al., 2007).

Additional Moderators

The availability of different versions of the LMX scale has raised the issue of whether observed relationships between LMX and other constructs vary depending on the LMX instrument (Gottfredson et al., 2020). The version utilized by a particular researcher is typically chosen based on the number of questions it would be feasible to include, the context in which the survey is deployed, the cultural backgrounds and languages of the potential participants, and the dimensionality of the conceptualized construct (Gooty et al., 2012; Gottfredson et al., 2020). While many researchers have examined the issue of whether the type of LMX measure moderates the observed

relationships, researchers have not found evidence that the version of the LMX instrument used affects the relationship between an antecedent and LMX (Banks et al., 2014; Dulebohn et al., 2012; Martin et al., 2016).

Additionally, no evidence has been found that work settings (defined as industrial settings, educational settings, public settings, or health care; Banks et al., 2014; Dulebohn et al., 2012) and participant location (defined as either the United States or elsewhere) significantly affect the relationship between LMX and its antecedents or between LMX and various outcomes (Dulebohn et al., 2012).

LMX as a Mediator and Moderator

As described in the preceding sections, LMX quality has moderators and mediators that affect its relationship to antecedents and outcomes. The sections that follow summarize investigations into whether LMX quality may also operate as a moderator or mediator for other constructs (Hughes et al., 2018).

LMX as a Mediating Variable

Several meta-analyses have found that LMX accounts for much of the variance between its own antecedents and consequences (Dulebohn et al., 2012; Gerstner & Day, 1997; Ilies et al., 2007). For instance, LMX was found to play a strong, partial mediating role between the antecedent of positive affectivity and the outcome of general job satisfaction (Dulebohn et al., 2012). These findings, coupled with the direct relationships between the antecedents and LMX, support the proposition that the quality of the relationship between the leader and follower predicts the outcomes or consequences and not the follower's or leader's behaviors and perceptions (Dulebohn et al., 2012). Jackson and Johnson (2012) also found LMX quality to fully mediate the relationship of self-

identity fit with job performance, regardless of whether the leader or follower reported the LMX quality. Another study found LMX quality, as reported by either the leader of follower, mediates the relationship between interactional justice and task performance and creative performance (He et al., 2017). LMX also mediates the relationship between idiosyncratic deals, otherwise known as individualized work arrangements, and performance outcomes, an interesting finding that explores the cross-level effects of LMX (Anand et al., 2018).

LMX as a Moderating Variable

LMX has also been found to moderate the relationship between leader-follower work values congruence and follower career satisfaction (Erdogan et al., 2004). Researchers have also explored LMX quality and differentiation by considering the configuration or mix of high and low LMX relationships within a group (Seo et al., 2018). LMX configurations were found to moderate the influence of LMX differentiation on collective turnover through collective organizational commitment (Seo et al., 2018).

Taken together, LMX as a construct has been found to operate as an antecedent, outcome, mediator and moderator in the study of leadership, yet the extent to which each has been studied varies greatly. One of the goals of the proposed research is to advance our understanding of how and why LMX quality operates by looking at the role of motivation in forming the relationship quality of dyads.

Treatment of Motivation in the Leadership Literature

The definitions of leadership previously discussed include several key elements: two or more parties are involved (Hollander, 1992; Uhl-Bien et al., 2014), there is influence of at least one party on another (Ruben & Gigliotti, 2017), and energies are

directed toward achieving a commonly agreed upon goal (Rost, 1991). Motivation is an

important aspect of this definition of leadership. Pinder (2008) described motivation as

the determinant of the form, direction, intensity, and duration of behaviors. Motivation

has also been characterized as the "factors of events that energize, channel, and sustain

human behavior over time" (Steers et al., 2004, p. 279). Motivation has a central role to

play in how leaders are able to effectively "influence individuals to achieve a common

goal" (Northouse, 2021, p. 6). However, authors often talk around motivation and do not

include the actual construct in their studies. For instance, a review article examined 26

meta-analyses to promote work motivation in organizations through leadership, yet none

of those articles included explicitly studied "motivation" as a construct but instead relied

on other constructs that were assumed to promote motivation (e.g., goal setting, feedback,

work design, financial incentives, and training; Wegge et al., 2010). Furthermore, a state-

of-the-science review on leader-follower dyad research analyzed 79 articles and created a

nomological network of the findings (Kim et al., 2020). The network included 132

empirically supported hypotheses for pure leader-follower dyads, yet the word

"motivation" was never included, with the most similar constructs being work

engagement, goal setting, and growth needs strength (Kim et al., 2020).

Furthermore, research has found leaders to play a vital role in the motivation of

employees (Hannah & Lester, 2009). In fact, leadership effectiveness is often established

upon and defined according to the leaders' ability to motivate followers towards a

mutually agreed upon goal, vision, and/or mission (Kark & van Dijk, 2007; Shamir et al.,

1998). Yet, leadership research continues to inadequately investigate the processes and

techniques through which leaders successfully motivate followers (Kark & van Dijk,

2007), and leadership theories differ in the centrality of motivational constructs to their model. Kark and van Dijk (2007) summarized the gap in research by stating, "Although recent work has stressed the importance of motivation to leadership processes (e.g., Yukl, 1998), the leadership literature, in general, has paid limited attention to the underlying psychological processes and mechanisms through which leaders motivate followers" (Kark & van Dijk, 2007, p. 500).

Leadership Models in which Motivation is a Central Construct

Examples of leadership theories that explicitly recognize the role of motivation and include it as a central element of the model include path-goal theory, motivation to lead, and motivation to manage.

Path-goal Theory of leadership is perhaps the best example of a leadership model that explicitly incorporates motivational constructs. The theory was developed to connect traditional leadership approaches focused on leader behaviors to new developments in terms of work motivations (House, 1971; House & Dessler, 1974; House & Mitchell, 1974). In fact, the "path-goal approach has its roots in a more general motivational theory called expectancy theory" (House & Mitchell, 1974, p.1). Expectancy theory, as stated in the original theorist's article, states that an individual's attitudes or behaviors can be predicted from: a) "the degree to which the job or behavior, is seen as leading to various outcomes (expectancy) and b) the evaluation of these outcomes (valences)" (House & Mitchell, 1974). As applied to leadership, the leader's role is to behave in ways that motivate their followers to expect their efforts to lead to effective performance and valued rewards (House & Mitchell, 1974).

Path-goal theory seeks to connect commonly studied leadership behaviors (e.g., directive, supportive, participative, and achievement-oriented behaviors) to follower motivations (House, 1971; House & Dessler, 1974; House & Mitchell, 1974) and explicitly recognizes the importance of a leader effectively motivating a follower to accomplish a mutually agreed upon goal (Chemers, 2000). The theorists state, "the theory suggests that a leader's behavior is motivating or satisfying to the degree that the behavior increases subordinate goal attainment and clarifies the paths to these goals" (House & Mitchell, 1974). Additionally, a leader's behavior towards its followers is influenced by the degree of satisfaction, performance, and motivation established by the followers (House, 1971), therefore recognizing the bi-directional effect of the follower's motivation on the leaders' resulting behaviors with a motivational theory at its core.

Work on motivation to manage (Eagly et al., 1994; Miner, 1965) and motivation to lead (Chan & Drasgow, 2001) are similar in the conceptual space they endeavor to explain, while also unique in the leadership literature. They are unique in the explicit focus on why an individual would be motivated to become a leader. Central to both constructs is the desire to fulfill a leadership role within an organization (Chan & Drasgow, 2001; Eagly et al., 1994; Miner, 1965). Motivation to manage captures the degree to which leaders feel the urge or are motivated to fulfill the requirements of a managerial role (Eagly et al., 1994). Motivation to lead (MTL), introduced by Chan and Drasgow (2001), is described as an "individual difference that represents the desire to attain leadership roles as well as expend effort to fulfill leader role requirements" (Badura et al., 2020). MTL consists of three different conceptualized types: affective-identity MTL (AFF-MTL) is the degree to which one visualizes themselves as a leader and enjoys

the role, social-normative MTL (SN-MTL) is the degree to which one views leadership as

a responsibility and duty, and non-calculative MTL (NC-MTL) is the degree to which

one views leadership opportunities positively even when the leader does not receive

much in return or potential losses are involved (Badura et al., 2020; Chan & Drasgow,

2001).

Both motivation to manage and MTL apply a general model of motivation to

describe a leader's intent to lead followers. However, both the motivation to manage and

MTM models focus on the motivation of an individual to be a leader (manager) and not

on the role of the leader as someone who motivates others. As a result, these theories fail

to address a core component of leadership, namely, the leader's intent to motivate

followers towards a common goal. Both models appear to ignore the bi-directional nature

of both the motivations and relationships.

Leadership Models Implying a Role for Motivation

While the theories discussed above clearly include the role of motivation in their

models, other leadership theories seem to include motivation as an implied or inherent

component. The theories used as examples in this section qualify as leadership models by

virtue of including the core elements of leadership as defined by Hollander (1992), Ruben

and Gigliotti (2017), and Rost (1991; i.e., involves two parties, the influence of one party

on another, and motivation towards a mutually desired goal). The models described in

this section have been somewhat circumspect in describing a role for motivation. The two

most highly researched of these are transformational leadership and LMX, and neither

clearly nor explicitly incorporate a role for motivation. Instead, these models appear to

implicitly assume the importance of motivation in inspiring others to achieve a goal. Both

theories use motivational language and terms in laying out its hypotheses and rationale, yet they do not explicitly include the construct of motivation in the model to be tested and assessed for impact.

In the case of transformational leadership, various authors have posited that leaders achieve beneficial outcomes by motivating and inspiring others (Bass, 1985; Bass & Riggio, 2006; Conchie, 2013). They also discuss how leaders may use group identification to motivate employees (Gagné & Deci, 2005; Wang & Howell, 2010). However, this model, as well as others, rarely, if ever, include constructs such as how well or how often and in what manner leaders foster motivation.

LMX also relies on motivation as an implicit component of the theory even though an original contributor to LMX theory posits that the quality of the relationship between the leader and follower is dependent upon the motivations of both parties involved (Uhl-Bien, 2006). Mumtaz and Rowley (2020) recently conducted a comprehensive review of 85 articles to summarize findings of LMX and outcomes. The authors failed to identify motivation as a variable of interest throughout their search (Mumtaz & Rowley, 2020). In summary, motivation is, by definition, a key mechanism behind leadership, yet a strong emphasis is not put on motivation as a predictor, outcome, mediator, or moderator of LMX.

There has, however, been some effort to bridge the gap between LMX and motivation theory. A summary of those efforts follows.

Motivational Models Extended to Leadership

A few researchers have recognized the need for uniting theories of leadership and motivation to build a more accurate and complete picture of the processes in action.

Much of this effort has involved self-determination theory (SDT) because of its comprehensive and recognized framework for understanding the interplays of self-determination and motivation at work (Deal et al., 2013; Deci et al., 2001; Deci & Ryan, 1985, 2000; Gagné & Deci, 2005; Graves & Luciano, 2013; Ryan & Deci, 2000, 2002). Deci and Ryan (1985) defined work motivation in relation to SDT as "a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work related behavior and to determine its form, direction, intensity, and duration." The leadership theories involved in these studies attempting to bridge are typically LMX or transformational leadership. Additionally, research on LMX has been extended to investigate the impact of motivational language and the type of motivation present for the follower.

SDT Motivation and Transformational Leadership

Gagné and colleagues (2015) included motivation constructs from SDT in their exploratory model and found a positive relationship between transformational leadership and autonomous motivations of integrated regulation, identified regulation, and intrinsic motivation. A positive link between transformational leadership and followers' reported experience of intrinsic motivation has also been discovered (Charbonneau et al., 2001; Shin & Zhou, 2003). Conchie (2013) addressed the role of motivation in transformational leadership through a two-party study. SDT was again the model of motivation adopted in the study. Findings indicated that follower intrinsic motivations mediate the relationship between transformational leadership and follower safety behaviors (Conchie, 2013). The findings from these studies support the notion that motivation (as conceptualized in SDT) plays an important role in transformational leadership.

SDT as a Contributor to Climate

Self-determination theory research also recognizes the impact the leader plays in creating an environment for the follower that allows them to experience feelings of need satisfaction and autonomous motivation (Gagné & Deci, 2005; Graves & Luciano, 2013). Workplace contexts, such as leadership, have been found to be particularly important for facilitating need fulfillment and championing autonomous motivation (Baard et al., 2004; Deci & Ryan, 2000; Gagné, 2003; Gagné & Deci, 2005; Graves & Luciano, 2013; Van den Broeck, Vansteenkiste, & De Witte., 2008). Leader behaviors such as listening to the followers' perspectives, providing followers with a choice of tasks to complete, giving informative feedback, and encouraging ingenuity have all been found to encourage the development of autonomous motivation among followers (see Baard et al., 2004; Richer et al., 2002; Van den Broeck, Vansteenkiste, De Witte, et al., 2008). Additionally, the SDT literature indicates that supportive leadership is important in the promotion of need fulfillment (Baard et al., 2004; Gagné, 2003; Gagné & Deci, 2005; Otis & Pelletier, 2005; Richer & Vallerand, 1995; Van den Broeck, Vansteenkiste, & De Witte., 2008). These findings support the linkage of SDT and leadership theories in understanding the process by which a leader successfully motivates a follower to achieve a common goal.

SDT and LMX

Graves and Luciano (2013) explored the connection between SDT and LMX after recognizing the growing evidence that the quality of workplace relationships is associated with one's autonomous motivation (Fernet et al., 2010; Richer et al., 2002). Graves and Luciano (2013) united LMX and SDT to examine the role of the leader in encouraging followers to feel need satisfaction and autonomous motivation (Gagné &

Deci, 2005; Graves & Luciano, 2013). Using structural equation modeling (SEM), the

researchers found followers' perception of LMX quality positively related to the need for

competence, autonomy, and relatedness, which in turn were positively associated to

autonomous motivation (Graves & Luciano, 2013). In short, this investigation found a

link between LMX and several motivation constructs, specifically LMX was an

antecedent to motivation.

LMX and the Motivating Language Framework (ML)

A study by Mayfield & Mayfield (2009) investigated whether congruency

between what a leader does (behavior) and what they communicate heightens follower

outcomes, with LMX included as a mediator. The study utilized a framework from

communications theory (motivating language or ML) as the motivational component.

LMX quality fully mediated the relationship between leader communication using the

motivating language framework (ML) and follower performance and job satisfaction

(Mayfield & Mayfield, 2009).

LMX and Task Motivation

Lastly, followers' task motivation has been found to mediate the positive

relationship between follower reported LMX and follower creativity and performance

(Tierney et al., 1999; Weng, 2016). For the purposes of these studies, task motivation was

defined as "the employee's attitude and initial level of motivation towards a particular

task" (Amabile, 1988). Furthermore, motivation has also been found to mediate the

relationship between follower rated LMX and task and citizenship performance (Martin

et al., 2016). In a similar vein, followers reporting high motivation and high-quality LMX

relationships may find their work to be more interesting and, in result, have a more

positive outlook or attitude when facing challenges (Graen et al., 1996; Graen, Novak, et al., 1982; Graen & Uhl-Bien, 1995). In conclusion, LMX has been found to positively relate to follower creativity and performance with motivation as the mediating variable.

One implication of these findings is that LMX quality appears to foster motivation in followers, which then leads to better outcomes. This is significant because it starts to build a picture of how and why LMX quality operates (i.e., that the nature of the leader-follower relationship is linked somehow to follower motivation).

A New Motivational Model Extended to Leadership: Reversal Theory

The goal of the proposed research is to elucidate how LMX relates to the motivational experiences of followers. There was an opportunity to take the most widely researched leadership model of recent years (LMX) and investigate whether agreement on the extent to which a motivational climate is set by the leader is an antecedent of the quality of the LMX relationship. The model for defining the motivational climate encouraged by the leader is reversal theory (Apter, 1982, 1989, 2005, 2013), which is discussed more fully in a later section. Motivational climate refers to the environment a leader may promote as a means of encouraging followers to work toward a common goal. Specifically, motivational climate consists of the "reasons why" followers should exert themselves, and these reasons (i.e., motivations) are conveyed by leaders to influence and energize followers (Apter, 2005). Reversal theory lays out eight qualitatively different motivations (i.e., reasons why a follower should want to expend effort), and each provides followers the opportunity to experience the rewards of work in different ways (Apter, 2005). The present study explored the role of leaders' efforts to encourage motivations in shaping the quality of the LMX relationship. The design took a dyadic

view of the extent to which motivations are encouraged (e.g., motivational climates) by

focusing on a) the agreement between leaders and followers on the extent to which

motivations are encouraged and b) the agreement between leaders and followers on

perceptions of LMX quality.

Reversal Theory

Introduction to Reversal Theory

Reversal theory is a general psychological proposition of motivation, emotion,

and personality that identifies eight motivational states to explain behaviors and

experiences (e.g., Apter, 2001). The motivational states provide a fluid, internal structure

that influences people's actions and experiences. Motivational states are defined in terms

of what the individual wants at a particular moment, regardless of whether they are able

to achieve that state (Apter, 2005). The theory rests upon the assumption that individuals'

motivational state of mind are changeable and adaptable to the situation; therefore, a

person may act differently at different points in time, even in the same situation (Apter,

2005).

