LEADERSHIP AND OUTCOMES: THE EXPLANATORY ROLE OF TEAM SOCIAL NETWORK

by

YOUNG-JAE KIM

(Under the Direction of Brian J. Hoffman)

ABSTRACT

Despite the large amount of research that examined the relationship between leadership and various outcomes, the leadership scholars have continuously attempted to explore the explanatory mechanisms of leadership. Leaders may affect the formation of trust relationships among the group members due to their certain attitudes or behaviors, yet this aspect has not been actively applied to the leadership research. This study advances the understanding of leadership in three primary ways. First, this study adds a novel set of explanatory variables: the centralization and density of followers' trust networks. Second, two types of trust network variables are examined including task-based trust and support-based trust. Third, the explanatory role of the trust network variables was compared with collective LMX, a commonly supported explanatory variable of the association between leadership and outcomes. The results show that work group LMX mediated the associated between three leadership variables (ethical leadership, transformational leadership, and abusive supervision) and work group-level turnover intention. However, of the network indexes, only task-based trust network density emerged as a significant mediator, as it mediated the association between ethical

leadership and work group intent to quit. Although the indirect effects of leadership were not significant, three of the four trust network variables were significant predictors of work group turnover intention supporting the value of work group trust network indexes.
INDEX WORDS: social network, group leadership, network centralization, network density, trust

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A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2021

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December 2021

# DEDICATION

I would like to dedicate this dissertation to my lovely wife, Yoon-Young, and my son, Taeo, for supporting me with love, encouragement, and a big smile. I wouldn't be able to cross the finish line without you. Additionally, I dedicate my work to my parents, Marco and Rosa, and my sister, Claire, who always have been believing in me and supporting me. Thank you all for everything.

# ACKNOWLEDGEMENTS

First and foremost, I want to thank my advisor, Dr. Brian Hoffman, who taught me and trained me how to become a true scholar. Without you, I wouldn't be able to experience and learn all these amazing knowledge and skills. Especially, thank you for advising me with great insights in leadership research and assessment center method. Everytime I work with you, I always have some lessons to learn as a researcher. It was a true honor to have you as my advisor and a mentor. Dr. Dorothy Carter, thank you so much for your guidance on my dissertation with your knowledge of social network theories. You expanded my view of leadership research as I spent semesters with you working on some projects together. It was so lucky to meet you during my graduate study. Dr. Neal Outland, I really appreciate your support and thoughts on my dissertation. Wth your keen insights and comments, I finally was able to finish my research. Thank you so much for contributing to my study with your research expertise. Finally, I am thankful for my cohorts in the program and LPD lab members. It was so grateful to have you all as research colleagues and friends and spent years together.

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# CHAPTER 1

# INTRODUCTION

"Leadership is an activity, not a position" (Ashford & Sitkin, 2019, p.456).

A key advance in leadership research has been progressed in opening the "black box" of leadership. That is, studies have begun to flesh out not just what effective leadership looks like but also *why* various leadership styles are associated with outcomes. To this end, a variety of explanatory mechanisms have been examined, ranging from follower value congruence (Hoffman, Bynum, Piccolo, & Sutton, 2011) and identification (Van Knippenberg, Van Knippenberg, Cremer, & Hogg, 2004), follower development and performance (Dvir, Eden, Avolio, & Shamir, 2002), and the relationship between the leader and followers (Ashford & Sitkin, 2019). A recent meta-analysis comparing these various explanatory mechanisms underscored leader-member exchange (LMX) as the key mediator of the relationship between various types of leadership and follower performance (Gottfredson & Aguinis, 2017). However, the vast majority of LMX research has emphasized the dyadic relationship between the leader and his or her follower, often at the expense of examining the more complex pattern of relationships between workgroup members themselves.