The eight motivational states in the reversal theory model are organized in pairs

of opposites: mastery and sympathy, telic and paratelic, self-oriented and other-oriented,

and conforming and negativist (Apter, 2001, 2005). At any given moment, one state from

each of the four pairs is active because the motivational states comprising each pair

represent opposite ways of interacting with everyday experiences. For example, one may

experience the mastery and conforming states upon waking in the morning but may

switch into self-oriented and rebellious states by lunchtime. The mastery state implies

that an individual wants to control their interactions and experiences in a dominating

manner. In contrast, the sympathy state involves an individual's desire to develop nurturing and intimate relationships. The telic-paratelic pair relates to whether the motivation is about means or ends, with the telic state being the motivation to reach a desired future outcome, and the paratelic state representing the motivation to engage in an activity for the experience and sake of enjoyment in the moment. The self-oriented state refers to wanting to do something for the sake of one's personal benefit. In contrast, the other-oriented state is the motivation to benefit someone other than oneself. While in the conforming state, an individual wants to follow the rules that give the situation clarity of expectations and predictability, but while in the negativist state, the individual desires to break free of those rules and challenge the status quo.

Reversal theory has explored and provided explanations for various real-world issues (Apter & Desselles, 2012). For example, researchers have investigated the link between people's television program choices and perceived threat (Portell & Mullet, 2014), predictors of aggressive driving (Lafreniere et al., 2021), teachers motivating their students in relation to lecture engagement (Cramer & Lafreniere, 2015), effects of performance feedback (Castillo et al., 2021), and the creation of smoking cessation programs (O'Connell et al., 2000), to name a few. As this abbreviated list attests, reversal theory has explored many different content areas and continues to uncover various human tendencies of motivation.

Reversal Theory Applied to Leadership

Researchers and practitioners have applied reversal theory constructs to leadership as well. They propose that leaders create a motivational climate in which followers are encouraged to experience various motivations by providing followers with

opportunities for experiencing and satisfying some motivations more than others (Carter, 2002). The leader creates a climate for followers that can be described as "what it is like to be around someone" motivationally speaking (Apter, 2013). The theorist describes an example in which a leader fosters a climate in which the telic state is encouraged: "A particular leader might be someone who sees the big picture, and reminds everyone of it, in this way tending to induce the serious [telic] state [purpose]" (Apter, 2013). Another leader may encourage followers to be in both the rebellious and telic states because the leader is interested in fostering creativity with a purpose. This climate is similar to the "creative abrasion" described by Hill in her research on the climate at Pixar (2017).

It has been proposed that leaders should develop motivational techniques and rewards to fit their followers instead of always emphasizing specific goals (Lord & Brown, 2001). A leader should work to create a motivational climate that compliments the needs of their followers. In addition to adapting to their followers, leaders are also advised to consider the situation in which they operate in order to provide followers with a diverse climate environment in which all eight motivational states are present at different times (Carter, 2002). According to Carter and Kourdi (2003), the motivational climate consists of the conditions created by the leader for the followers to experience the situation in different ways. The theory posits that leaders who provide a diverse, wide climate will be more likely to have followers who prosper due to the expansive array of motivational climates they experience (Apter, 2001).

Reversal theory applied to leadership focuses on the climate created by the leader for and experienced by each individual follower. A separate set of theory-driven constructs have been proposed to differentiate motivational climates created by a leader

from motivations experienced by individuals (e.g., staff members, followers). Each

motivational climate condition reflects one of the eight basic motivations (Robson, 2007).

The eight climate conditions are *Purpose* (in which the telic state is encouraged), *Energy*

(in which the paratelic state is encouraged), *structure* (in which the conforming state is

encouraged), *Change Orientation* (in which the rebellious state is encouraged), *Individual*

Contribution (in which self and mastery states are encouraged), *Enablement* (in which

other and mastery states are encouraged), *Consideration* (in which self and sympathy

states are encouraged), and *Warmth* (in which other and sympathy states are encouraged).

See Figure 1 for a summary of the climates and their associated motivations.

Figure 1

Reversal Theory Motivational States and Corresponding Leadership Microclimates

Purpose	Structure	Individual Contribution	Consideration
Telic	*Conforming*	*Self-Mastery*	*Self-Sympathy*
↕	↕	↕	↕
Paratelic	*Rebellious*	*Other-Mastery*	*Other-Sympathy*
Energy	Change Orientation	Enablement	Warmth

Note. Adapted from Apter, M. J. (2001). *Motivational Styles in Everyday Life: A Guide to Reversal Theory* (pp.532). American Psychological Association.

When a leader encourages followers to be in the telic state (e.g., focus on the long-term goals with a value of achievement), they are said to be encouraging a motivational climate characterized by purpose. When a leader encourages a follower to be paratelic (e.g., engaged and energetically involved in the tasks at hand), they are encouraging a motivational climate with energy (Robson, 2007). A motivational climate with structure occurs when the leader encourages the conforming state (e.g., by establishing roles, routines, processes, and expectations to increase efficiency and productivity). When a leader encourages a follower to be in the rebellious state and challenge norms or rules, they are creating a climate characterized by change orientation, perhaps by encouraging creativity, innovation, and freedom to bring about change in the organization (Robson, 2007). When followers are encouraged to exercise power and authority in ways that make a contribution (i.e., be in the self-mastery motivational state), a climate of Individual Contribution is fostered. When leaders encourage followers to cooperate and collaborate with others (i.e., the other-mastery motivational state), they are fostering a climate of Enablement. When the leader encourages followers to want to be cared about as people (i.e., self-sympathy motivational state), a climate of Consideration is built. When leaders encourage followers to value caring about other coworkers (i.e., other-sympathy motivational state), a climate of Warmth grows (Robson, 2007).

Reversal theory acknowledges the possibility that a leader might want very different things from what their followers seek or desire (Carter, 2002). The type of motivational climate desired by the follower changes throughout the day depending on their own motivational states, situations, and tasks at hand. A successful leader must recognize the followers' desires and adjust their leadership style accordingly. Leadership

may be viewed as an intricate process that involves the leader, the follower, and the situation (Daft, 2011; Northouse, 2008; Yukl, 1998), making the dynamic and dyadic model of reversal theory-based leadership well-suited for application.

Present Study

As stated previously, this study examined how LMX relates to the motivational experience of followers through a purely dyadic design. It explored the question of what drives the quality of relationships from the perspective of both the leader and follower? The research investigated whether agreement on the extent to which the leader encourages any of the motivational climates described in the theory is connected to the quality of the LMX relationship between the leader and follower. The dyadic design involved analysis of the agreement between leaders and followers on both the predictor and outcome variables: extent to which a motivational climate is encouraged by the leader and LMX quality between the leader and follower, respectively.

H1: The extent to which a motivational climate is encouraged by the leader positively relates to the quality of the leader-follower relationship as perceived by both leader and follower at the dyadic level.

H2: The extent to which a motivational climate is encouraged by the leader positively relates to the quality of the leader-follower relationship as perceived at the group level (e.g., leader or follower level as a whole).

CHAPTER 2

METHOD

Participants

The sample consisted of archival data from participants recruited as part of leadership-development programs at large organizations, as well as a supplemental sample of newly collected data. All archival data was collected prior to the leadership-development programs to avoid biases. The archival data included participants who completed the ALP and LMX-7 between 2018 and 2022. Participants in the supplemental sample completed the ALP and LMX-7 in 2022 for self-development or for extra credit in university courses. New participants were required to agree to an informed consent statement (see Appendix I) before beginning the study.

All participants, regardless of source, voluntarily completed the instruments, functioned as a formal leader or follower in an organization, were 18 and over, and were allowed to withdraw at any time without penalty. Participants with direct reports were classified as leaders.

Taken together, a total of 246 separate observations (123 leader cases and 123 follower cases) were collected for the study. However, 18 observations (9 leader cases and 9 follower cases) were removed from the study due to missing data or non-compliant responses. (See the Results section for details on the pre-analysis data screening.) Because the focus of the study is on dyads, the removal of either a leader or follower's

response requires the removal of the corresponding matched response as well. Therefore, the removal of one participant actually requires the removal of both observations from that dyad (e.g., both the leader and corresponding follower cases). After removal of matched dyadic responses in which at least observation was incomplete or noncompliant, the retained, combined sample consisted of 228 observations for the analysis.

The retained sample included three followers who reported to more than one leader (e.g., each follower answered about three different leaders). These followers completed the surveys once for each leader. The demographic data from each of these followers was only included once in the descriptive statistics. Similarly, the majority of leaders took the survey several times in order to describe their motivational climate (ALP) and relationship (LMX) with each follower as their frame of reference each time. The retained sample included eight (or 17.39%) leaders who took the survey once, eight (or 17.39%) leaders who took the survey twice, and 30 (or 60.87%) leaders who took the survey three times, with a mean of 2.48, median of three, and standard deviation of 0.78 for the number of times a leader completed the survey about a different follower. Their demographics were only counted once in reporting descriptive statistics.

The retained sample of 228 observations consisted of 46 leaders, 108 followers, and 114 dyads. The average age of the retained sample of leaders was 36.23 years ($SD =$ 15.08), with ages ranging from 20 to 71 years old and three leaders choosing not to disclose their age. Female leaders out-numbered males (30 to 14, or 65% female), with two leaders not indicating their gender. The leader sample identified as 70% white, 11% African American, 4% Hispanic, Latino, or Spanish Origin, 2% Asian, 2% American Indian or Alaska Native, 4% some other race, ethnicity, or origin, and 2% opted not to

respond. The proportion of the sample by geographic location was as follows: South

91%, West 2%, Midwest 0%, Northeast 0%, and "Other" region 2%.

The average age of the retained sample of followers was 23.37 years ($SD = 7.91$),

with ages ranging from 18 to 55 years old and four followers choosing not to disclose

their age. Female followers outnumbered males (81 versus 25, or 75% female), with two

followers not indicating their gender. The follower sample identified as 73% white, 19%

African American, 1% Hispanic, Latino, or Spanish Origin, 1% Asian, 1% American

Indian or Alaska Native, 1% some other race, ethnicity, or origin, and 1% opting not to

respond. As for the geographic location indicated by their "home", 1% indicated the

Midwest, 0% indicated the Northeast, 94% indicated the South, 1% indicated the West,

and 3% indicated "other." The leader sample was older than the follower sample by

approximately 13 years, both samples were predominantly female and white, but higher

proportions of females and African Americans were included in the follower sample.

Prior to collecting the supplemental data, a power analysis was conducted on the

planned analyses. The procedure for determining the necessary sample size was not

straightforward using commonly available packages such as G*Power 3 (Faul et al.,

2009). Specifically, G*Power does not include within-and-between analysis (WABA), an

inferential system developed by Dansereau and colleagues (Dansereau et al., 1984;

Dansereau & McConnell, 2000) as an option. WABA I relies on ANOVA while WABA

II relies on correlation-based procedures (Dansereau et al., 1984) to conduct the

appropriate analyses. Due to the nature of the hypotheses in the present study, sample

sizes must be determined at the individual level (e.g., Level 1) and the dyadic level (e.g.,

Level 2). As a result, two different estimates are made for each step in the WABA

analysis (Dansereau et al., 1984). WABA is discussed in more detail in the sections that follow, but it has been used by several teams of researchers to investigate leader-follower dyads (e.g., Douglas, 2012; Gooty & Yammarino, 2011; Markham et al., 2015; Schriesheim, 1995).

Working within the confines of the G*Power package, sample size estimates were calculated for both ANOVA and correlation procedures because of their foundational support of the WABA procedure. The estimated minimum sample sizes were 128 and 97, respectively (Faul et al., 2009). The ANOVA estimates assumed $\alpha = .05$, power of .80 to detect a change in the F statistic that is significantly greater than zero, a small effect size (.25), and comparison of 2 groups. The estimated sample size for ANOVA was 128 individuals (e.g., 64 leaders and 64 followers) for Level 1 and 128 dyads for Level 2 analyses (e.g., matched leader and followers). The estimated sample size for the correlations assumed $\alpha = .05$ and power of .80, and an expected correlation of .25. The estimated sample size for correlations at Level 1 was 97 individuals (e.g., 49 leaders and 49 followers) and 97 dyads at Level 2. Therefore, taking a conservative position, the present study aimed to collect data from the higher figure (i.e., a minimum of 128 matched dyads). A non-compliance rate of at least 5% was expected for data collected through online platforms (Barends & de Vries, 2019). Therefore, the target number of responses was 135 dyads.

Analysis was completed on 228 individual cases and 114 matched dyads. Although this sample size did not meet the target, I continued with the analyses based on an estimated power of .96 for ANOVA at Level 1 (i.e., individuals) and .75 at Level 2 (i.e., dyads), using G*Power. The estimated power for the obtained sample was .99 for a

correlation at Level 1 and .86 at Level 2. All estimates were determined using the same parameters as above, 0.25 effect size, and .05 alpha. In sum, the sample size provided sufficient power (.80 or higher) for three of the four analyses. Only the ANOVA at Level 2 would be considered under-powered.

Measures

Participants identified as a leader completed the ALP-L survey on which they indicated the extent to which they create each climate for their followers, and they completed the LMX-7 to describe the quality of their relationship with each of their followers. Participants identified as followers received the ALP-S survey to report their leader's current leadership style, and the LMX-7 to describe the quality of their relationship with their leader. If participants qualified as both a leader and follower, they were able to answer the questionnaire two separate times with a different frame of reference each time (i.e., as the leader to a follower the first time and as a follower of another leader the second time). In other words, a participant could answer as a leader describing their own leadership style for and relationship with their follower and then respond again as a follower describing their leader's leadership style and type of relationship with them. Additionally, followers were able to respond to the surveys multiple times with a different leader in mind each time, and three followers responded three times each for a total of nine cases.

Apter Leadership Profile for Leaders and Followers (ALP-L and ALP-S)

The motivational climates a leader creates for their followers were assessed using the ALP-L and the ALP-S. The Apter Leadership Profile for both leaders and staff (ALP-L and ALP-S; Carter, 2007) were both designed by four reversal-theory subject matter

experts (SMEs). Each SME independently wrote 36 items reflecting a leadership model based on reversal theory (RT) and the definition of leadership as motivational climate-setting. The four SMEs discussed the items and narrowed the 144 items to 40 items, five for each of the eight motivational climates. The questionnaire consists of 40 items and yields scores on eight subscales: Purpose, Energy, Structure, Change Orientation, Individual Contribution, Enablement, Consideration, and Warmth. The instrument has two versions, one for leaders (ALP Leader version or ALP-L) and one for followers or direct reports (ALP Staff version or ALP-S). The two versions have different stems indicating who the participant should rate. The leader answered the ALP-L by responding to each item as it pertains to themselves as the leader or manager, while the follower answered each ALP-S item as it pertains to their current leader.

Instructions for ALP-L are "Please decide for each of the following descriptive phrases how often it applies to you in your role as a leader at work. The phrases represent different aspects of team climate that a leader can influence. You are asked to describe how often you foster the kind of climate stated in each phrase regardless of how well you succeed in actually creating that type of climate." The stem for the leader version is "As a leader, I try to foster a climate in which there is…"

Followers took the parallel staff version (ALP-S) of the leader's instrument to assess the extent to which they feel as though they are receiving each of the climates from their leader. Instructions for the follower-version (ALP-S) are, "Please decide for each of the following descriptive phrases the extent to which it applies to your manager or supervisor in his or her role as a leader. Note that you are asked to describe the climate

your leader or manager creates." The stem for the staff version states, "My leader fosters a climate in which there is…"

Both versions asked respondents to rate the same set of 40 items. A sample item from the measure is, "A clear vision for the team" (purpose). The response options for both versions of the ALP surveys were a 6-point Likert-scale format to indicate how often the behavior occurs, with one indicating that the leader never exhibits the behavior and six indicating that the leader always exhibits the behavior.

The 40 items fall into eight subscales of five items each, one for each motivational climate condition. Scores on each subscale are typically calculated as the sum of the five items, for a maximum of 30 points per subscale. The scores from the items for the eight subscales were averaged to form an overall measure of the extent to which a leader is perceived to focus on motivational climate. The full versions of the ALP-L and ALP-S may be found in Appendix II.

A prior study assessed the internal consistency of the ALP for leaders (n = 317) and staff (n = 801) separately using Cronbach's alpha (Cronbach, 1951; Desselles & Crum, 2019). The analysis revealed coefficient alphas ranging from .67 to .87 for the leader and .83 to .92 for the staff versions (Desselles & Crum, 2019). The lowest reported coefficient alpha was on the Individual Contribution subscale for the leader sample (.67) which is below the recommended minimum alpha of .70 (Cortina, 1993). The remaining seven subscales on the ALP-L and all subscales on the ALP-S were above this recommended threshold. Additionally, Desselles and Crum (2019) conducted confirmatory factor analyses on these same leader and staff samples. The analyses revealed a good fit for the hypothesized 8-factor model both with leaders (x^2 = 1383.22,

CFI = .891, GFI = .814, RMSEA = .055) and staff (x^2 = 2394.95, CFI = .939, GFI = .811,

RMSEA = .054; Byrne, 2010).

Leader-Member Exchange 7 for Leaders and Followers (LMX-7-Revised)

The Leader-Member Exchange (LMX-7; Scandura & Graen, 1984) questionnaire

was completed by leaders and followers to describe the quality of their relationship. The

revised seven-item LMX scale (LMX-7; Scandura & Graen, 1984) with the word changes

provided by Liden and colleagues (Liden et al., 1993) was used. The word changes

allowed the use of the 5-point Likert scale by rewording the items to be statements

instead of the original question format of the first developed scale (Liden et al., 1993).

The revised wording has been used in multiple research studies, including work by

Tekleab and Taylor (2003) and Bauer and Green (1996). An example included changing

"How does your leader understand your problems and needs?" to "My supervisor

understands my problems and needs." Following the advice of Bauer and Green (1996) to

include an eighth item, the researcher also split one double-barreled item (e.g., "Do you

usually feel that you know where you stand with your leader (follower)…[and] do you

usually know how satisfied your leader (follower) is with what you do?") into two

separate items (e.g., "I usually know where I stand with my leader (follower)" and "I

usually know how satisfied my leader (follower) is with me"). Those authors originally

split the scale because the one item asked two separate questions and the resulting eight-

item measure was found to be "extremely similar" to the seven-item scale

psychometrically (Bauer & Green, 1996).

The responses to each item were on a 5-point Likert scale allowing participants to

rate how well the statements apply to themselves (1 = *strongly disagree* and 5 = *strongly*

agree). The resulting eight-item LMX scale is very psychometrically similar to the

original LMX-7 scale and has a previously shown psychometric property of a coefficient

alpha of .94 (Bauer & Green, 1996). Researchers averaged the eight items to form the

composite score for each party (leader or follower). Appendix III includes the items,

responses, and directions for the LMX scale.

Demographics

All participants voluntarily completed a demographic questionnaire (see

Appendix IV) regarding their age, gender identity, race or ethnicity, and geographic

region to assess the representativeness of the participant sample. The demographic

questions were included at the end of the surveys to address the potential for attrition.

The researcher chose to give participants the more focal survey content (e.g., ALP-L,

ALP-S, and LMX-7 revised) before the demographic questions as it is the information

necessary for the researchers to complete the proposed analyses.

Procedure

Archival Data from 2018 to 2022

Permission from the Institutional Review Board at Louisiana Tech University was

obtained to analyze the archival data. Data from previously conducted leadership

development programs was collected at the very start of the program and before any

information on leadership models was discussed. This was done to avoid potentially

biasing participants' responses. In some organizations, supervisors identified leaders to

participate in the development course, and these individuals were invited by the

consulting group to take part. In other organizations, leaders were self-nominated. In the

invitation (and in response to any follow up questions from participants), participants

were assured all data collected through these programs was confidential, was for developmental purposes only, and would not be used for any personnel actions or decisions (e.g., promotions, performance appraisals, salary changes, or bonuses). Once enrolled in the program, leaders were asked to provide the names and emails of their direct reports. Direct reports were contacted by the consulting group and invited to participate. All participation from leaders and their direct reports was voluntary. Leader and direct report responses were confidential. Only researchers at the consulting group saw identifiable leader and direct report data.

A minimum number of responses from direct reports was required for a leader to receive an aggregated summary of direct reports' ratings. Leaders were informed that only aggregated staff data that met the minimum threshold for reporting would be reported back to them. The minimum was five direct reports. By aggregating responses prior to reporting them to participants, leaders were unable to identify individual responses from a direct report. Leaders completed the Apter Leadership Profile Leader version (ALP-L), while followers (e.g., direct reports) completed the Apter Leadership Profile Staff version (ALP-S). Demographic questions (discussed above in "Demographics") were included on the survey but were optional. The email invitation to all participants included a brief description of the study, the time commitment required, confidentiality protections, and what information to expect on the report (i.e., de-identified aggregated data from direct reports and/or others). Participants were reminded that they could discontinue the survey at any time without penalty.

New Supplemental Data

Data collection proceeded in much the same manner as described in the previous

section; the primary difference was the recruiting technique. The supplemental sample of

leaders and followers was recruited using a snowball sampling technique, as utilized in

Gooty and Yammarino's (2011, 2016) studies on dependent, dyadic leader-follower

LMX relationships. This sampling method allowed a wide range of occupations,

organizations, and ages to participate, facilitating the generalizability of the results

(Gosserand & Diefendroff, 2005; Little et al., 2016; Martins et al., 2002; Tepper, 1995).

Names and contact information on nominated leaders and corresponding followers were

collected, and the researcher contacted them and invited them to participate. The email

invitation included a brief description of the study, the time commitment required, and

confidentiality protections. The invitation also explained that the information was being

collected solely for research purposes. Only the core research team saw identifiable data

from leaders and staff. No individualized feedback was offered to participating leaders or

followers. Instead, all participants were offered a summary of the study's findings after

the conclusion of the research. Participants were reminded that they are able to exit the

survey at any time without penalty.

Data collection was through an online survey platform, Qualtrics. The landing

page of the survey included an informed consent statement for participants to allow the

researchers to link the data obtained by leaders and followers to each other, and to use the

demographics provided as part of the research study to assess representativeness. It

described the types of questions that were included in the survey. It assured participants

that their collected info would not be used by the organization to make any personnel

decisions, affect any employment opportunities available to them, or otherwise impact their career. The average time for completion of the survey was approximately 27 minutes for leaders and 10 minutes for followers. After giving informed consent, all participants took the ALP (leader or staff version as appropriate) and the LMX-7 in counterbalanced order. Lastly, all participants answered the demographic questions. The ALP-L, ALP-S, and LMX surveys and demographic questions may be found in Appendices II through IV, respectively.

If a leader self-identified as having three followers, they took the ALP-L and the LMX-7 measures three times, with a different follower in mind for each iteration of the surveys. Consequently, the study relied on dependent dyads that involved the one leader possibly having multiple relationships with different followers (Gooty & Yammarino, 2011; Kim et al., 2020). Figure 2 details the study's design with dependent, non-unique dyads. As depicted, the leader belongs to three dyads creating between-dyad dependencies, while each follower belongs to only one dyad (Yammarino & Gooty, 2017). Additionally, Yammarino and Gooty (2017) further describe the figure to include "solid arrows [to] indicate dyad membership [and] dashed arrows [to] indicate group membership." Each follower is represented as an individual, as part of a dyadic partnership with their leader, and part of a group of followers who belong to one leader.

Figure 2

Dependent Dyads Membership
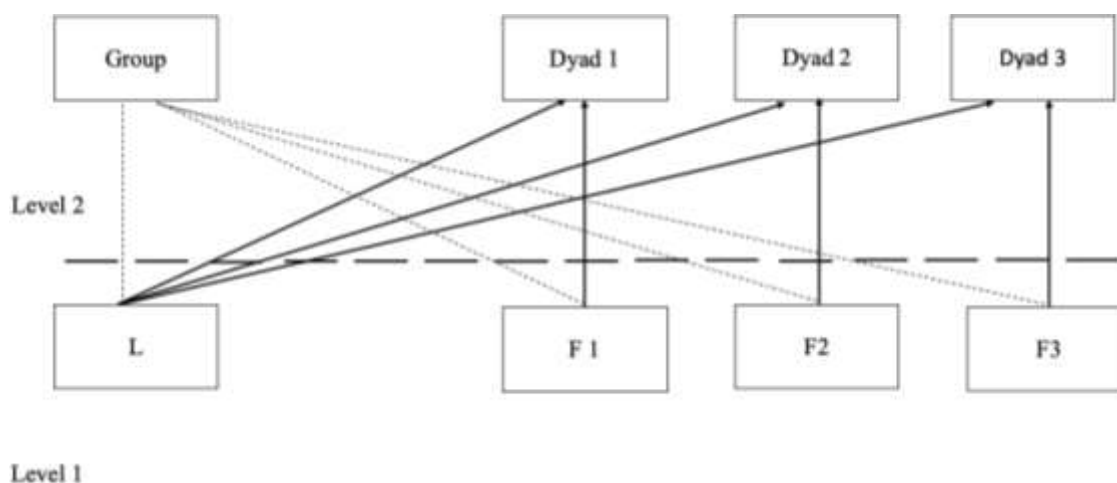
Followers were asked to complete the Apter Leadership Profile – Staff (ALP-S) to describe their leader's current leadership style and the LMX-7 to describe the quality of their relationship with their leader. The name of the leader was piped in throughout the surveys to inform the follower of who to have in mind while answering the items.

All participants were able to opt out of the survey at any time, and, if so, their data was not linked or used in any analyses. Leaders provided their name and agreed for it to be used in the survey administered to their followers. Followers were given the option to voluntarily provide their name so that researchers were able to confirm their responses were linked to those from their leader. If followers were not comfortable providing their name, they were able to provide a code of their choosing. In this scenario, the survey data from followers was collected anonymously but may have still been linked to the corresponding leader-follower data for analysis.

The researcher then downloaded the data, merged the two datasets (leaders and

followers), and matched the corresponding leaders and followers into their perspective

dyads. Once the survey data from corresponding leaders and followers were linked, all

identifying information about participants was deidentified, and each participant was

assigned a unique respondent-identification code for the researcher's use. From this

point, participants' data was never linked to their given names but instead by their

assigned identification numbers in a password-protected document saved on a secure

jump drive that was only accessed by the research team. All data collected from

participants was and will be held confidential by the team.

Analytical Procedure

Agreement Analysis of Variables

The proposed study required the analysis of pure dyadic constructs such that the

focus of the analysis was on agreement between leaders' and followers' perceptions of

the extent to which leaders encourage a motivational climate and the quality of the LMX

relationship. That is, both the predictor and outcome involved measures of congruence.

As a result, these measures had to be analyzed separately according to an appropriate

congruence procedure (Kim et al., 2020). There is currently a debate in organizational

science on what constitutes the appropriate way to calculate and interpret congruence and

similarity measures (Edwards, 1994, 2002; Edwards & Parry, 2018; Minsky, 2002).

Historically, difference scores were most widely utilized, however numerous

criticisms have emerged surrounding both the use of the analysis and the interpretation of

results (Minsky, 2002). Difference scores have been described as "unstable" due to an

array of potential problems including "reduced reliability, ambiguity, confounded effects,

untested constraints, and dimensional reduction" (Cafri et al., 2010, p. 361). Many

researchers reject the use of difference scores because of its potential to reduce reliability

relative to the inputted components (Cafri et al., 2010; Cohen & Cohen, 1983; Edwards,

2002; Traub, 1994). Difference scores collapse multiple ratings together (e.g., self and

ideal) to create a confounded single score assumed to conceptually represent the multiple

constructs (Edwards, 2002; Shanock et al., 2010). The use of difference scores also

creates the potential to lose meaningful theoretical information (Cafri et al., 2010).

Additionally, difference scores inflict untested constraints on predictors in a regression

equation which may lower the proportion of variance the difference score can account for

in the outcome variable (Cafri et al., 2010; Edwards, 2002). Lastly, difference scores are

unable to examine the individual and joint effects of each component on a third variable

or the outcome (Cafri et al., 2010; Edwards, 2002; Shanock et al., 2010). In response,

researchers have sought alternative methods with fewer shortcomings for examining

multi-level phenomenon in organizational research (Edwards, 1994, 2002; Edwards &

Parry, 2018; Kim et al., 2020; Shanock et al., 2010).

Before choosing an appropriate multi-level analysis procedure for dyadic

variables, researchers must consider the type of dyads involved (e.g., independent or

dependent dyads), research questions, and levels of involved variables (Kim et al., 2020).

A recent "state-of-the-science" review article on leader-follower dyadic analysis and

research identified multilevel modeling, polynomial regression, within and between

analysis (WABA), and the Actor-Partner Independence Model (APIM) / One with Many

(OWM model) as the appropriate methods for congruence analysis, depending on the

type of dyad and level at which the variables operate (Kim et al., 2020). The authors

acknowledge the polynomial regression technique proposed by Edwards and others (1994, 2002, 2018) but do not recommend its use. They stated, "Although polynomial regression is a useful tool to study the effect of congruence and/or divergence of the predictor on individual outcomes, this method cannot be directly implemented when examining dyad level outcomes" (Kim et al., 2020, p. 5). Table 1 details when each method may be utilized. Refer to Kim and colleagues (Kim et al., 2020) for a more detailed account of how and when to use each analytical strategy. The WABA approach utilized for this study is described in the section that follows.

Table 1

Appropriate Dyadic Research Methods

Method	Type of Dyad	Independent Variable Level	Dependent Variable Level
Multilevel modeling	Independent & Dependent	Dyad	Individual
Polynomial regression	Independent & Dependent	Dyad	Individual
WABA	Independent & Dependent	Dyad	Dyad
APIM / OWM	APIM: Independent OWM: Dependent	Dyad	Individual

Note. Adapted from "State-of-the-science review of leader-follower dyads research," by J. Kim, F. J. Yammarino, S. D. Dionne, R. Eckardt, M. Cheong, C. Y. Tsai, J. Guo, & J. W. Park, 2020, *The Leadership Quarterly, 31*, p. 5.

Within and Between Analysis (WABA)

As seen in Table 1, WABA (Dansereau et al., 1984) is appropriate when both the involved predictor and outcome are dyadic in nature (Kim et al., 2020; Yammarino & Gooty, 2017) and the variables involved may operate at more than one level (i.e., the individual, dyadic, or group level; Schriesheim, 1995). WABA tests both the level of variables and the relationships of interest, while taking into consideration independent

and dependent dyads, multi-level effects, and dyad-level outcomes (Gooty &

Yammarino, 2011; Kim et al., 2020). The analysis procedure is able to "determine (test)

the appropriate level of analysis of constructs and relationships (after typically

hypothesizing effects at a particular level)" (Gooty & Yammarino, 2011, p. 459). The

traditional WABA method is able to test if "there is evidence of homogeneity,

heterogeneity, or independence among entities at a level of analysis" (Yammarino, 1998,

p. 2), while an expanded version of the analysis allows for the testing of moderators and

other variables as well. Kim and colleagues further describe WABA as "useful for testing

the level of analysis of variables (WABA I), the relationship between the variables

(WABA II), and traditional cross level effects" (Kim et al., 2020) as indicated in multiple

dyadic research articles (Dansereau et al., 1984; Gooty & Yammarino, 2011; Schriesheim

et al., 2001; Yammarino & Dubinsky, 1992; Yammarino & Gooty, 2019). Furthermore,

WABA I estimates the extent to which group differences exist in terms of the level of

analysis for the variable, WABA II answers whether there are group-based correlations

and the level of analysis for each relationship (Gooty & Yammarino, 2011; Yammarino,

1998). The two tests combined (WABA I and II) answer whether the results are

consistent throughout the analysis (Gooty & Yammarino, 2011; Yammarino, 1998).

WABA relies on ANOVA and correlation-based procedures to determine the

level of variables and relationships and cross-level effects between the variables

(Dansereau et al., 1984; Kim et al., 2020; Yammarino, 1998; Yammarino & Gooty, 2017,

2019). Yammarino (1998, p. 204) describes the analysis process saying, "In WABA,

within- and between-cell indicators (correlations) are calculated and compared relative to

one another with tests of statistical and practical (magnitude of effects) significance." The

process for deriving appropriate inferences from the results involves a "rigorous and conservative set of inferential criteria" meeting both statistical and practical tests of significance with minimal acceptable test criteria of the following: .05 statistical and 15 degree, or .26 radians practical criteria (Yammarino, 1998, p.3). WABA is the appropriate analytic procedure for this study because it is able to "test the relationship of two variables and simultaneously test the effects of the nested entities" (e.g., each dyad consisting of a leader and a follower), while also providing a joint estimate of both the contribution of variability between the dyads and the co-variability amongst the variables through the detection of self-other agreement within each dyad (Markham et al., 2010, 2015).

CHAPTER 3

RESULTS

Pre-Analysis Data Screening

Before conducting WABA, the researcher examined the archival and new survey data (ALP and LMX) to identify cases with missing responses (Baraldi & Enders, 2010) and to determine whether the data were missing due to technical error. The datasets analyzed only included follower participants who were linked to a leader (i.e., any follower participant who did not have a leader who also filled out the measures). The researcher did not determine any data to be missing due to technical errors. Once the researcher ruled out technical errors as a possible explanation for the missing data, the researcher created a variable to compare mean differences to determine how many data points were missing systematically.

The researcher also conducted a visual scan of the data to determine whether the data were missing at random or systematically (e.g., straight line responses; Field, 2013). If a single item per subscale was missing, its value was replaced with the mean of the items for which responses were available. If more than one item per subscale was missing, then the data was deleted listwise. The *careless* package in R (Yentes & Wilhelm, 2021) was used to detect non-compliant responses (Meade & Craig, 2012). The statistical package relies on Mahalanobis distance, psychometrics synonyms, and

maximum longstring (Yentes & Wilhelm, 2021). A total of seven dyads (e.g., 14 cases of

data between matched leaders and followers) were deleted due to missing data, and

another two dyads (e.g., four cases of data) were dropped due to non-compliant

responses. The researcher then split the remaining data consisting of 228 individual cases

and 114 dyads into leaders and followers for additional analyses.