Although fostering a high-quality relationship with followers is a keyway that leaders impact important organizational outcomes, more recent leadership research (e.g., Song et al., 2020; Zhang & Peterson, 2011) has begun to focus on the impact of leadership on the relationships that members of the leader's work group have with one

another. Particularly, the pattern of relationships between followers has been recently studied using social network perspectives. To this end, the social network of team members has emerged as an important antecedent of outcomes such as team performance (e.g., Sarker, Ahuja, Sarker, & Kirkeby, 2011) and an important explanatory mechanism of the association between leadership and outcomes (e.g., Bono & Anderson, 2005). Although the social network ties among workgroup members have been revealed as an important predictor of group outcomes, with a few notable exceptions (e.g., Balkundi, Kilduff, & Harrison, 2011; Friedrich, Griffith, & Mumford, 2016; Hoppe & Reinelt, 2010), leadership research has rarely attended to the impact of leadership on the social network among members of the leader's workgroup. Instead, existing research on social networks and leadership has tended to focus on the social networks of leaders themselves, the impact of a leader's network on followers, or shared leadership among group members (Carter, DeChurch, Braun, & Contractor, 2015). Although a few studies (e.g., Zhang & Peterson, 2011) have examined the influence of leadership on the social network of their workgroup, these studies have tended to focus on a single type of leadership, a single type of social network construct, and have not controlled for other popular explanatory mechanisms. This study seeks to better understand how leaders impact the social network ties among members of their workgroup and whether this pattern helps to explain the association between leadership and group outcomes like group members' turnover intention.

The purpose of the present study is to compare the impact of three different leadership variables (transformational leadership, ethical leadership, and abusive supervision) on two different aspects of followers' social network (e.g., task-based trust

and support-based trust density and centralization). In addition, these social network variables are examined as mediators of the relationship between leader behaviors and intent to quit and compared to LMX, the most strongly supported explanatory mechanism of leadership (Gottfredson & Aguinis, 2017). In doing so, this study makes three overarching contributions to the leadership literature.

First, given the substantial overlap among different leadership variables (DeRue, Nahrgang, Wellman, & Humphrey, 2011; Hoch, Bommer, Dulebohn, & Wu, 2018), the focus on a single leadership style in past studies (e.g., Balkundi et al., 2011; Wang, Fang, Qureshi, & Janssen, 2015; Zhang & Peterson, 2011) is problematic. Specifically, it is possible that past studies focusing on a single leadership style have misattributed which leadership style impacts followers' social networks. In addition, given on-going concerns about construct proliferation in the leadership domain (e.g., Bormann & Rowold, 2018; Hoch et al., 2018; Lord et al., 2017), it is important to directly compare leadership styles to determine whether they indeed have direct effects on key outcomes and explanatory variables. Accordingly, this study tests a model in which transformational leadership, ethical leadership, and abusive supervision, are examined as antecedents of the structure of their work group's social network.

Next, the vast majority of research examining team level explanatory variables has done so using team process variables that reflect either the dyadic relationship between the leader and followers or when examining group-level variables, reflecting an isomorphic (Kozlowski & Klein, 2000) or shared conceptualization of the process variable. In contrast, recent research has urged consideration of configural approaches to studying team process variables (Crawford & LePine, 2013). As noted above, research

using traditional approaches has pointed to the dyadic relationship between the leader and his or her followers as the key explanatory mechanism of leadership (Gottfredson & Aguinis, 2017). On the other hand, research stemming from the social network perspective has underscored the importance of the broader structure of relationships within the workgroup as a critical antecedent of outcomes. To date, the shared and configural perspectives have not been directly compared as explanatory mechanisms of leadership. Thus, a key contribution of this study is to determine whether configural variables explain the unique effects above and beyond the most strongly supported explanatory variable, LMX.

Finally, existing research on follower social networks has tended to focus on a single aspect of networks at a time. However, it is widely recognized that relationships are multidimensional (Ferris, Liden, Munyon, Summers, Basik, & Buckley, 2009). Two key features of relationships at work that have emerged across domains (e.g., leadership, mentoring, performance behaviors) correspond to the task and social support. And past studies have shown that affective and cognitive trust (e.g., McAllister, 1995) are the different mechanisms by which leadership impacts outcomes (Zhu, Newman, Miao, & Hooke, 2013). This study is the first of which we are aware to investigate differences in the network structure of task-related trust and support-related trust in order to determine whether types of network variables hold unique explanatory value in the leadership process.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1. Social Networks as Explanatory Mechanisms of Leadership

Recent decades have seen a considerable focus on the mechanics that account for the influence of leadership on organizational outcomes. During this time, scholars suggested that the leadership mechanisms follow an input-process-output logic (Illgen, Hollenbeck, Johnson, & Jundt, 2005), where the process explains how mediators play a role in the cause (e.g., leadership behaviors) and effect (e.g., performance) relationships, and to explain this process, several different mechanisms have emerged. For instance, research has examined that there are several potential mediators like identification, self (or team)-efficacy, and/or fairness perceptions that explain how the leadership behaviors predict outcomes like performance or job satisfaction (see Fischer, Dietz, & Antonakis, 2017 for details). Scholars have assumed that leadership behaviors make significant influences over members of groups and those members develop shared experiences.

Although a variety of different explanatory mechanisms of the link between leadership and outcomes have been examined, a common feature of this research is that it has focused on aggregated or shared explanatory variables. With shared approaches, researchers survey the leader's followers, assess agreement on the focal explanatory mechanism, and assuming sufficient agreement, the explanatory variable is aggregated into a shared, group-level construct. As scholars explored the mechanisms of group-level leadership (e.g., shared leadership or collective leadership), it has been an important topic

to discuss how to measure group-level variables. In the context of leadership study, the majority of group-level leadership behaviors were measured by aggregating the group members' perceptions toward their leadership experience (e.g., Brower, Schoorman, & Tan, 2000; Podsakoff, MacKenzie, & Bommer, 1996), assuming that all members are consistently agreeing on their perceptions. Crawford and LePine (2013) explained this method of aggregating all member perception and referred to as a shared unit construct. This *shared approach* describes common experiences or characteristics, which are shared by the group members equally. The assumption of this sharing experience is based on the collective aspect of the group and similar perspectives of the group-level constructs. Thus, studies with a shared unit construct approach assume that group members' perception of some process variables are evenly distributed and by aggregating those individual perceptions, the group-level construct can be measured. Notably, although LMX was historically viewed as a dyadic variable, more recently it has been recognized that LMX can also exist as a group-level construct (LeBlanc & González-Romá, 2012). In essence, group-level LMX reflects that some leaders are more effective at facilitating strong relationships across different workgroup members. Indeed, the Gottfredson and Aguinis (2017) meta-analysis that supported the explanatory value of LMX conceptualized LMX as a group-level construct.

In contrast to the traditional approaches (e.g., dyadic or shared) to investigate the explanatory mechanism of leadership, more recent research has used a *configural approach*. Configural approaches involve examining properties or interactions across the group members (Crawford & LePine, 2013). Whereas shared approaches assume isomorphism, configural approaches use compilation models, which assume

"…discontinuity and complex nonlinear emergence of constructs between levels. These models are not concerned with agreement or consistency among members with respect to some general team property but with patterns, distribution, and variability among specific member contributions" (Crawford & LePine, 2013, p.34). Scholars have adopted social network analysis (SNA) to identify interpersonal connections (i.e., ties) between people (i.e., actors or nodes), which provide additional information about individuals' relationships (Scott, 2000). In the context of leadership research, much of the application of SNA has focused on shared leadership, leadership in informal networks, or the leader's place among the larger network of the organization. For instance, Venkataramani and her colleagues (2010) used SNA to measure how much the employees seek for advice from other members (i.e., advice centrality), and examined how those network relationships influence the quality of LMX. Bono and Anderson (2005) investigated whether followers of transformational leaders have network ties to members outside the followers' workgroup. Although these are certainly interesting lines of inquiry, it is also important to understand whether leadership influences the patterns of relationships among members of their workgroup. Stated differently, as the majority of leadership research has focused on shared approaches among members of the leader's workgroup, it also seems likely that leaders can influence the nature and pattern of relationships among workgroup members. Indeed, a handful of studies have examined the relationship between leadership variables and the configuration of the team's social network (e.g., DeRue, Nahrgang, & Ashford, 2015; Zhang & Peterson, 2011; Zohar & Tenne-Gazit, 2008). These studies are reviewed in more detail below.

**2.2. Leadership Impacts on Group's Social Network**

First, it is important to discuss the network indicators that are the focus of the present study. According to Galvin, Balkundi, and Waldman' (2010) review, there is a process that makes impacts of leadership on the group's social networks. When followers work with their leader, they interact with their leader and make a leadership perception based on the feelings and thoughts they experience over the course of interactions with the leader. If the followers experience positive leader behaviors, then they tend to have strong and positive leader perceptions. If not, they may have negative or no perceptions about their leader. In order to make a significant influence on group members, a minimum level of direct interaction is needed for information change.

However, not all followers can make meaningful interactions with their leaders. There are some cases where followers and leaders have a lack of interactions due to some constraints (e.g., time, geographical distance, or organizational hierarchy). Nevertheless, despite these restrictions, some followers with low interactions have positive perceptions of leadership. Galvin et al. (2010) explained this by employing the existence of secondhand sources (or intermediaries) who delivers information about leaders. Unlike the notion of LMX, which describes a dyadic relationship, this leadership-group social network is unique in that it describes how a leader makes an impact not only on a single follower, but also on the entire group members by interacting only with a few members.