CFA on ALP to Confirm Measurement Properties

Prior to the primary analysis, the researcher re-analyzed the data reported by

Desselles and Crum (2019) to test a second-order measurement model that included a

higher level "*m*" factor (reminiscent of "*g*" in intelligence measurement or an "*A-factor*"

in work engagement; Newman et al., 2010; Spearman, 1904). The "*m*" construct was

hypothesized to represent the extent to which a generalized motivational climate is

fostered by the leader for the follower to experience, with a higher score representing the

leader giving more attention to creating a motivational climate for followers. Both the

first level of the CFA, consisting of the eight theory-based factors as described above,

and the second-order CFA on the Apter Leadership Profile (ALP) were conducted

separately for leaders and direct reports. Previously collected and analyzed data was used

due to the larger sample size and resulting greater power levels, which was not possible

with the data in the present study. The sample contained 317 leaders and 801 followers

(Desselles & Crum, 2019).

The fit of the second-order model of the extent to which the leader creates an

overall motivational climate for followers was assessed using CFA analyses, using the

ALP (both leader and follower versions). Modifications to the baseline model to identify

the best-fitting model followed recommendations by Byrne (2010), Kline (2005), and

Little (2013). The model that fit best for both leaders and followers was used for the remaining analyses. To reach the best fitting model, each iteration of the model was compared using the Akaike Information Criterion (AIC) with lower scores indicating a better fitting model (Akaike, 1987). Additionally, the goodness of fit for each iteration of the model was evaluated using other model fit statistics such as the Chi Square, the comparative fit index (CFI) value, the root-mean-square of error of approximation (RMSEA) value, the goodness of fit (GFI), and standardized regression weights (Byrne, 2010; Hu & Bentler, 1995; Kline, 2005; Steiger & Lind, 1980). According to Hu and Bentler (1998), a good fitting model is indicated by a CFI value greater than .90-.95, a RMSEA value equal to or less than .07, and a GFI value close to 1.00 with a .9 minimum (Byrne, 2010). The researcher was conservative in making modifications to the baseline model, in order to avoid proceeding in an "exploratory (rather than confirmatory) fashion" (Byrne, 2010, p. 8).

The baseline second-order model for both the leader and follower CFAs incorporated the confirmed first-order ALP model consisting of eight factors with five items per factor (Desselles & Crum, 2019). However, instead of each factor covarying, as in the first-order CFA, the factors loaded onto a higher order factor of "m" (Byrne, 2010). Figure 3 below depicts the final second-order model that was used in the primary WABA analysis. Five problematic items were dropped due to standardized regression weights below .06 (Byrne, 2010), with one of those dropped items also cross-loading on three factors (e.g., willingness to give practical support to other team members). The resulting model consisted of a second-order "m" factor representing motivation, eight first-order factors, and 35 items. The dropped items included two items from the Change Orientation

subscale, two items from the Individual Contribution subscale, and one item from the

Enablement subscale. For leaders, the resulting model showed acceptable fit (x^2 =

1128.671, df = 551, p < .01, CFI = .896, RMSEA = .058, AIC = 1286.671, GFI = .823).

The resulting model for followers showed good fit (x^2 = 2146.803, df = 551, p < .01, CFI

= .936, RMSEA = .06, AIC = 2314.803, GFI = .853). The CFA analysis provided

evidence that the ALP instrument measures what it purports to measure and support for

using the "m" score based on the eight subscales identified in theory and confirmed in the

prior first-order CFA. The same final model was applicable to both leaders and followers,

and 35 retained items were used in the WABA analysis.

Figure 3

Second-Order Confirmed ALP Model
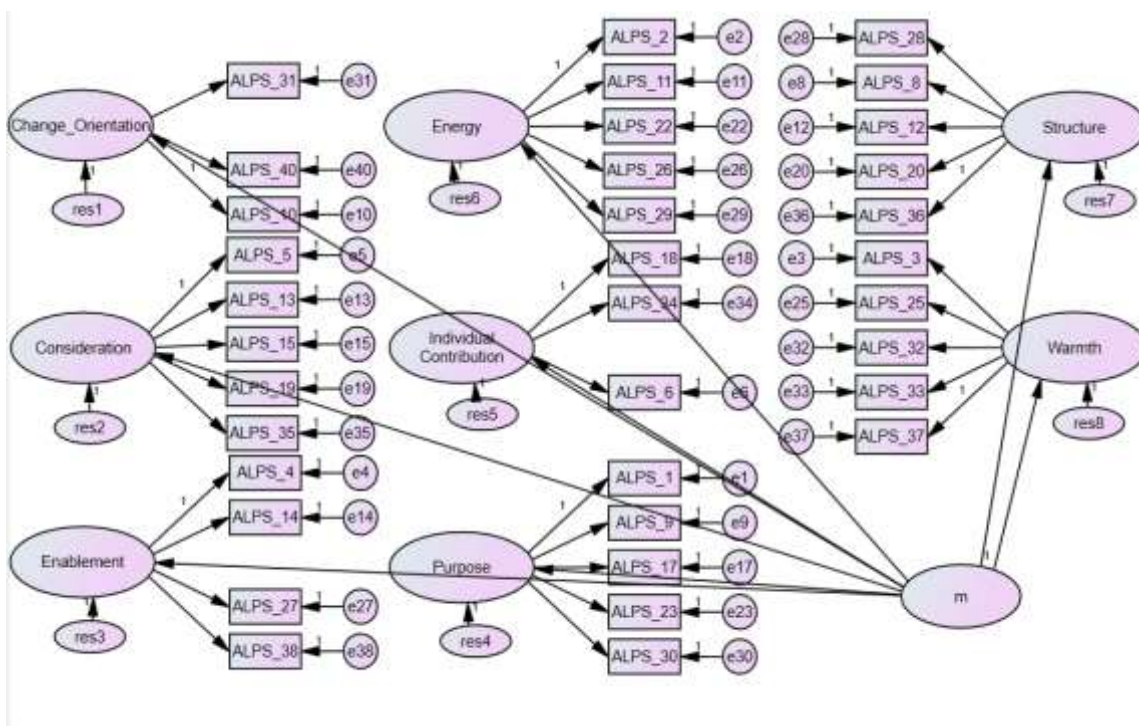
A CFA was not conducted on the LMX-7 measure due to its extensive publication record (Gottfredson et al., 2020; Graen, Novak, et al., 1982; Graen & Uhl-Bien, 1995; Mumtaz & Rowley, 2020; Scandura & Graen, 1984). The internal consistency for the revised LMX-7 scale was measured, using Cronbach's alpha, first for the entire retained sample and again separately for leader and follower reports (Cronbach,1951). The alpha coefficient was .871 for the entire sample together. The scale's coefficient alpha was .870 for both leaders and followers, therefore internal consistency was adequate and quite high for the LMX-7 revised scale.

Primary Analysis: WABA

WABA was utilized to examine between-dyad differences and covariances (Markham et al., 2015) that estimate whether the effects occur within dyads and groups, between dyads and groups, or both (Douglas, 2012). WABA relies on ANOVA and correlation-based procedures (Dansereau et al., 1984; Kim et al., 2020; Yammarino, 1998; Yammarino & Gooty, 2017, 2019), therefore assumptions for those statistics were assessed prior to beginning the primary analysis. As illustrated by Gooty and Yammarino (2011), the analysis took a two-step approach that first explored the level of analysis for each variable and the connected relationships among them and then uncovered the group level of analysis for each variable and connected relationship among them. More specifically, the study relied on single-level WABA analyses which addressed "the question of whether [the] embedding of individuals in dyads is inappropriate or if the scores reflect whole dyads or dyad parts" (Dansereau et al., 1986, p. 13). It was then extended to address the appropriateness of the scores reflecting the group level of either a leader or follower, while still relying on a single-level analysis.

First, I used WABA I for dyads, based on the logic of ANOVA, to a) examine the independence of leader ratings across multiple followers for both the ALP and LMX measures (separately) and b) determine if the observed relationships reflect the individual level within the dyads (Dansereau et al., 1984; Gooty & Yammarino, 2011; Hui et al., 2000; Lam & Schaubroeck, 2000; Markham et al., 2015). I began by determining if the E ratio and F ratio were significant (Gooty & Yammarino, 2011). I examined the E ratio (tests of practical significance) for a result less than 1.0, which would have indicated that the variation within dyads was significantly greater than the variation between dyads (Hui et al., 2000; Lam & Schaubroeck, 2000). Additionally, I examined the between- and within-etas. Larger within-eta correlations than between-eta correlations support the inference that the observed variation of the measures is at the dyadic rather than group level of analysis (Dansereau et al., 1984; Liden et al., 2000). Overall, these results assessed the assumption of independence for the leader and follower ratings and the appropriateness for conducting the analysis at the individual level for each dyad (Dansereau et al., 1984; Hui et al., 2000; Lam & Schaubroeck, 2000). Next, I used WABA II for dyadic data, focused on correlation-based information, to determine whether the observed bivariate relationships detailed in the hypotheses are consistent with interpretation at the dyadic level of analysis (Dansereau et al., 1984; Liden et al., 2000; Markham et al., 2015).

WABA II examines if the relationships between the variables operate at the individual or dyadic level (Gooty & Yammarino, 2011). In other words, the findings seek to uncover if the perceptions of the amount of attention spent on motivation and quality of the relationship differ according to each dyad. The findings of within-eta correlations

greater than zero and higher between-eta correlations would have indicated that dyad-level effects exist within the relationships (Dansereau et al., 1984; Liden et al., 2000). Those findings coupled with the WABA I results determined if the involved predictor and outcome and the relationships among them operated at the dyadic level of analysis (Dansereau et al., 1984; Liden et al., 2000).

Lastly, I followed-up the analyses by examining WABA I for groups to see if the variables operate differently based on whether it was rated by a leader or follower. This allowed me to determine at which level the perceptions operate, or, in other words, whether the constructs operate according to either the group of leaders' or followers' point of view (Gooty & Yammarino, 2011). A lack of group-level effects indicates that the construct is distinguished by either the leader or follower based on individuals or each unique dyadic relationship (Gooty & Yammarino, 2011). WABA II for groups again would have allowed me to discover at which level the relationships among the variables operate, either the individual or group level (Gooty & Yammarino, 2011).

Yammarino et al. (2000), Gooty and Yammarino (2011), and Dansereau et al. (1986) provide heuristics for inferring between- versus within-dyad effects using WABA. I followed their approach when drawing inferences from the WABA procedures. The WABA technique partitions the total correlation between variables into between and within components. The between and within etas are tested using traditional F-tests to infer statistical significance and an E-test of the magnitude of effects to infer practical significance (Gooty & Yammarino, 2011).

For both hypotheses, WABA I was interpreted to determine the appropriate level of analysis for each variable. Then WABA II addressed each of the hypothesized

relationships between the congruence or dyadic-level constructs. Between-dyad effects would have existed when: (a) both variables operate at the between-dyad levels as indicated by significant F and E ratios; and (b) A and Z tests are positive and significant, the between-dyad correlation is significant and larger than within, and R and t tests are significant for between and not within (Gooty & Yammarino, 2011; Yammarino & Gooty, 2017). Within-dyad effects would have been inferred when: (a) WABA I indicates that both variables operate at the within-dyad levels through significant $1/F$ and E ratios; and (b) WABA II finds within-dyad effects as indicated by negative and significant A and Z tests, a larger within-dyad correlation than between, and significant R and t tests for within but not between (Gooty & Yammarino, 2011; Yammarino & Gooty, 2017).

Dyadic-Level Results (H1)

Means, standard deviations, range, and correlation for all constructs from dyadic ratings are presented below in Table 2. The correlation is in the expected direction.

Table 2

Means, Standard Deviations, Range, and Correlation

Variable	*M*	SD	Min.	Max.	Correlation
Dyad level					
1. Mean dyadic ALP	5.25	.72	3.0	6.0	.53**
2. Mean dyadic LMX	4.37	.60	3.0	5.0	

Note. N = 114 for all variables at dyad levels. One-tailed correlation. ** $p < .01$. Adapted from "The Leader-Member Exchange relationship: A multi-source, cross-level investigation," by J. Gooty & F. J. Yammarino, *Journal of Management, 42*(4), p. 923. Copyright (2016).

Findings for WABA are presented in a two-step approach following the logic of how WABA is conducted. The findings for the dyadic level of analysis for each variable are presented in Table 3. The following results address Hypothesis 1 which predicted that

the extent to which a motivational climate is encouraged by the leader (represented by ALP) positively relates to the quality of the leader-follower relationship (represented by LMX) at the dyadic level. The theoretical grounding for the hypothesis supported the notion of the variables operating at the dyadic level, therefore a single-level analysis was conducted (Dansereau et al., 1986). The dataset for the analysis included a dyad membership code, the ALP variable, and the LMX variable.

WABA I

WABA I was utilized to determine at what level the relevant variables operate. As seen in Table 3, ALP and LMX do not meet the criteria for strong between-dyad (wholes) variations or strong within-dyad (parts) variations. The between-eta correlation is the correlation of the total scores on a variable with its between-cell scores, while the within-eta correlation is the correlation of the total scores on a variable with its within-cell scores (Dansereau et al., 1986). The between-eta and within-etas are very similar for both variables. The *E*-ratio is the between-eta correlation divided by the within-eta correlation (Dansereau et al., 1986). The *E*-ratio is greater than 1.0 for both variables, and DETECT (Dansereau et al., 1984) does not provide an *E*-ratio induction response to support practically significant results. Therefore, results indicate inexplicable findings for both the ALP and LMX variables operating at the dyadic level, as the findings are neither statistically nor practically significant. The inexplicable condition "is defined as a lack of focus within and between entities" found when "a focus within or between entities is erroneous" (Dansereau et al., 1984). Therefore, based on practical and statistical significance, WABA I indicates that ALP and LMX do not operate at the dyadic level and do not show greater variation either between or within cells.

Table 3

WABA I Dyad-Level Results

Variable	Eta		E Ratio	Tests	
	B	*W*	*E*	*F* (I/F)	
				B	*W*
ALP	.77	.64	1.20	1.45	.03
LMX	.73	.69	1.06	1.14	.24

Note. N = 114 for all variables at dyad levels. Degrees of freedom for the between *F*-ratio = 113, 114. Degrees of freedom for the within *F*-ratio = 114, 113. Adapted from "The Leader-Member Exchange relationship: A multi-source, cross-level investigation," by J. Gooty & F. J. Yammarino, *Journal of Management, 42*(4), p. 923. Copyright (2016).

WABA II

Notably, WABA I indicated that neither ALP nor LMX operates at the dyadic level. Therefore, one must stop the further interpretation of results (Dansereau et al., 1986). Dansereau and colleagues (Dansereau et al., 1984, p. 183) state, "When an analysis using WABA I results in the induction of an inexplicable condition (no deviation within or between cells), the analysis of WABA II should not result in an induction of a parts, whole, or equivocal condition; according to WABA I, scores do not vary either within or between cells." Therefore, it is automatically assumed that WABA I would result in an inexplicable condition due to the variables not operating at a dyadic level of analysis when analyzed alone.

Overall Inference

Taken together, both WABA I and WABA II results indicate that neither ALP alone, LMX alone, or the relationship between ALP and LMX operate at the dyadic level. Therefore, Hypothesis 1 was not supported. As a result, one may then infer the variables

to operate at the individual level of analysis. Investigations of the relationship between

LMX and ALP measure at the individual level could be the subject of a future study.

Group-Level Results (H2)

Means, standard deviations, and correlation for all constructs from leader and

follower ratings are presented below in Table 4. The correlations are in the expected

direction for all but Leader LMX and Follower ALP which is negatively related.

Table 4

Means, Standard Deviations, Variance, and Correlations

Variable	M	SD	Variance	Correlation			
				1	2	3	4
Follower ratings							
1. ALP	5.27	.71	.51		.67**	.20*	-.46
2. LMX	4.40	.51	.26	.67**		.27**	.16*
Leading ratings							
3. ALP	5.17	.56	.31	.20*	.27**		.36**
4. LMX	4.24	.53	.28	-.46	.16*	.36**	

*Note. N = 114 for leaders and N=114 for followers. One-tailed correlation. * p<.05. ** p < .01.* Adapted
from J. Gooty & F. J. Yammarino (2016).

Findings for group-level WABA are presented in a two-step approach following

the logic of WABA analyses. The findings for the group level of analysis for each

variable are presented in Table 5. The analysis tested to see if membership in either the

leader or follower group affects reported ratings. The following results address

Hypothesis 2 which predicted that the extent to which a motivational climate is

encouraged by the leader (represented by ALP) positively relates to the quality of the

leader-follower relationship (represented by LMX) at the group level. The theoretical

grounding for the hypothesis supported the notion of the variables operating according to group membership, therefore a single-level analysis was conducted (Dansereau et al., 1986). However, if "group" had referred to the work group membership the dyads belonged to, a multiple-level analysis would have been necessary because two conditions (e.g., level 1 for dyads and level 2 for work group membership) would have been tested (Dansereau et al., 1986). The dataset for the analysis included a group membership code (e.g., either leader or follower), the ALP variable, and the LMX variable.