In many cases, these individuals as secondhand sources are also seen as more reliable and trustworthy by others, thus, they are considered as influential ones who have the power to modulate the other followers' leadership perceptions (Bowler & Brass, 2006; Galvin et al., 2010). This kind of skewed relationships can arouse different forms of interactions among the group members, which eventually define the shape of mutual

relationships. Specifically, when the formally designated position is absent, social relations define the informal leader(s) in the workgroup (Shaw, 1964). For years, many of the other studies have examined these informal network relationships among the members and tried to investigate how social network relations reflect the aspects of informal leadership. This network method conveys the relational information that is integrated into the social context, and reveal the information regarding group members, which provides more rationale to explain the nature of leadership.

**2.3. Network Centralization and Density**

Although there are several different variables related to the configural approach, the present study examined network centralization and network density. These two metrics are group-level constructs and, of the network characteristics, are the most relevant to understanding the pattern of relationships within a given workgroup. Over the number of interactions between individuals, the actors (i.e., employees) add and subtract relationships, and eventually, they structure their own social networks (Sparrowe, Liden, Wayne, & Kraimer, 2001).

*Network centralization* is "a network-level, macrostructural measure that quantifies how 'dispersed' the centralities of the actors are." (Kang, 2007, p.587). This notion of centralization has been used to depict the variability in the strength of groups' interconnectedness, which delivers fruitful information about where the relational connections are concentrated. However, before discussing centralization, is it necessary to define its component piece- centrality. Within this network, it is likely to happen that certain individuals gain more connections than others (e.g., having more friends or providing more advice to others), and this is one type of measure that identifies how an

individual is central in this network (referred as *degree centrality*) (Balkundi & Kilduff, 2006; Scott, 2000). It is known that if an individual is tied to numerous people around the work team, then this person is characterized with high centrality and is perceived as an informal leader due to the amount of information that this person can access than others with low centrality (Adler & Kwon, 2002). A previous study found that if an actor with a central position is a formal leader, then this high centrality can be functioning as a catalyst to make a positive work performance (Balkundi, Kilduff, & Harrison, 2011), which suggest that this degree centrality index can be a variable that influences on work-related outcomes.

The group level variable centralization is closely related to centrality. As Figure 1 (a) and (b) present, SNA can visualize the distribution of interactions among the group members, which describes how each of the group members is connected to other members. In essence, SNA conceptualizes individual members' centrality in their workgroup as the degree to which each individual has ties to other network members. Centralization is the group level corollary of this concept and is concerned with the degree to which the group's social network is consistent across group members or, instead, whether connections are unevenly distributed. Low centralization implies that group members are equally connected to one another in the social network (Freeman, 1979). For instance, a low centralized advice network implies that members are thought to have more opportunities to share and exchange necessary information and resources due to their equal status across the entire members (Zhang & Peterson, 2011; Zohar & Tenne-Gazit, 2008). On the other hand, a highly centralized network occurs when network ties are distributed unevenly among group members (e.g., a few members have

the majority of the network ties). For example, when measuring a friendship network, a highly centralized groups would have a few members with more ties than other members (Zohar & Tenne-Gazit, 2008). Accordingly, the value of centralization can vary from 0 to 1, where 0 indicates the status that all members of the group evenly occupy central positions while 1 indicates a single or few members of the group completely dominate the central positions (Wasserman & Faust, 1994). This metrics has been actively used as a measure of shared leadership (e.g., Contractor, DeChurch, Carter, & Keegan, 2012) and as a way to examine leader emergence (e.g., DeRue et al., 2015) and less commonly as an exploratory group process variable of leadership (e.g., Balkundi et al., 2011). However, a few studies have shown that leaders can impact their workgroup's centralization (e.g., Zhang & Peterson, 2011; Zohar & Tenne-Gazit, 2008).