WABA I

WABA I was utilized to determine at what level the relevant variables operate. As seen in Table 5, ALP and LMX show a similar pattern of results. For both ALP and LMX, (1) the within-eta correlation (e.g., the correlation of the total scores on a variable with its within-cell scores; Dansereau et al., 1986) is larger than the between-eta correlation; (2) the E-ratio (e.g., the between-eta correlation divided by the within-eta correlation; Dansereau et al., 1986) is less than 1; and (3) DETECT (Dansereau et al., 1984) printed an induction of "PARTS-30" for both variables based on the required practical significance criteria of E< OR = 0.57735. Therefore, based on practical and statistical significance, both ALP and LMX at the group level show greater variation within cells and are more compatible with an induction of parts than wholes. Thus, the results support within-group effects which "show similar variation within groups but a lack of difference between groups" (Dansereau et al., 2006, p.553). One must also point out the results found of near-perfect within-eta correlations. As discussed in the Limitations and Future Directions section, it could be due to the use of whole number

scores to represent the variables, or the lack of variation within groups across responses for the other member of the relationship.

Table 5

WABA I Group-Level Results

	Variable	Eta		E Ratio	Tests	
		B	*W*	*E*	*F* (I/F)	
					B	*W*
1.	ALP	.07	1.0	.07	.83	.73
2.	LMX	.15	.99	.15	.21	.97

Note. N = 114 for leaders and N=114 for followers. Degrees of freedom for the between *F*-ratio = 1, 226. Degrees of freedom for the within *F*-ratio = 226, 1. Adapted from Gooty, J., & Yammarino, F. J. (2016).

WABA II

WABA II was conducted to determine at what level the relationship between the two variables operates. WABA II results are "tests of the correlations among the variables based on within- and between-cell scores" (Dansereau et al., 1986, p. 72). The results for WABA II include between-cell correlations, within-cell correlations, *A* tests of the practical significant of the difference of the within- and between-cell correlations, and *Z* tests of the difference of the between- and within-cell correlations (Dansereau et al., 1986). Findings indicated the correlation of ALP and LMX results in a near-perfect correlation of 1.0 which is certainly suspect and possibly due to specious data. Upon further investigation, results indicated that the DETECT program (Dansereau et al., 1984) was unable to run WABA II on the inputted data. To perform the analysis, a square root function is performed which resulted in a negative element (Dansereau et al., 1984). Additionally, due to the use of the grouping membership variable with only two categories acting as the level 1 condition, the analysis attempted to operate with a "degree

of freedom less than or equal to zero" (Dansereau et al., 1984). Due to the impossibility

for running WABA II, no results should be interpreted for the level at which the

relationship between the variables operate for hypothesis 2.

Overall Inference

Taken together, WABA I indicated the variables of ALP and LMX had within-

group effects based on statistical and practical significance, while WABA II was unable

to be conducted. However, due to the lack of grounding for WABA II, further

interpretation of the level for which the relationship between the two variables operates

could not be inducted (Dansereau et al., 1986). Therefore, further investigation is needed

to uncover whether one should focus either between and/or within entities when

investigating the group-level (i.e., leader or follower membership) relationship between

ALP and LMX. Hypothesis 2 was partially supported.

CHAPTER 4

DISCUSSION

Principal Findings

Findings did not support the hypothesis that the extent to which a leader encourages a motivational climate positively relates to the quality of the relationship between the leader and follower at the dyadic level. In fact, neither variable was found to operate at the dyadic level of analysis. This in itself is quite interesting theoretically as both reversal theory and leader-member exchange incorporate the importance of both members in the relationship. Reversal theory discusses the importance of a leader creating a climate that is then experienced by the follower. Leader-member exchange focuses on the dyadic exchange between the members of the relationship. However, results from this study's sample did not support either theory operating at the dyadic level of analysis.

Furthermore, results did not fully support the notion of the extent to which a leader encourages a motivational climate positively relating to the quality of the relationship at the group membership level. The lack of a degrees of freedom resulted in the analysis not determining the relationship to be solely relevant to either the whole or parts perspective. The variables indicated operation at the within-groups level, however WABA II could not be run to provide additional support for the findings. Interestingly, it

seems to be relevant to study the variables both according to one's group membership and without taking membership into consideration, however additional categories would need to be introduced in terms of one's possible group membership.

Due to the study's findings, it is possible that the data did not support the theoretical underpinnings of either reversal theory or LMX and instead both operated at the individual level. In other words, it is possible that other partners did not have any effect on the individual's ratings. This possibility is interesting since ALP seeks to measure the extent to which the leader creates a motivational climate for a follower, which would imply a connection to exist between the two entities.

Limitations and Future Directions

The present study is not without limitations, and many of the contributing factors arose from practical constraints in how the study could feasibly be conducted. First, data collected for the study were collected at a single time point for all measures, yet the motivational climate encouraged and LMX relationships have been described as evolving over time. While the use of multi-source, cross-rater surveys does minimize concerns about single-source biases, future research should try to collect data from multiple sources and at multiple time points to assess the development of LMX longitudinally over time. The non-longitudinal design is a shortcoming shared by many (if not most) studies of leader-follower dyads because "they require intensive repeated data collection and additional modeling complexities" (Kim et al., 2020, p.14).

Second, data were collected using a snowballing technique, therefore both leaders, followers, and third parties were able to nominate who to include. Snowball sampling is often used when "seeking access to hard-to-reach populations," particularly

leader-follower dyads in this study (Parker et al., 2020). Parker et al. (2020) discuss the

convenience of snowball sampling and describe its limitations stating, "it may be viewed

negatively for not producing samples that meet the criteria of random samples in the

statistical sense (i.e., it departs from probability-based sampling approaches)."

Oftentimes the demographics of the recruited sample tend to be homogenous (e.g.,

primarily one ethnicity; Parker et al., 2020), with women potentially over-represented due

to their likelihood of responding to the ask (Noy, 2008). Therefore, this study could

benefit from a replication with a more diverse sample (e.g., more male and distinct ethnic

representation), as well as a larger sample size including more dyads to raise the

estimated power levels to above .80 for all analyses. The estimated power levels were

determined in relation to an assumed moderate effect size; however, the study may have

actually employed a small effect size and was therefore underpowered in more ways than

one. It is also possible that leaders nominated their favorite followers, or vice versa.

However, since the analysis was focused on the congruence of scores, this likely did not

play a part in the results. Future research could aim to include an organization in which

participation is widely encouraged by all employees, keeping the possibility of favoritism

in dyadic partners at a minimum. Future research could also investigate the leaders and

followers at the individual level of analysis.

Additionally, the study's collected data did not explicitly identify work group

membership (i.e., a leader and his/her specific followers who work directly under his/her

supervision). Work group membership information would have allowed the researcher to

run a multiple-level analysis to include the higher-level grouping variable (Dansereau et

al., 1984). This inclusion would have allowed WABA analysis to move from a single-

level analysis (as was the case with dyads and group membership of either a leader or follower) to a multiple-level analysis to investigate the differences between the two (Dansereau et al., 1986). Further theoretical grounding would be needed to support associated hypotheses. Interestingly, a higher-level analysis at this work group membership level uses between-dyad scores which vary much less than within-dyad scores causing the analysis to be based on a severe restriction of the variation in the two variables of ALP and LMX (Dansereau et al., 1986). Therefore, inclusion of additional variables, answer choices, or a change in the method for achieving the overall score for each variable could be warranted.

Due to the nature of how data must be input into DETECT (Dansereau et al., 1986), a single score was used to represent each of the primary variables (i.e., ALP and LMX). The use of a single score to represent the average score for both the ALP and LMX most likely led to range restriction. A participant's overall score for the ALP measure was forced to become a whole number between one and six, and their score for the LMX measure was forced to become a score between one and five. The use of a single digit to represent the participant's overall score for the variable greatly restricted the amount of variance allowed. Additionally, the ALP scale is typically scored on eight subscales for each individual (Carter, 2007). The second-order CFA results was of sufficiently good fit to support aggregating subscale scores to an overall "m" factor to represent the entire measure. However, the second-order CFA results were not perfect, and further research should investigate the relationships between the eight reversal theory leader climate factors and the LMX measure. Specifically, I would encourage future researchers to test whether a relationship exists between LMX and the reversal theory

climate variables dealing with interpersonal exchanges: Individual Contribution, Enablement, Consideration, and Warmth.

Since this study is not experimental in nature, inferring causality between constructs is impossible. Specifically, the study was unable to clearly establish the direction in which the linkage between motivational climate and the quality of the leader-follower relationship operates. Therefore, I suggest future research seeks to investigate causality through longitudinal and experimental designs.

As for future directions not stated above, studies could seek to incorporate other motivation theories and associated measures to further uncover the relationship between motivation and LMX. Additionally, researchers could explore leader member social exchange (LMSX; Bernerth et al., 2007a) in relation to motivation which would warrant WABA analysis at both the dyadic and group (e.g., team) level.

Conclusion

Theorists seem to have reached a consensus on the definition of leadership to include two or more parties, the influence of at least one party upon the other, and bi-directional influence towards a mutually agreed upon goal. Yet, leadership research still suffers from most leadership studies being inappropriately conducted at the individual (i.e., from the viewpoint of only one member in the relationship) rather than the dyadic level of analysis (Dionne et al., 2014; Gooty et al., 2012; Kim et al., 2020; Yammarino et al., 2005). Furthermore, LMX explicitly recognizes the importance of the dyadic leader-follower relationship and has been found to operate at the dyadic level of analysis (Gooty & Yammarino, 2011; Markham et al., 2010; Schriesheim et al., 2001). This study furthered leadership research by testing assumptions about relationships between

constructs at the appropriate level of theory and analysis. Additionally, it addressed the lack of investigating leader-follower agreement on variables, and the lack of explicitly including motivation in leadership theories. Furthermore, it relied on the under-utilized analysis approach of Within-and-Between Analysis to appropriately address the level of analysis and congruence between members. The goal of the study was to address the gaps in LMX research and investigate the convergence on motivational climates as an antecedent to the quality of the LMX relationship at a purely dyadic level of analysis.

Specifically, the study hypothesized that the extent to which a leader creates a motivational climate (measured by the ALP) would positively relate to the quality of the relationship between the leader and follower (measured by the LMX-7 revised) at both the dyadic and group membership levels. Results revealed that neither the variables nor the relationships between the variables operate at the dyadic level. WABA I results for the dyadic-level of analysis did not support the variables independently operating at the dyadic level, leaving one to question the appropriateness of further investigating the variables at an even higher level (e.g., group). Additionally, results at the group membership level were uninterpretable due to a lack of necessary degrees of freedom for the statistical tests utilized. The use of a membership grouping variable with only two categories (e.g., leader or follower) resulted in the analysis failure. Given the mixed findings, further research concerning LMX, a motivational component, and the dyadic level of emphasis is needed.

REFERENCES

Adriasola, E., & Lord, R. G. (2019). From a leader and a follower to shared leadership: A review of identity as antecedent of shared leadership. *In The Connecting Leader: Serving Concurrently as Leader and a Follower*, ed. Z Jaser. Information Age Publications.

Akaike, H. (1987). Factor analysis and AIC. In *Selected Papers of Hirotugu Akaike* (pp. 371-386). Springer.

Amabile, T. M. (1988). A model of creativity and innovation in organizations. In Staw, B. M., & Cummings, L. L. (Eds.), *Research in Organizational Behavior*, JAI Press.

Anand, S., Hu, J., Vidyarthi, P. R., & Liden, R. C. (2018). Leader-member exchange as a linking pin in the idiosyncratic deals - Performance relationship in workgroups. *The Leadership Quarterly, 29*, 698-708.

Apter, M. J. (1982). *The experience of motivation: The theory of psychological reversals*. Academic Press.

Apter, M. J. (1989). *Reversal theory: Motivation, emotion and personality*. Taylor & Frances/Routledge.

Apter, M. J. (2001). *Motivational styles in everyday life: A guide to reversal theory*. American Psychological Association. doi: 10.1037/10427-000

Apter, M. J. (2005). *Personality dynamics: Key concepts in reversal theory*. Apter International Ltd.

Apter, M. J. (2013). Developing reversal theory: Some suggestions for future research. *Journal of Motivation, Emotion, and Personality, 1*(1), 1-8.

Apter, M. J., & Desselles, M. (2012). Disclosure humor and distortion humor: A reversal theory analysis. *International Journal of Humor Research, 25*, 417-435.

Ashkanasy, N. M., & Daus, C. S. (2005). Rumors of the death of emotional intelligence in organizational behavior are vastly exaggerated. *Journal of Organizational Behavior, 26*(4), 441-452.

Atwater, L. E., & Yammarino, F. J. (1997). Self-other rating agreement: A review and model. Atwater, Leanne E.; Yammarino, Francis J., & Ferris, Gerald R. (Eds). (1997). *Research in Personnel and Human Resources Management*, *15*, 121-174. JAI Press.

Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology, 34*, 2045-2068.

Badura, K. L., Grijalva, E., Galvin, B. M., Owens, B. P., & Joseph, D. L. (2020). Motivation to lead: A meta-analysis and distal-proximal model of motivation and leadership. *Journal of Applied Psychology, 105*(4), 331-354.

Ballinger, G., Lehman, D. W., & Schoorman, F. D. (2010). Leader-member exchange and turnover before and after succession event. *Organizational Behavior and Human Decision Processes, 113*(1), 25-36.

Banks, G. C., Batchelor, J. H., Seers, A., O'Boyle, E. H., Pollack, J. M., & Gower, K. (2014). What does a team-member exchange bring to the party? A meta-analytic review of team and leader social exchange. *Journal of Organizational Behavior, 35*, 273-295.

Baraldi, A. N., & Enders, C. K. (2010). An introduction to modern missing data analyses. *Journal of School Psychology, 48*(1), 537.

Barends, A. J., & de Vries, R. E. (2019). Noncompliant responding: Comparing exclusion criteria in MTurk personality research to improve data quality. *Personality and Individual Differences*, *143*, 84-89. doi:10.1016/j.paid.2019.02.015

Basford, T. E., Offermann, L. R., & Behrend, T. S. (2014). Please accept my sincerest apologies: Examining follower reactions to leader apology. *Journal of Business Ethics*, *119*(1), 99-117.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press.

Bass, B. M. (1990). *Bass & Stogdill's handbook of leadership: Theory research, and managerial applications*. Free Press.

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Lawrence Erlbaum.

Basu, R., & Green, S. G. (1997). Leader-member exchange and transformational leadership: An empirical examination of innovative behaviors in leader-member dyads. *Journal of Applied Social Psychology, 27*: 477–499.

Bauer, T. N., Erdogan, B., Liden, R. C., & Wayne, S. J. (2006). A longitudinal study of the moderating role of extraversion: Leader–member exchange, performance, and turnover during new executive development. *Journal of Applied Psychology, 91*, 298-310.

Bauer, T. N., & Green, S. G. (1996). The development of leader-member exchange: A longitudinal test. *Academy of Management Journal, 39*, 1538-1567.

Bernerth, J. B., Armenakis, A. A., Feild, H. S., Giles, W. F., & Walker, H. J. (2007a). Leader-member social exchange (LMSX): Development and validation of a scale. *Journal of Organizational Behavior, 28*, 979-1003.

Bernerth, J. B., Armenakis, A. A., Feild, H. S., Giles, W. F., & Walker, H. J. (2007b, September 25). Is personality associated with perceptions of LMX? An empirical study. *Leadership and Organization Development Journal, 28*(7), 613-631.

Blau, P. M. (1964). *Exchange and power in social life*. John Wiley.

Bolino, M. C., & Turnley, W. H. (2009). Relative deprivation among employees in lower quality leader-member exchange relationships. *Leadership Quarterly, 20*, 276-286.

Brewer, M. B., & Gardner, W. (1996). Who is this 'We'? Levels of collective identity and self-representations. *Journal of Personality and Social Psychology, 71*, 83-93.

Brower, H. H., Schoorman, F. D., & Tan, H. H. (2000). A model of relational leadership: The integration of trust and leader–member exchange. *Leadership Quarterly*, *11*(2), 227-250.

Brunetto, Y., Shacklock, K., Bartram, T., Leggat, S. G., Farr-Wharton, R., & Stanton, P. (2012). Comparing the impact of leader-member exchange, psychological empowerment and affective commitment upon Australian public and private sector nurses: Implications for retention. *The International Journal of Human Resource Management 23*(11), 2238-2255.

Burns, J. M. (1978). *Leadership*. Harper & Row.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). Taylor and Francis Group, LLC.

Byun, G., Dai, Y., Lee, S., & Kang, S. (2017). Leader trust, competence, LMX, and member performance: A moderated mediation framework. *Psychological Reports, 120*(6), 1137-1159.

Cafri, G., van den Berg, P., & Brannick, M. T. (2010). What have difference scores not been telling us? A critique of the use of self-ideal discrepancy in the assessment of body image and evaluation of an alternative data-analytic framework. *Assessment, 17*(3), 361-376.

Camarillo, R. A. (2003). *Worker-supervisor value congruence and its effects on worker performance in a lean production system* [Unpublished doctoral dissertation]. University of Southern California.

Caplan, R. D. (1987). Person-environment fit theory and organizations: Commensurate dimensions, time perspectives, and mechanisms. *Journal of Vocational Behavior, 31*(3), 248–267.

Carter, S. (2002). *Who's leading the way? How organizations and leaders succeed*. Apter International Ltd.

Carter, S. (2007). *Apter Leadership Profiling System: A technical brief*. Apter
    International Ltd.