*Network density* measures the level of linkage among the members within a group (Scott, 2000). Density is a group-level variable that identifies and compares the total number of possible paths that actors can have in a social network against the ones that they actually have (Scott, 2000; Wasserman & Faust, 1994). The level of density ranges from 0 to 1, with higher numbers indicating more connections out of possible connections (see Figure 2 for details). Groups with a higher density are often thought to have a more cohesive culture (Carson, Tesluk, & Marrone, 2007; DeRue et al., 2011) than the lower density groups. A few studies have examined the linkage between leadership style and work group density. For instance, studies have shown that LMX is related to the density of the friendship network (e.g., Mehra, Dixon, Brass, & Robertson, 2006), the influence of transformational leadership on advice network density (e.g., Zhang & Peterson, 2011), the relationship between transformational leadership and

communication/friendship network density (e.g., Zohar & Tenne-Gazit, 2008), and the impact of socialized charismatic leadership on instrumental network density (e.g., Varella, Javidan, & Waldman, 2012).

**2.4. Trust in Team Network**

Up until now, the discussion of workgroup social networks has focused on the pattern of the group's social network, rather than the constructs associated with the network. There are many constructs in which a social network can be patterned. For instance, the advice network is one of the most widely used network constructs that indicates the extent to which the members of a group are asked for work-related advice (e.g., Erdogan, Bauer, & Walter, 2015; Venkataramani, Green, & Schleicher, 2010). Similarly, friendship and communication networks are also frequently used as representing social influences among the group members (Marsden & Friedkin, 1993; Zohar & Tenne-Gazit, 2008). On the other hand, a smaller number of studies has examined network structure based on group members' trust (e.g., Ferrin, Dirks, & Shah, 2006; Sarker, Ahuja, Sarker, & Kirkeby, 2011). Given the central role that trust plays in effective group outcomes, this study focused on the trust network.

Trust is defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al., 1998, p. 395). Specifically, in a network perspective, Tasselli et al. (2015) described trust as a forged phenomenon that occurs at the interpersonal level through social interactions, and once the members achieve group-level trust, then it can also exist at both the team and organization level. Dirks and Ferrin (2002) also asserted that trust is a social exchange process, which requires continuous reciprocal relationships

among the members across time.

Butler (1991) argued that trust is multidimensional and is affected by situational factors, thus its complexity and specificity cannot be fully explained by traditional global (attitudinal/nonspecific) approaches which typically examine overall trust. Instead, he asserted specific components like interpersonal skills or individual competence must be incorporated in explaining the trust. With this notion of specificity, scholars have developed the model of trust over years, and among them, cognition- and affect-based approaches to trust has been actively adopted as a framework of trust research (Chua, Ingram, & Morris, 2008; De Jong, Dirks, & Gillespie, 2016; McAllister, 1995; Schaubroeck, Lam, & Peng, 2011).

**2.5. Task-based and Psychological Support-based Trust Network**

In terms of the trust development process, cognition-based and affect-based approach to trust explain how people make perceived trustworthiness with co-workers in the organization. Particularly, in the context of peer relationships, these two distinct types of trust can describe how individuals initiate their reactions with the intention to consolidate their trust relationships.

According to McAllister's (1995) model, people use their rationale and objectives to assess others' personal characteristics or competencies to gauge their level of trust toward them. This *cognition-based trust* is, then, often described as a 'trust from the head' (Chua et al., 2008), and the primary sources of making this trust are originated from the trustees' competence and performance (Colquitt et al., 2012). On the other hand, when people develop socio-emotional exchanges, they care more about personal concerns and emotional side rather than any work-related attributes. This *affect-based trust*, also

known as ‘trust from the heart’ (Chua et al., 2008), is typically based on more behaviors that support the trustee’s well-being (Colquitt et al., 2012; Dirks & Ferrin, 2002).

Social network research also makes a distinction between relationships characterized as more task-based versus ones that are more affective. For instance, Balkundi and Kilduff’s (2006) *network leadership theory* says that leadership can be shaped either by the fundamental importance of cognitive structures or by the importance of relations. Similarly, Carter and her colleagues (2015) also stated that social relationship network ties can be characterized as either cognitive (e.g., advice) or affective (e.g., emotional support).

In light of the distinction between competence and affective based trust, the present study also adopts a two-factor conceptualization of trust. The first is *task-based trust*, which is defined as the extent to which the members are trusted by peers in the same workgroup when they need help with work-related problems. The second is *psychological support-based trust*, which is defined as the extent to which a workgroup member seeks the trust of other group members to provide any kind of emotional or psychological support. Importantly, although past social network research has separately examined both task-based and more psychological-support oriented aspects of social networks these have rarely been examined in the same study. Thus, a contribution of this study will be to compare task and psychological support-based trust networks as explanatory mechanisms of leadership.