Carter, S., & Kourdi, J. (2003). *The road to audacity: Being adventurous in life and work.*
    Palgrave Macmillan.

Cartwright, S., & Cooper, C. L. (1994). *No hassle: Taking the stress out of work*. Century
    Books.

Castillo, M., Taylor, H., Castille, A. M., & Desselles, M. (2021). Exploring the effects of
    performance feedback on motivational states. *Journal of Motivation, Emotion,
    and Personality, 10,* 19-26.

Chan, K. Y., & Drasgow, F. (2001). Toward a theory of individual differences and
    leadership: Understanding the motivation to lead. *Journal of Applied Psychology,
    86*, 481-498.

Chang, C.-H., & Johnson, R. E. (2010). Not all leader–member exchanges are created
    equal: Importance of leader relational identity level. *The Leadership Quarterly,
    21*, 796-808.

Charbonneau, D., Barling, J., & Kelloway, E. K. (2001). Transformational leadership and
    sports performance: The mediating role of intrinsic motivation. *Journal of
    Applied Social Psychology*, *31*(7), 1521-1534.

Chemers, M. M. (2000). Leadership research and theory: A functional integration. *Group
    Dynamics: Theory, Research, and Practice, 4*(1), 27-43.

Chen, Z., Lam, W., & Zhong, J. A. (2007). Leader-Member Exchange and member

    performance: A new look at individual-level negative feedback-seeking behavior

    and team-level empowerment climate. *Journal of Applied Psychology, 92*(1), 202-

    212.

Cherniss, C. (1995). *Beyond burnout*. Routledge.

Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A

    quantitative review and test of its relations with task and contextual performance.

    Personnel Psychology, 64: 89-136.

Cogliser, C. C., Schriesheim, C. A., Scandura, T. A., & Gardner, W. L. (2009). Balance

    in leader and follower perceptions of leader–member exchange: Relationships

    with performance and work attitudes. *The Leadership Quarterly*, *20*(3), 452-465.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the*

    behavioral sciences. Lawrence Erlbaum.

Conchie, S. M. (2013). Transformational leadership, intrinsic motivation, and trust: A

    moderated-mediated model of workplace safety. *Journal of Occupational Health*

    Psychology, 18(2), 198-210.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and

    applications. *Journal of Applied Psychology, 78*(1), 98.

Cramer, K. M., & Lafreniere, K. L. (2015). Lecture engagement and metamotivational

    states: Tracking and intervention. *Journal of Motivation, Emotion, and*

    *Personality, 4,*9-14.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests.

    Psychometrika, 16, 297-334.

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, *31*, 874-900.

Daft, R. L. (2011). *Leadership: Theory and Practice.* The Dryden Press.

Dahling, J. J., Chau, S. L., & O'Malley, A. (2012). Correlates and consequences of feedback orientation in organizations. *Journal of Management, 38*(2), 531-546.

Danna, K., & Griffin, R. W. (1999). Health and wellbeing in the workplace: A review and synthesis of the literature. *Journal of Management, 25*, 357–384.

Dansereau, F. (1995). A dyadic approach to leadership: Creating and nurturing this approach under fire. *The Leadership Quarterly, 6*, 479-490.

Dansereau, F., Alutto, J. A., & Yammarino, F. J. (1984). *Theory testing in organizational behavior: The varient approach*. Prentice Hall.

Dansereau, F., Cashman, J., & Graen, G. (1973). Instrumentality theory and equity theory as complementary approaches in predicting the relationship of leadership and turnover among managers. *Organizational Behavior & Human Performance, 10*(2), 184-200.

Dansereau, F., Chandrasekaran, G., Dumas, M., Coleman, D. F., Ehrlich, S., & Bagchi, D. (1986). *Data Enquiry that Tests Entity and Correlational/Causal Theories: Application and User's Guide*. The Institute for Theory Testing.

Dansereau, F., Cho, J., & Yammarino, F. J. (2006). Avoiding the "fallacy of the wrong level." *Group & Organization Management, 31*(5), 536-577.

Dansereau, F., Graen, G. B., & Haga, W. (1975). A vertical dyad linkage approach to leadership in formal organizations. *Organizational Behavior and Human Performance, 13*, 46–78.

Day, D. V., & Crain, E. C. (1992). The role of affect and ability in initial exchange quality perceptions. *Group & Organization Management, 17*, 380-397.

Deal, J. J., Stawiski, S., Graves, L., Gentry, W. A., Weber, T. J., & Ruderman, M. (2013). Motivation at work: Which matters more, generation or managerial level? *Consulting Psychology Journal: Practice and Research, 65*(1), 1-16.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

Deci, E. L., & Ryan, R. M. (2000). The ''what'' and ''why'' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usanov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Bloc Country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin, 27*, 930–942.

Dépret, E. M., & Fiske, S. T. (1992). Social cognition and power: Some cognitive consequences of social structure as a source of control deprivation. In G. Weary, F. Gleicher, & K. Marsh (Eds.), *Control, motivation, and social cognition*. Springer-Verlag.

Desselles, M. L., & Crum, B. (2019, July 10-12). *A confirmatory factor analysis of the Apter leadership profile (ALP)*. Reversal Theory Society Conference, New Mexico.

Dienesch, R. M., & Liden, R. C. (1986). Leader–member exchange model of leadership: A critique and further development. *Academy of Management Review, 11*, 618-634.

Dionne, S. D., Gupta, A., Sotak, K. L., Shirreffs, K. A., Serban, A., Hao, C., Kim, D. H., & Yammarino, F. J. (2014). A 25-year perspective on levels of analysis in leadership research. *The Leadership Quarterly, 25*(1), 6-35.

Dose, J. J. (1999). The relationship between work values similarity and team-member and leader–member exchange relationships. *Group Dynamics: Theory, Research, and Practice, 3*, 20-32.

Douglas, C. (2012). The moderating role of leader and follower sex in dyads on the leadership behavior-leader effectiveness relationships. *The Leadership Quarterly, 23*, 163-175.

Duarte, N. T., Goodson, J. R., & Klich, N. R. (1994). Effects of dyadic quality and duration on performance appraisal. *Academy of Management Journal, 37*(3), 499.

Duchon, D., Green, S. G., & Taber, T. D. (1986). Vertical dyad linkage: A longitudinal assessment of antecedents, measures, and consequences. *Journal of Applied Psychology, 71*, 56-60.

Dulac, T., Coyle-Shapiro, J. A., Henderson, D. J., & Wayne, S. J. (2008). Not all responses to breach are the same: The interconnection of social exchange and psychological contract processes in organizations. *Academy of Management Journal, 51*(6), 1079-1098.

Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A meta-analysis of antecedents and consequences of leader-member exchange: Integrating the past with an eye toward the future. *Journal of Management, 38*(6), 1715-1759.

Duncan, P., & Herrera, R. (2014). The relationship between diversity and the multidimensional measure of leader-member exchange (LMX-MDM). *Journal of Management Policy and Practice, 15*(1), 11-24.

Dunegan, K. J., Uhl-Bien, M., & Duchon, D. (2002). LMX and subordinate performance: The moderating effects of task characteristics. *Journal of Business and Psychology, 17*, 275-285.

Eagly, A. H., Karau, S. J., Miner, J. B., & Johnson, B. T. (1994). Gender and motivation to manage in hierarchic organizations: A meta-analysis. *The Leadership Quarterly, 5,* 135-159.

Eden, D., & Leviatan, U. (1975). Implicit leadership theory as a determinant of the factor structure underlying supervisory behavior scales. *Journal of Applied Psychology, 89*, 293-310.

Edwards, J. R. (1994). Regression analysis as an alternative to difference scores. *Journal of Management, 20*(3), 683-689.

Edwards, J. R. (2002). Alternatives to difference scores: Polynomial regression and response surface methodology. In F. Drasgow & N. W. Schmitt (Eds.), *Advances in measurement and data analysis*. Jossey-Bass.

Edwards, J. R., & Parry, M. E. (2018). On the use of spline regression in the study of congruence in organizational research. *Organizational Research Methods, 21*(1), 68-110.

Eisenberger, R., Karagonlar, G., Stinglhamber, F., Neves, P., Becker, T. E., & González-Morales, M. G. (2010). Leader-Member Exchange and affective organizational commitment: The contribution of supervisor's organizational embodiment. *Journal of Applied Psychology, 95*(6), 1085-1103.

Eisenberger, R. A., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., & Rhoades, L. (2002). Perceived supervisor support: Contributions of perceived organizational support and employee retention. *Journal of Applied Psychology, 87*, 565–573.

Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review, 27*, 31-40.

Engle, E. M., & Lord, R. G. (1997). Implicit theories, self-schemas, and leader-member exchange. *Academy of Management Journal*, *40*, 988-1010.

Epitropaki, O., & Martin, R. (1999). The impact of relational demography on the quality of leader–member exchanges (LMX) and employees' work attitudes and well-being. *Journal of Occupational and Organizational Psychology*, *72*, 237-240.

Epitropaki, O., & Martin, R. (2005). From ideal to real: A longitudinal study of the role of implicit leadership theories on leader-member exchanges and employee outcomes. *Journal of Applied Psychology*, *90*, 659-676.

Erdogan, B., & Bauer, T. N. (2014). Leader-member exchange (LMX) theory: The relational approach to leadership. In D. Day (Ed.), *The Oxford handbook of leadership and organizations*. Oxford University Press.

Erdogan, B., Kraimer, M. L., & Liden, R. C. (2004). Work value congruence and intrinsic career success: The compensatory roles of leader-member exchange and perceived organizational support. *Personnel Psychology, 57*, 305-332.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

Fernet, C., Gagné, M., & Austin, S. (2010). When does quality of relationships with coworkers predict burnout over time? The moderating role of work motivation. *Journal of Organizational Behavior, 31*(8), 1163-1180.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics.* Sage.

Gagné, M. (2003). The role of autonomy support and autonomy orientation in the engagement of prosocial behavior. *Motivation and Emotion, 27*, 199-223.

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior, 26*, 331-362.

Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., van den Broeck, A., Aspeli, A. K., Bellerose, J., Benabou, C., Chemolli, E., Güntert, S. T., Halvari, H., Indiyastuti, D. L., Johnson, P. A., Molstad, M. H., Naudin, M., Ndao, A., Olafsen, A. H., Roussel, P., Wang, Z., & Westbye, C. (2015). The multidimensional work motivation scale: Validation evidence in seven languages and nine countries. *European Journal of Work and Organizational Psychology, 24*(2), 178-196.

Gerstner, C. R., & Day, D. V. (1997). Meta-analytic review of leader-member exchange theory: Correlates and construct issues. *Journal of Applied Psychology*, *82*, 827-844.

Gooty, J., Serban, A., Thomas, J. S., Gavin, M. B., & Yammarino, F. J. (2012). Use and misuse of levels of analysis in leadership research: An illustrative review of leader-member exchange. *The Leadership Quarterly, 23*(6), 1080-1103.

Gooty, J., & Yammarino, F. J. (2011). Dyads in organizational research: Conceptual issues and multilevel analyses. *Organizational Research Methods*, 14(3), 456-483.

Gooty, J., & Yammarino, F. J. (2016). The Leader-Member Exchange relationship: A multisource, cross-level investigation. *Journal of Management, 42*(4), 915-935.

Gosserand, R. H., & Diefendroff, J. M. (2005). Emotional display rules and emotional labor: The moderating role of commitment. *Journal of Applied Psychology, 90*, 1256-1264.

Gottfredson, R. K., Wright, S. L., & Heaphy, E. D. (2020). A critique of the Leader-Member Exchange construct: Back to square one. *The Leadership Quarterly, 31*, 1-17.

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, *25*, 161-177.

Graen, G., Novak, M. A., & Sommerkamp, P. (1982). The effects of Leader-Member Exchange and job design on productivity and satisfaction: Testing a dual attachment model. *Organizational Behavior and Human Performance, 30*, 109-131.

Graen, G., & Schiemann, W. (1978). Leader-member agreement: A vertical dyad linkage approach. *Journal of Applied Psychology, 63*(2), 206-212.

Graen, G. B. (1976). Role-making processes within complex organizations. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1202–1245). Rand McNally.

Graen, G. B., & Cashman, J. (1975). A role-making model of leadership in formal organizations: A developmental approach. In J. G. Hunt & L. L. Larson (Eds.), *Leadership frontiers* (pp. 143-166). Kent State University Press.

Graen, G. B., Liden, R. C., & Hoel, W. (1982). Role of leadership in the employee withdrawal process. *Journal of Applied Psychology, 67*, 868-872.

Graen, G. B., & Scandura, T. A. (1987). Toward a psychology of dyadic organizing. *Research in Organizational Behavior, 9*: 175-208.

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader–member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, *6*, 219-247.

Graen, S. G., Anderson, S. E., & Shivers, S. L. (1996). Demographic and organizational influences on leader-member exchange and related work attitudes. *Organizational Behavior and Human Decision Processes, 6*(2), 203-214.

Graves, L. M., & Luciano, M. M. (2013). Self-determination at work: Understanding the role of leader-member exchange. *Motivation and Emotion, 37*, 518-538.

Hackman, J. R., & Wageman, R. (2007). Asking the right questions about leadership: Discussion and conclusions. *American Psychologist, 62*(1), 43-47.

Hannah, S. T., & Lester, P. B. (2009). A multilevel approach to building and leading learning organizations. *The Leadership Quarterly, 20*, 34-48.

He, W., Fehr, R., Yam, K. C., Long, L. R., & Hao, P. (2017). Interactional justice, leader–member exchange, and employee performance: Examining the moderating role of justice differentiation. *Journal of Organizational Behavior, 38*, 537-557.

Heller, T., & Van Til, J. (1983). Leadership and followership: Some summary propositions. *Journal of Applied Behavioral Science*, *18*, 405-414.

Hill, L. (2017). Innovative Organizations. *Network Journal, 24*(1), 68.

Hofmann, D. A., Morgeson, F. P., & Gerras, S. J. (2013). Climate as a moderator of the relationship between leader-member exchange and content specific citizenship: Safety climate as an exemplar. *Journal of Applied Psychology, 88*(1), 170-178.

Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations (2nd ed.). Sage.

Hollander, E. P. (1992). Leadership, followership, self, and others. *The Leadership Quarterly, 3*(1), 43-54.

Hollander, E. P., & Julian, J. W. (1969). Contemporary trends in the analysis of leadership processes. *Psychological Bulletin, 71*(5), 387-397.

House, J. S. (1981). *Work stress and social support*. Addison Wesley.

House, R. J. (1971). A path-goal theory of leadership. *Administrative Science Quarterly, 16*, 321-338.

House, R. J., & Dessler, G. (1974). The path-goal theory of leadership: Some post-hoc and a priori tests. In J. G. Hunt & L. L. Larson (Eds.). *Contingency approaches to leadership.* Southern Illinois University Press.

House, R. J., & Mitchell, T. R. (1974). Path-goal theory of leadership. *Journal of Contemporary Business, 3*, 81-98.

Hu, J., & Liden, R. C. (2013). Relative leader-member exchange within team contexts: How and when social comparison impacts individual effectiveness. *Personnel Psychology, 66*(1), 127-172.

Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp.76-99). Sage.

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to under parameterized model misspecification. *Psychological Methods*, *3*, 424-453. doi:10.1037/1082-989x.3.4.424

Huang, X., Chan, S. C. H., Lam, W., & Nan, X. (2010). The joint effect of leader-member exchange and emotional intelligence on burnout and work performance in call centers in China. *The International Journal of Human Resource Management*, *21*(7).

Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. *The Leadership Quarterly, 29*, 549-569.

Hui, C., Lam, S. S. K., & Law, K. K. S. (2000). Instrumental values of organizational citizenship behavior for promotion: A field quasi-experiment. *Journal of Applied Psychology, 85*(5), 822-828.

Ilies, R., Nahrgang, J. D., & Morgeson, F. P. (2007). Leader-member exchange and citizenship behaviors: A meta-analysis. *Journal of Applied Psychology, 92,* 269-277.

Jackson, E. M., & Johnson, R. E. (2012). When opposites do (and do not) attract: Interplay of leader and follower self-identities and its consequences for leader-member exchange. *The Leadership Quarterly, 23*, 488-501.

Jago, A. G. (1982). Leadership: Perspectives in theory and research. *Management Science, 28*(3), 315-336.

Janssen, O., & Van Yperen, N. W. (2004). Employees' goal orientations, the quality of leader–member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal, 47*, 368−384.

Johnson, R. E., & Saboe, K. (2011). Measuring implicit traits in organizational research: Development of an indirect measure of employee implicit self-concept. *Organizational Research Methods, 14*, 530-547.

Joseph, D. L., Newman, D. A., & Sin, H. P. (2011). Leader-member exchange (LMX) measurement: Evidence of consensus, construct breadth, and discriminant validity. In D. Bergh & D. Ketchen Jr (Eds.), *Building methodological bridges: Research methodology in strategy and management*. *6*, 89-135. Emerald.

Jung, D. I., & Avolio, B. J. (2000). Opening the black box: An experimental investigation of the mediating effects of trust and value congruence on transformational and transactional leadership. *Journal of Organizational Behavior, 21*, 949-964.

Kacmar, K. M., Witt, L. A., Zivnuska, S., & Gully, S. M. (2003). The interactive effect of leader–member exchange and communication frequency on performance ratings. *Journal of Applied Psychology, 88*, 764-772.

Kark, R., & van Dijk, D. (2007). Motivation to lead, motivation to follow: The role of the self-regulatory focus in leadership processes. *Academy of Management Review, 32*(2), 500-528.

Kemelgor, B. H. (1982). Job satisfaction as mediated by the value congruity of supervisors and their subordinates. *Journal of Occupational Behavior, 3*, 147-160.

Kim, J., Yammarino, F. J., Dionne, S. D., Eckardt, R., Cheong, M., Tsai, C., & Park, J. W. (2020). State-of-the-science review of leader-follower dyads research. *The Leadership Quarterly, 31*.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). Guilford.

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions*. Jossey-Bass.

Krasikova, D. V., & LeBreton, J. M. (2012). Just the two of us: Misalignment of theory and methods in examining dyadic phenomena. *Journal of Applied Psychology, 97*(4), 739-757.

Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology, 49*(1), 1-49.

Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology, 58*(2), 281-342.

Lafreniere, K. D., Lee, C. C., Craig, J., Shah, D., & Cramer, K. M. (2021). Personality and meta-motivational predictors of aggressive driving. *Journal of Motivation, Emotion, and Personality, 10,* 1-12.

Lam, S. S. K., & Schaubroeck, J. (2000). A field experiment testing frontline opinion leaders as change agents. *Journal of Applied Psychology, 85*(6), 987-995.

Liden, R. C., Anand, S., & Vidyarthi, P. (2016). Dyadic relationships. *Annual Review of Organizational Psychology and Organizational Behavior, 3*, 139-166.

Liden, R. C., & Graen, G. (1980). Generalizability of the vertical dyad linkage model of leadership. *Academy of Management Journal, 23*(3).

Liden, R. C., & Maslyn, J. (1998). Multidimensionality of leader-member exchange: An empirical assessment through scale development. *Journal of Management, 24*(1), 43-72.

Liden, R. C., Sparrowe, R. T., & Wayne, S. J. (1997). Leader-member exchange theory: The past and potential for the future. *Research in Personnel and Human Resources Management*, *15*, 47-119.

Liden, R. C., Wayne, S. J., & Sparrowe, R. T. (2000). An examination of the mediating role of psychological empowerment on the relations between the job, interpersonal relationships, and work outcomes. *Journal of Applied Psychology, 85*(3), 407-416.

Liden, R. C., Wayne, S. J., & Stilwell, D. (1993). A longitudinal study on the early development of leader-member exchange. *Journal of Applied Psychology, 78*, 662-674.

Little, L. M., Gooty, J., & Williams, M. (2016). The role of leader emotion management in leader-member exchange and follower outcomes. *The Leadership Quarterly, 27*, 85-97.

Little, T. D. (2013). *Longitudinal structural equation modeling*. Guilford Press.

Lord, R. G. (1985). An information processing approach to social perceptions, leadership perceptions and behavioral measurement on organizational settings. In B. M. Staw & L. L. Cummings (Eds.), *Research in Organizational Behavior*. *7*, 85-128.

Lord, R. G., & Brown, D. J. (2001). Leadership, values and subordinate self-concepts. *The Leadership Quarterly, 12*(2), 133-152.

Lord, R. G., Day, D. V., Zaccaro, S. J., Avolio, B. J., & Eagly, A. H. (2017). Leadership in applied psychology: Three waves of theory and research. *Journal of Applied Psychology, 102*(3), 434-451.

Lord, R. G., Foti, R. J., & De Vader, C. L. (1984). A test of leadership categorization theory: Internal structure, information processing, and leadership perceptions. *Organizational Behavior Human Performance, 34*(3), 343–378.

Lord, R. G., & Maher, K. J. (1993). *Leadership and information processing: Linking perceptions and performance*. Routledge.

MacDonald, H. A., Sulsky, L. M., & Brown, D. J. (2008). Leadership and perceiver cognition: Examining the role of self-identity in implicit leadership theories. *Human Performance, 21*, 333-353.

Malik, M., Wan, D., Ahmad, M. I., Naseem, M. A., & Rehman, R. (2015). The role of LMX in employee's job motivation, satisfaction, empowerment, stress, and turnover: Cross country analysis. *The Journal of Applied Business Research, 31*(5), 1988-2000.

Markham, S. E., Markham, I. S., & Smith, J. W. (2015). At the crux of dyadic leadership: Self-other agreement of leaders and direct reports - Analyzing 360-degree feedback. *The Leadership Quarterly, 26*, 958-977.

Markham, S. E., Yammarino, F. J., Murry, W. D., & Palanski, M. E. (2010). Leader-member exchange, shared values, and performance: Agreement and levels of analysis do matter. *The Leadership Quarterly, 21*(3), 469-480.

Martin, R., Guillaume, Y., Thomas, G., Lee, A., & Epitropaki, O. (2016). Leader-Member Exchange (LMX) and performance: A meta-analytic review. *Personnel Psychology, 69*, 67-121.

Martins, L. L., Eddleston, K. A., & Veiga, J. F. (2002). Moderators of the relationship between work-family conflict and career satisfaction. *Academy of Management Journal, 45*, 399-409.

Maslyn, J. M., Schyns, B., & Farmer, S. M. (2017). Attachment style and leader-member exchange. *Leadership and Organization Development Journal, 38*(3), 450-462.

Matta, F. K., Scott, B. A., Koopman, J., & Conlon, D. E. (2015). Does seeing "eye to eye" affect work engagement and organizational citizenship behavior? A role theory perspective on LMX agreement. *Academy of Management Journal, 58*(6), 1686-1708.

Matta, F. K., & Van Dyne, L. (2015). Leader-member exchange and performance: Where we are and where we go from here. In T. N. Bauer & B. Erdogan (Eds.), *The Oxford handbook of leader-member exchange.* Oxford University Press.

Maurer, T. J., & Lord, R. G. (1991). An exploration of cognitive demands in group interaction as a moderator of information processing variables in perceptions of leadership. *Journal of Applied Social Psychology*, 21, 821-839.

Mayfield, M., & Mayfield, J. (2009). The role of leader-follower relationships in leader communication: A test using the LMX and motivating language models. *The Journal of Business Inquiry, 8*(1), 65-82.

Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods, 17*, 437-455.

Meglino, B. M., Ravlin, E. C., & Adkins, C. L. (1989). A work values approach to corporate culture: A field test of the value congruence process and its relationship to individual outcomes. *Journal of Applied Psychology, 74*, 424-432.

Miner, J. B. (1965). *Studies in management education*. Organizational Measurement Systems Press.

Minsky, B. D. (2002). *LMX dyad agreement: Construct definition and the role of supervisor/subordinate similarity and communication in understanding LMX* [Unpublished doctoral dissertation] Louisiana State University.

Mumtaz, S., & Rowley, C. (2020). The relationship between leader-member exchange and employee outcomes: Review of past themes and future potential. *Management Review Quarterly, 70*, 165-189.

Nahrgang, J. D., Morgeson, F. P., & Ilies, R. (2009). The development of leader-member exchanges: Exploring how personality and performance influence leader and member relationships over time. *Organizational Behavior and Human Decision Processes, 108,* 256-266.

Nelson, D., Basu, R., & Purdie, R. (1998). An examination of exchange quality and work stressors in leader-follower dyads. *International Journal of Stress Management*, *5*, 103-112.

Newcombe, M. J., & Ashkanasy, N. M. (2002). The role of affect and affective congruence in perceptions of leaders: An experimental study. *The Leadership Quarterly*, *13*(5), 601-614.

Newman, D. A., Joseph, D. L., & Hulin, C. L. (2010). Job attitudes and employee engagement: considering the attitude "A-factor." In S. L. Albrecht (Ed.), *Handbook of employee engagement: Perspectives, issues, research and practice* (pp. 43-61). Edward Elgar Publishing.

Northouse, P. G. (2008). *Leadership: Theory and Practice.* SAGE Publications Inc.

Northouse, P. G. (2021). *Introduction to leadership: Concepts and practice* (5th ed.). Sage Publications, Inc.

Noy, C. (2008). Sampling knowledge: the hermeneutics of snowball sampling in qualitative research. *International Journal of Social Research Methodology, 11*, 327-344.

O'Connell, K. A., Gerkovich, M. M., Bott, M., Cook, M. R., & Shiffman, S. (2000). Playfulness, arousal-seeking, and rebelliousness during smoking cessation. *Personality and Individual Differences, 29*, 671-683.

Offermann, L. R., & Hellmann, P. S. (1996). Leadership behavior and subordinate stress: A 360" view. *Journal of Occupational Health Psychology, 1*(4), 382–390.

O'Reilly, C. A., III, Chatman, J., & Caldwell, D. F. (1991). People and organizational culture: A profile comparison approach to assessing person-organization fit. *Academy of Management Journal, 34*, 487-516.

Otis, N., & Pelletier, L. G. (2005). A motivational model of daily hassles, physical symptoms, and future work intentions among police officers. *Journal of Applied Social Psychology, 35*, 2193–2214.

Park, S., Sturman, M. C., Vanderpool, C., & Chan, E. (2015). Only time will tell: The changing relationships between LMX, job performance, and justice. *Journal of Applied Psychology, 100*(3), 660-680.

Parker, C., Scott, S., & Geddes, A. (2020). Snowball sampling. *Sage Research Methods Foundations.* doi: 10.4135

Phillips, A. S., & Bedeian, A. G. (1994). Leader-follower exchange quality: The role of personal and interpersonal attributes. *Academy of Management Journal*, 37, 990-1001.

Pinder, C. C. (2008). *Work motivation in organizational behavior*. Psychology Press.

Portell, M., & Mullet, E. (2014). Why do people enjoy watching natural disasters and human violence on television? A reversal theory perspective. *Journal of Motivation, Emotion, and Personality, 2*(1), 38-49.

Randolph-Seng, B., Cogliser, C. C., Randolph, A. F., Scandura, T. A., Miller, C. D., & Smith-Genthôs, R. (2016). Diversity in leadership: Race in leader-member exchanges. *Leadership & Organization Development Journal, 37*(6), 750-773.

Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology, 87*, 698-714.

Richer, S. F., Blanchard, C., & Vallerand, R. J. (2002). A motivational model of work turnover. *Journal of Applied Psychology, 32*, 2089-2113.

Richer, S. F., & Vallerand, R. J. (1995). Supervisors' interactional styles and subordinates' intrinsic and extrinsic motivation. *The Journal of Social Psychology, 135*(6), 707-722.

Robson, R. (2007, July 1-5). *The Apter Leadership Profiling System (ALPS): Internal consistency and prediction of employee engagement.* Reversal Theory Society Conference, Gregynog, Wales, United Kingdom.

Rost, J. C. (1991). *Leadership for the twenty-first century*. Praeger.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, *33*, 300-303.

Ruben, B. D., & Gigliotti, R. A. (2017). Communication: Sine qua non of organizational leadership theory and practice. *International Journal of Business Communication*, *54*(1), 12-30.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and wellbeing. *American Psychologist, 55*, 68-78.

Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory: An organismic-dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). University of Rochester.

Scandura, T. A. (1999). Rethinking leader-member exchange: An organizational justice perspective. *The Leadership Quarterly*, 10: 25-40.

Scandura, T. A., & Graen, G. B. (1984). Moderating effects of initial leader-member exchange status on the effects of a leadership intervention. *Journal of Applied Psychology, 69*(3), 428-436.

Schriesheim, C. A. (1995). Multivariate and moderated within- and between-entity analysis (WABA) using hierarchical linear multiple regression. *The Leadership Quarterly, 6*(1), 1-18.

Schriesheim, C. A., Castro, S. L., & Cogliser, C. C. (1999). Leader–member exchange (LMX) research: A comprehensive review of theory, measurement, and data-analytic practices. *Leadership Quarterly, 10*, 63-113.

Schriesheim, C. A., Castro, S. L., Zhou, X. T., & Yammarino, F. J. (2001). The folly of theorizing "a" but testing "B": A selective level-of-analysis review of the field and a detailed leader–member exchange illustration. *The Leadership Quarterly, 12*(4), 515-551.

Schriesheim, C. A., Cogliser, C. C., Scandura, T. A., Lankau, M. J., & Powers, K. J. (1999b). An empirical comparison of approaches for quantitatively assessing the content adequacy of paper-and-pencil measurement instruments. *Organizational Research Methods, 2*, 140-156.

Schriesheim, C. A., Neider, L. L., & Scandura, T. A. (1998). Delegation and leader-member exchange: Main effects, moderators, and measurement issues. *Academy of Management Journal*, *41*, 298-318.

Schriesheim, C. A., Neider, L. L., Scandura, T. A., & Tepper, B. J. (1992). Development and preliminary validation of a new scale (LMX-6) to measure leader-member exchange in organizations. *Educational and Psychological Measurement, 52*, 135-147.

Schriesheim, C. A., Wu, J. B., & Cooper, C. D. (2011). A two-study investigation of item wording effects on leader-follower convergence in descriptions of the leader-member exchange (LMX) relationship. *The Leadership Quarterly, 22*, 881-992.

Schyns, B., & Day, D. V. (2010). Critique and review of leader–member exchange theory: Issues of agreement, consensus, and excellence. *European Journal of Work and Organizational Psychology, 19*, 1-29.

Sears, G. J., & Hackett, R. D. (2011). The influence of role definition and affect in LMX: A process perspective on the personality - LMX relationship. *Journal of Occupational and Organizational Psychology, 84*(3), 544-564.

Seers, A., & Graen, G. B. (1984). The dual attachment concept: A longitudinal investigation of the combination of task characteristics and leader-member exchange. *Organizational Behavior and Human Performance*, *33*, 283–306.

Selznick, P. (1957). *Leadership in administration.* Row, Peterson.

Seo, J. J., Nahrgang, J. D., Carter, M. Z., & Hom, P. W. (2018). Not all differentiation is the same: Examining the moderating effects of leader-member exchange (LMX) configurations. *Journal of Applied Psychology, 103*(5), 478-495.

Shamir, B., Zakay, E., Breinin, E. B., & Popper, M. (1998). Correlates of charismatic leader behavior in military units: Subordinates' attitudes, unit characteristics, and superiors' appraisals of leader performance. *Academy of Management Journal, 41*, 387-409.

Shanock, L. R., Baran, B. E., Gentry, W. A., Pattison, S. C., & Heggestad, E. D. (2010). Polynomial regression with response curve analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business Psychology, 25*, 543-554.

Shin, A. J., & Zhou, J. (2003). Transformational leadership, conservation and creativity: Evidence from Korea. *Academy of Management Journal*, *46*, 703-714.

Shuell, T. J. (1986). Cognitive conceptions of learning. *Review of Educational Research, 56*, 411-436.

Sin, H. P., Nahrgang, J. D., & Morgeson, F. P. (2009). Understanding why they don't see eye to eye: An examination of leader-member exchange (LMX) agreement. *Journal of Applied Psychology, 94*(4), 1048-1057.

Smircich, L., & Morgan, G. (1982). Leadership: The Management of Meaning. *The Journal of Applied Behavioral Science*, *18*, 257-273.

Solmon, M. A. (1996). Impact of motivational climate on students' behaviors and perceptions in a physical education setting. *Journal of Educational Psychology, 88*(4), 731-738. doi:10.1037/0022-0663.88.4.731

Sparrowe, R. T., & Liden, R. C. (1997). Process and structure in leader-member exchange. *Academy of Management Review*, *22*, 522-552.

Spearman, C. (1904). 'General intelligence,' objectively determined and measured. *The American Journal of Psychology, 15*(2), 201-293.

Steers, R. M., Mowday, R. T., & Shapiro, D. L. (2004). The future of work motivation theory. *Academy of Management Review, 29*, 379-387.

Steiger, J. H., & Lind, J. C. (1980, June). *Statically based tests for the number of common factors*. Paper presented at the Psychometric Society annual meeting, Iowa City, IA.

Sy, T. (2010). What do you think of followers? Examining the content, structure and consequences of implicit followership theories. *Organizational Behavior Human Decision Processes, 113*, 73-84.

Tekleab, A. G., & Taylor, S. (2003). Aren't there two parties in an employment relationship? Antecedents and consequences of organization-employee agreement on contract obligations and violations. *Journal of Organizational Behavior*, 24, 585-608.

Tepper, B. J. (1995). Upward maintenance tactics in supervisory mentoring and non-mentoring relationships. *Academy of Management Journal, 38*, 1191-1205.

Tierney, P., Farmer, S. M., & Graen, G. B. (1999). An examination of leadership and employee creativity: The relevance of traits and relationships. *Personnel Psychology, 52*(3), 591-620.

Traub, R. E. (1994). *Reliability for the social sciences: Theory and applications*. Sage.

Tse, H. H. M., & Ashkanasy, N. M. (2015). The dyadic level of conceptualization and analysis: A missing link in multilevel OB research? *Journal of Organizational Behavior, 36*(8), 1176-1180.

Tse, H. H. M., Troth, A. C., Ashkanasy, N. M., & Collins, A. L. (2017). Affect and leader-member exchange in the new millennium: A state-of-art review and guiding framework. *The Leadership Quarterly, 29*(1), 135-149.