**2.6. Leadership and Trust Network**

Although past studies have underscored the influence that leadership can have on the follower’s trust for the leader, they have not examined the influence of leadership on

the amount of trust that followers have for each other. As described above, leadership behaviors trigger followers' advice-seeking behavior, which leads a strong group cohesion, and thus, individuals' reciprocal interactions increase. When members of a team share a strong cohesive environment, which can be caused by effective leadership behaviors, team identity, group member self-esteem, and proactive behaviors toward other group members are thought to increase (Hannah, Walumbwa, & Fry, 2011; Morgeson, DeRue, & Karam, 2010). Because they understand such collaborative behaviors and reciprocal relationships are beneficial for all members to achieve their common group goal, social interactions among group members are expected to increase. Sometimes members need technical advice (e.g., task-based trust) to accomplish a project or group works while others may look for emotional support (e.g., psychological support-based trust) and thus may seek out co-workers dependent on the type of problem they are facing and the type of trust they have in that co-worker. Different leadership styles may build different surroundings and levels of trust around the team members, and such differences can make a unique group network among the team members.

A key question in leadership research has been which style of leadership is the most effective at facilitating important outcomes (DeRue et al., 2011; Hoch et al., 2018). In recent decades, numerous styles of leadership have been proposed, and scholars have explored the differences between each type of leadership (e.g., DeRue et al., 2011). In recent years, three of the more popular leadership styles include transformational leadership, ethical leadership, and abusive supervision. Although transformational leadership has been examined as an antecedent of followers' network structure (e.g., Zhang & Peterson, 2011; Zohar & Tenne-Gazit, 2008), past studies have not examined

the impact of ethical leadership or abusive supervision on the network structure. However, as described below, there are reasons to expect that these styles of leadership will have an important impact on the development of the trust network among followers. Thus, a primary contribution of this paper will be to examine the role that ethical leadership and abusive supervision play in the development of follower social networks and whether these types of leadership have novel associations with the workgroups network structures. In addition, transformational leadership has been pointed to as the leadership style with one of the strongest associations with leader effectiveness (DeRue et al., 2011; Hoch et al., 2018). Therefore, this study also included transformational leadership in order to compare the unique contribution of ethical leadership and abusive supervision to that of transformational leadership as determinants of follower network structure. Each style of leader behavior is described below, and a model linking each leadership style to both the shared explanatory variable (LMX) and the configural explanatory variables (task-based and psychological support-based trust network centralization and density) is articulated.

**2.7. Transformational Leadership and Network Characteristics**

Previous studies have found a significant relationship between transformational leadership and various types of social network ties (e.g., advice or friendship network centralization/density), (Bono & Anderson, 2005; Zhang & Peterson, 2011; Zohar & Tenne-Gazit, 2008). With a few exceptions, these studies have focused on transformational leadership's impact on the leader's centrality either in their workgroup or in the broader organization and none have focused on the trust network of the followers of transformational leaders.

### 2.7.1. Transformational Leadership and Trust Network

Transformational leadership studies have found trust as an important mediator of transformational leadership and outcomes (e.g., Pillai, Schrieshdim, & Williams, 1999; Podsakoff, MacKenzie, & Bommer, 1996). Yet, the vast majority of this research has focused on the trust between the leader and the follower, which ignored the possibility that transformational leaders also facilitated a broader climate in which followers building trusting relationships with each other. As we outline below, there is a reason to believe that transformational leaders will lead workgroups in which group members feel sufficiently safe that they trust one another to seek out both task and psychosocial support.

Since transformational leaders emphasize collective efforts (Simsek, Veiga, Lubatkin, & Dino, 2005), group cohesion (Bass, Avolio, Jung, & Berson, 2003), and cooperation among group members to achieve shared goals (Pillai, Schriesheim, & Williams, 1999), it seems likely that groups lead by transformational leaders will trust one another more. For instance, Arnold and her colleagues (2001) found that transformational leaders not only foster commitment in team members, but also increase trust among the members. Similarly, another study found that transformational leadership enhances trust in teams, which eventually leads to positive team performance (Braun, Peus, Weisweiler, & Frey, 2013). According to these studies, teams with transformational leaders tend to show higher mutual trust, higher cohesion, and higher cooperation among team members due to the transformational leaders' collectivistic orientation towards the team.