Tsui, A. S., & O'Reilly, C. A. (1989). Beyond simple demographic effects: The importance of relational demography in superior-subordinate dyads. *Academy of Management Journal, 32*, 402-423.

Turban, D. B., & Jones, A. P. (1988). Supervisor-subordinate similarity: Types, effects, and mechanisms. *Journal of Applied Psychology, 73*, 228-234.

Turban, D. B., Jones, A. P., & Rozelle, R. M. (1990). Influences of supervisor liking of a subordinate and the reward context on the treatment and evaluation of that subordinate. *Motivation and Emotion, 14*, 215-233.

Uhl-Bien, M. (2006). Relational leadership theory: Exploring the social processes of leadership and organizing. *The Leadership Quarterly, 17*, 654-676.

Uhl-Bien, M., & Maslyn, J. M. (2003). Reciprocity in manager-subordinate relationships: Components, configurations, and outcomes. *Journal of Management, 29*, 511-532.

Uhl-Bien, M., Riggio, R. E., Lowe, K. B., & Carsten, M. K. (2014). Followership theory: A review and research agenda. *The Leadership Quarterly, 25*, 83-104.

Van den Broeck, A., Vansteenkiste, M., & De Witte, H. (2008). Self-determination theory: A theoretical and empirical overview in occupational health psychology. In J. Houdmont & S. Leka (Eds.), *Occupational health psychology: European perspectives on research, education, and practice* (pp. 63–88). Nottingham University.

Van den Broeck, A., Vansteenkiste, M., De Witte, H., & Lens, W. (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work & Stress, 22*, 277-294.

Van Dierendonck, D., Haynes, C., Borrill, C., & Stride, C. (2004). Leadership behavior and subordinate well-being. *Journal of Occupational Health Psychology, 9*(2), 165-175.

Vidyarthi, P. R., Erdogan, B., Anand, S., Liden, R. C., & Chaudhry, A. (2014). One member, two leaders: Extending leader-member exchange theory to dual leadership context. *Journal of Applied Psychology, 99*(3), 468-483.

Vidyarthi, P. R., Liden, R. C., Anand, S., Erdogan, B., & Ghosh, S. (2010). Where do I stand? Examining the effects of leader-member exchange social comparison on employee work behaviors. *Journal of Applied Psychology, 95*(5), 849-861.

Wakabayashi, M., & Graen, G. B. (1984). The Japanese career progress study: A 7-year follow-up. *Journal of Applied Psychology, 69*, 603-614.

Wang, H., Law, K. S., Hackett, R. D., Wang, D., & Chen, Z. X. (2005). Leader-member exchange as a mediator of the relationship between transformational leadership and followers' performance and organizational citizenship behavior. *Academy of Management Journal, 48*, 420-432.

Wang, X. -H. (F.), & Howell, J. M. (2010). Exploring the dual-level effects of transformational leadership on followers. *Journal of Applied Psychology, 95*(6), 1134-1144.

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and negative affectivity and their relation to anxiety and depressive disorders. *Journal of Abnormal Psychology*, *97*, 346-353.

Wayne, S. J., & Ferris, G. R. (1990). Influence tactics, affect, and exchange quality in supervisor-subordinate interactions: A laboratory experiment and field study. *Journal of Applied Psychology, 75*, 487-499.

Wegge, J., Jeppesen, H. J., Weber, W. G., Pearce, C. L., Silva, S. A., Pundt, A., Jonsson, T., Wolf, S., Wassenaar, C. L., Unterrainer, C., & Piecha, A. (2010). Promoting work motivation in organizations: Should employee involvement in organizational leadership become a new tool in the organizational psychologist's kit? *Journal of Personnel Psychology, 9*(4), 154-171.

Weng, C.-J. (2016). Does leader-member exchange enhance performance in the hospitality industry? The mediating roles of task motivation and creativity. *International Journal of Contemporary Hospitality Management, 28*(5), 969-987.

Wilson, K. S., Sin, H. P., & Conlon, D. E. (2010). What about the leader in leader–member exchange? The impact of resource exchanges and substitutability on the leader. *Academy of Management Review, 35,* 358-372.

Yammarino, F. J. (1998). Multivariate aspects of the varient/WABA approach: A discussion and leadership illustration. *The Leadership Quarterly, 9*(2), 203-227.

Yammarino, F. J., Dionne, S. D., Chun, J. U., & Dansereau, F. (2005). Leadership and levels of analysis: A state-of-the-science review. *The Leadership Quarterly, 16*(6), 879-919.

Yammarino, F. J., & Dubinsky, A. J. (1992). Superior-subordinate relationships: A multiple levels of analysis approach. *Human Relations, 45*(6), 575-600.

Yammarino, F. J., & Gooty, J. (2017). Multi-level issues and dyads in leadership

    research. In B. Schyns, R. Hall, & P. Neves (Eds.). *Handbook of methods in*

    leadership research (pp. 229-255). Edward Elgar Publishing.

Yammarino, F. J., & Gooty, J. (2019). Cross-level models. In S. E. Humphrey, & J. M.

    LeBreton (Eds.). *Handbook of multilevel theory, measurement, and analysis*.

    American Psychological Association.

Yentes, R. D., & Wilhelm, F. (2021). *Careless: Procedures for computing indices of*

    careless responding. R package version 1.2.1.

Yukl, G. (1998). *Leadership in organizations*. Prentice-Hall.

Zacher, H., Pearce, L. K., Rooney, D., & McKenna, B. (2014). Leaders' personal wisdom

    and leader-member exchange quality: The role of individualized

    consideration. *Journal of Business Ethics*, *121*(2), 171-187.

Zhang, L., & Morand, D. (2014). The linkage between status-leveling symbols and work

    attitudes. *Journal of Managerial Psychology, 29*(8), 973-993.

APPENDIX A

INFORMED CONSENT

HUMAN SUBJECTS CONSENT FORM

The following is a brief summary of the project in which you are asked to participate. Please read this information before signing the statement below. You must be of legal age or must be co-signed by parent or guardian to participate in this study.

TITLE OF PROJECT: Leader-Member Study

PURPOSE OF STUDY/PROJECT:
The purpose of this study is to explore the relationships between scores from leaders and members using the ALP, ALP-S, ALP-P, and LMX-7. The comparison of reported scores between leaders and members will be examined.

SUBJECTS:
All participants will be 18 years of age or older. The leader subject pool will consist of identified supervisors, while the member subject pool will consist of direct reports. All participation is voluntary. Participants may drop out of the study at any time. Participation in the study will in no way affect your relationship with Louisiana Tech University. The researchers are faculty members and graduate students at Louisiana Tech University.

PROCEDURE:
Participants are agreeing to allow the research team to access their data from the ALP survey, ALP-S survey, ALP-P survey, and LMX-7 survey and link the data to the corresponding surveys of their indicated leader (or member). Participants are agreeing to provide the researchers with demographic information to test the representativeness of the sample. The demographic information will only be reported in the aggregate. Once all surveys have been taken, the data from both the leader and direct report will be linked and all identifying information will be deleted to create anonymity.

BENEFITS/COMPENSATION:
No compensation will be offered to research participants.

RISKS, DISCOMFORTS, ALTERNATIVE TREATMENTS: The participant understands that Louisiana Tech is not able to offer financial compensation nor to absorb the costs of medical treatment should you be injured as a result of participating in this research. No known risks are associated with this study. No alternative treatments will be offered. Some survey items may be extreme in terms of feelings and reactions. If participants experience any distress during or after the survey, they may contact the National Distress Hotline at 1-800-985-5990. The student may quit the survey at any time without consequence.

The following disclosure applies to all participants using online survey tools: This server may collect information and your IP address indirectly and automatically via "cookies".

   I, _____ attest with my signature that I have read and understood the following description of the study, "(Leader-Member Study)", and its purposes and methods. I understand that my (Or my Child's) participation in this research is strictly voluntary and my (or my child's) participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University or my grades in any way. Further, I understand that I may withdraw (my child) at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the results of the material will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

CONTACT INFORMATION:
The principal experimenters listed below may be reached to Answer questions about the research, subjects' rights, or related matters.

PRINCIPAL INVESTIGATOR: Mitzi Desselles ; mdessell@latech.edu
CO-INVESTIGATOR: Barton Crum – bcc017@latech.edu; Sidney Thomas – sth043@latech.edu; Stacy Gilbert – stacyc@latech.edu; Devonia Love-Vaughn – email; Wes Cavin – email

Members of the Human Use Committee of Louisiana Tech University may also be contacted if a problem cannot be discussed with the experimenters:

Dr. Richard Kordal, Director, Office of Intellectual Property & Commercialization
Ph: (318) 257-2484, Email: rkordal@latech.edu

- ○ I Accept: Continue to survey
- ○ I Decline: I do not wish to participate

APPENDIX B

ALP AND ALP-S

Directions landing page for Leaders (ALP):

You have been asked to describe how you have led [insert name of follower] throughout this survey.

Instructions

Please decide for each of the following descriptive phrases how often it applies to you in your role as a leader at work. The phrases represent different aspects of team climate that a leader can influence. You are asked to describe how often you foster the kind of climate stated in each phrase, regardless of how well you succeed in actually creating that type of climate. Here are a few guidelines to keep in mind as you complete this section of the survey:

· The term "team" refers to any group for which you are (or will be) responsible as a leader, whether this is a project group, an informal work team, a department, a unit, a division, a staff group, or an entire organization.

· There are no right or wrong answers. Your responses should be based on your own estimates of how you operate as a leader, not what you think other people expect.

· The more careful and accurate you are in your responses, the greater the value of the feedback you will receive.

· Try not to allow your feelings at this moment to sway your judgment but make an estimate based on how you generally view your role as a leader.

Survey for Leaders:

As a leader to [insert follower's name], I try to foster a climate in which there is...

A clear vision for the team

Never	Seldom	Sometimes	Often	Very Often	Always
⭘	⭘	⭘	⭘	⭘	⭘

[Scale repeats for all items]

A stimulating work environment

A friendly atmosphere

Sharing of knowledge and skills

The belief by team members that they are valued

A determination to succeed

A desire among team members to be in control

Acceptance of the correct way of doing things

Anticipation of future consequences

Willingness to re-assess how the work is done

Excitement about the work

Adherence to accepted procedures

Appreciation for each team member's unique qualities

Open dissemination of information within the team

The feeling among the team that they are liked

Critical thinking

A sense of mission

Sensitivity toward the feelings of others

A passion for what the team does

Voluntary sharing of resources

A warm, collegial atmosphere

Expression of emotional support for others

Pleasure in mastering problems

A sense in team members that they are appreciated as people

A belief in following established practices

Caring for other team members

A desire to demand the best from oneself

A feeling of self-worth by each team member

Compliance with rules and regulations

Assertive behavior on the part of team members

Enjoyment of the work

Inspired commitment to long-term goals

Willingness to give practical support to other team members

Willingness to follow routines
Enthusiasm among the team

Awareness of the team's strategic purpose

Recognition of the importance of innovation

Sharing of best practices

Eagerness to challenge bureaucracy

Openness to new ideas

Freedom to debate options

Openness to non-traditional approaches

Determination to master difficult challenges

Strong resolve to get things done

Directions landing page for Followers (ALP-S):

You have been asked to describe how you have been led by [insert name of leader] throughout this survey.

Instructions

Please decide for each of the following descriptive phrases how often it applies to your manager or supervisor in his or her role as leader. Note that you are asked to make a judgment about how often you think the phrase applies to your leader or manager. Here are a few guidelines to keep in mind as you complete the questionnaire:

-   The aim of the questionnaire is to profile your manager or leader's particular approach to leadership. There are no right or wrong answers.

-   The term "team" refers to the group reporting to the leader, whether this is a department, a unit, a division, a staff group, an office, or an entire organization.

-   Your responses to this questionnaire will remain confidential and reported only as part of group averages or other kinds of aggregations.

-   The questionnaire asks you to record your own opinion, not the opinions of others.

-   The more careful and accurate you are in your responses, the greater the value of the feedback for your leader.

-   Try not to allow your feelings at this moment to sway your judgment, but make an estimate based on how you generally see your leader.

Survey for Direct Reports:

My leader fosters a climate in which there is...

A clear vision for the team

Never	Seldom	Sometimes	Often	Very Often	Always
○	○	○	○	○	○

[Scale repeats for all items]

A stimulating work environment

A friendly atmosphere

Sharing of knowledge and skills

The belief by team members that they are valued

A determination to succeed

A desire among team members to be in control

Acceptance of the correct way of doing things

Anticipation of future consequences

Open dissemination of information within the team

The feeling among the team that they are liked

Critical thinking

A sense of mission

A desire to demand the best from oneself

A feeling of self-worth by each team member
Sensitivity toward the feelings of others

A passion for what the team does

Voluntary sharing of resources

A warm, collegial atmosphere

Expression of emotional support for others

Pleasure in mastering problems

A sense in team members that they are appreciated as people

A belief in following established practices

Caring for other team members

Sharing of best practices

Willingness to re-assess how the work is done

Excitement about the work

Adherence to accepted procedures

Appreciation for each team member's unique qualities

Compliance with rules and regulations

Assertive behavior on the part of team members

Enjoyment of the work

Inspired commitment to long-term goals

Willingness to give practical support to other team members

Eagerness to challenge bureaucracy

Willingness to follow routines
Enthusiasm among the team

Awareness of the team's strategic purpose

Recognition of the importance of innovation

Openness to new ideas

Freedom to debate options

Openness to non-traditional approaches

Determination to master difficult challenges

Strong resolve to get things done

APPENDIX C

LMX-7

Directions landing page for Leaders:

You have been asked to describe how you have led [insert name of follower] throughout this survey.

Instructions

The following questionnaire contains items that ask you to describe your relationship with the same specific direct report/colleague. For each of the items, indicate the degree to which the item applies to you and the person that is referenced above the questions. This questionnaire is purely for research purposes and the information collected will never be shared. All responses will be held confidential.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
○	○	○	○	○

[scale repeats for all items]

I know where I stand with my subordinate.

I usually know how satisfied my subordinate is with me.

Regardless of how much power I have built into my position, I would be personally inclined to use my power to help my subordinate solve problems in his or her work.

Regardless of how much power I have built into my position, I would be willing to "bail out" my subordinate, even at my own expense, if he or she really needed it.

I think I understand my subordinate's problems and needs.

I think that I recognize my subordinate's potential.

I have enough confidence in my subordinate that I would defend and justify his or her decisions if he or she were not present to do so.

My working relationship with my subordinate is effective.

Directions landing page for Followers:

You have been asked to describe how you have been led by [insert name of leader] throughout this survey.

Instructions

This questionnaire contains items that ask you to describe your relationship with your leader. For each of the items, indicate the degree to which you think the item applies to you and the supervisor you have in mind.

I usually know where I stand with my supervisor.

○	○	○	○	○
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

[scale repeats for all items]

I usually know how satisfied my supervisor is with me.

Regardless of how much power he/she has built into his/her position, my supervisor would be personally inclined to use his/her power to help me solve my problems in my work.

Regardless of how much power he/she has built into his/her position, I can count on my supervisor to "bail me out," even at his or her own expense, when I really need it.

My supervisor understands my problems and needs.

My supervisor recognizes my potential.

My supervisor has enough confidence in me that he/she would defend and justify my decisions if I were not present to do so.

My working relationship with my supervisor is effective.

APPENDIX D

DEMOGRAPHICS

Demographic Questions for both Leaders and Followers

All of the information provided here will be kept confidential, and it will be stored separately from any other information that you will complete during this study. The findings will only be reported in aggregate.

What is your age in years: _____ (Fill in the blank)

How do you currently describe your gender identity:
- Male
- Female
- Other
- Prefer Not to Answer

Which categories describe you? Select all that apply to you:
- Caucasian or White
- African American or Black
- Hispanic, Latino, or Spanish Origin
- Asian
- American Indian or Alaska Native
- Middle Eastern or North African
- Native Hawaiian or Other Pacific Islander
- Some other race, ethnicity, or origin, please specify: _____
- Prefer Not to Answer

Where do you call home?
- Midwest (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, North Dakota, South Dakota, Wisconsin)
- Northeast (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont)
- South (Arkansas, Alabama, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia)
- West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming)
- Puerto Rico or other U.S. territories
- Other, please specify: _____

Major(s): _____

Minor(s): _____

Academic year in college:
- Freshman   - Junior

- Sophomore   - Senior

APPENDIX E

HUMAN USE APPROVAL LETTER

LOUISIANA TECH
UNIVERSITY.

OFFICE OF SPONSORED PROJECTS

MEMORANDUM

TO:	Mitzi Desselles, Barton Crum, Sidney Thomas, Stacy Gilbert, Matthew Johnson
FROM:	Dr. Richard Kordal, Director, Office of Intellectual Property & Commercialization (OIPC) rkordal@latech.edu
SUBJECT:	Human Use Committee Review
DATE:	December 8, 2021
RE:	**Approved Continuation of Study HUC 20-102 - RENEWAL 22**
TITLE:	**"Leader-Member Study"**

HUC 20-102 - RENEWAL 22

The above referenced study has been approved as of December 8, 2021 as a continuation of the original study that received approval on April 14, 2020. **This project will need to receive a continuation review by the IRB if the project, including collecting or analyzing data, continues beyond December 8, 2022.** Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.