### 2.7.2. Transformational Leadership and Network Density

Groups with a high degree of trust density would reflect a saturated network where all group members trust every other group member. Scholars suggested that such a strong group-level effect is derived from a transformational leader's collective vision-based goals and close relationships with followers, which results in a strong member commitment and group identity (Wang & Howell, 2010; Zhang & Peterson, 2011). Similarly, transformational leaders' collective visioning and individualized consideration can bring a more cohesive culture to the members, who observe and emulate the leader's behaviors. Zhang and Peterson (2011) suggested that transformational leaders' intellectual stimulation encourages followers to actively think of or seek for advice from peers in order to achieve challenging tasks. Additionally, transformational leaders' inspirational motivation also promotes followers' advice-seeking behaviors since the leaders' evident vision provides a clear path to group goals in which the followers need to accomplish. This logic is also aligned with Wang and Howell's (2010) study that found a positive increase in followers' helping behavior in a group-level examination of transformational leadership. According to the studies, transformational leadership behaviors are particularly effective in a group performance in that they advance group cohesion by providing collective values and goals (Burke et al., 2007; Zohar & Tenne-Gazit, 2008). From the studies, Zohar and Tenne-Gazit's (2008) research found that transformational leadership can predict team members' communication network density, which was operationalized as the proportion of members who were participating in work-related exchanges. In the same vein, Zhang and Peterson (2011) examined the relationship between transformational leadership and team's advice network density, and they found that transformational leaders can shape the team's advice network as well as

influencing social networks among the individuals. Authors characterized advice network density as the proportion of ties that members had, indicating how an individual member sought advice from other members and how many connections each member had with one another.

Thus, I hypothesize as follows:

**Hypothesis 1a.** Transformational leadership will be positively related to trust network (i.e., task-based trust & psychological support-based trust) density.

### 2.7.3. Transformational Leadership and Network Centralization

Despite the previous studies that employed network density in explaining the impact of leadership on group members' social networks, past studies have not examined the direct link between transformational leadership and network centralization. As noted above, centralization is an indicator of the pattern of network ties and indicates whether the group is characterized by some members having more connections (e.g., in this case, more task or psychological trust) than other members. In that transformational leaders place a strong emphasis on collective efforts (Simsek, Veiga, Lubatkin, & Dino, 2005), group cohesion (Bass et al., 2003), and cooperation among group members to meet shard goals (Pillai, Schriesheim, & Williams, 1999), it seems likely that the group's trust network will be more decentralized. In other words, this focus on the collective effort that is a defining characteristic of transformational leadership would reduce the likelihood that specific group members are more trusted than other group members. Instead, because the group works together collaboratively, each group member would be viewed as a valued and trusted source for both task-based and psychological oriented support. Consistent with this rationale, Wang and Howell (2010) also said that "Group-focused

transformational leadership behavior encourages followers to transcend their self-interests for the interests of the group and emphasizes the individual's contribution to the group as a whole, which requires followers to help each other and to facilitate the progress of the group" (p.1136), and these behaviors develop mutual trust and cooperative relationships (Zaccaro, Rittman, & Marks, 2001). Accordingly, I hypothesize as follows:

> **Hypothesis 1b.** Transformational leadership will be negatively related to trust network (i.e., task-based trust & psychological support-based trust) centralization.

### 2.8.1. Ethical leadership and trust network density

Brown and his colleagues (2005) defined ethical leadership as "the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making" (p.120). Ethical leaders become a role model and motivate subordinates to emulate their ethical conduct (Avolio, 1999; Brown and Treviño, 2006).

By treating each follower ethically and fairly, ethical leaders would be expected to reduce the competitiveness among group members and instead facilitate a group that works together harmoniously (Brown & Treviño, 2006). In addition, by creating a group that emphasizes ethical behavior, honesty, and fair treatment, the climate would have a relatively high degree of psychological safety. Consequently, it is expected that ethical leaders' work groups will be characterized by a high degree of psychological safety (Men et al., 2020; Walumbwa & Schaubroeck, 2009). In this way, followers of ethical leaders

will likely feel safe to go to one another for both task and interpersonal related support, and this sense of trust will be spread throughout workgroup members, resulting in a high degree of trust density.

In explaining the development of trust relationships among followers of ethical leaders, Pastoriza and Ariño (2013) examined how ethical leadership behaviors and group members' internal social capital were related to each other. They found that ethical leadership significantly predicted the three distinct dimensions of social capital (relational, structural, and cognitive). The relational dimension indicates mutual trust and emotional intensity, the structural dimension shows the interconnected system of sharing intellectual capital, and the cognitive dimension describes the extent to which group members share a common goal and collective view. The authors argued that ethical leaders became a role model and showed appropriate behaviors to the group members, and those group members learn to feel empathy toward others and build affective relationships with other members through the three types of social capital.

Since ethical leaders' focus is to make a positive impact not only for a specific team member but also for the entire group as a team, ethical leaders' influence on the group-level outcome is aligned with the purpose of ethical leadership. In the hierarchical organizational structure, leaders' role in generating organizational culture is particularly critical in that they have social authority to expand their influences over the organizational members (Mayer et al., 2009). According to Kaptein's study (2008), a leader's ethical behavior can expand to the organizational level of influence through developing a collective state of mind (Hofstede, 1984) across organizational members. As members share common values, beliefs, and shared perspectives, they build their

organizational culture as an output of the leadership (Eisenbeiss, Knippenberg, & Fahrbach, 2015; Kaptein, 2008).

Thus, I hypothesize as follows:

**Hypothesis 2a.** Ethical leadership will be positively related to trust network (i.e., task-based trust & psychological support-based trust) density.

### 2.8.2. Ethical leadership and trust network centralization

In terms of trust network centralization, teams with ethical leaders tend to perceive the ethical standard and mutual trust as core competencies of the group, which naturally lead them to make collaborative culture between group members. Such practices eventually derive less competitive environment and more helping behaviors among the members to achieve their common group goals (De Cremer & van Knippenberg, 2002). In turn, teams with ethical norms build a supportive atmosphere that connects all team members together, which blocks a member to monopolize the group resources. Such decentralized teams display cooperative practices by sharing their social capital either cognitively (i.e., task-based) or affectively (i.e., psychological support-based). Supporting these arguments, Bavik, Tang, Shao, and Lam (2018) conducted a field study and found that ethical leadership fosters employees' knowledge sharing activities by creating employees' moral identity and generating organizational norms. Authors argued that people are motivated to engage in desirable behavior through either a regulatory force or autonomous self-concept (Aquino & Reed, 2002). Ethical leaders can serve as a role model that displays moral standards to the team members, so the members see the moral values and behaviors, and eventually develop a moral self-concept. Simultaneously, ethical leaders establish moral regulations and policies that guide

members to comply with ethical norms (Gagné & Deci, 2005). With these two instruments, members with ethical leader form a network and share information together, and such interactions are likely to include everyone in the team followed by the ethical norms and standards. Therefore, I hypothesize as follows:

**Hypothesis 2b.** Ethical leadership will be negatively related to trust network (i.e., task-based trust & psychological support-based trust) centralization.

### 2.9.1 Abusive supervision and trust network density

Tepper (2000) defined abusive supervision as "subordinates' perceptions of the extent to which their supervisors engage in the sustained display of hostile verbal and non-verbal behaviors, excluding physical contact" (p.178). Later, Mitchell and Ambrose (2007) suggested the abusive supervision consists of two dimensions: Active-aggressive behavior and passive-aggressive behavior. When a leader directly ridicules his or her followers, then this is an example of active-aggressive behavior while some indirect course of actions like not giving credit for jobs requiring a lot of work is an example of passive-aggressive behavior (Mitchell & Ambrose, 2007).

Although past studies have not linked abusive supervision to the work group's trust network, there is reason to believe that abusive supervision will have a deleterious impact on the formation of a high-density trust network. Abusive supervision has been known as a negative predictor of individuals' trust perception. Scholars have argued that abusive supervision may hinder the formation of social environment among the team members (Farh & Chen, 2014; Peng, Schaubroeck, & Li, 2014). In other words, leader aggression would cause team members to be aggressive to one another, which would erode trust (Aquino & Douglas, 2003; Glomb & Liao, 2003). According to Decoster et al.'s (2013),

abusive supervision brings negative influences on individuals' interpersonal behaviors as they experience mistreatment from their leaders, which in turn decreases group cohesion. Borrowing from social exchange theory (Cropanzano & Mitchell, 2005), authors explained that employees tend to make a balance by reciprocating negatively with other members when they experience some negative outcomes. Additionally, employees tend to see their supervisors as a projection of group's opinion or an elevated version of employees (Chan & McAllister, 2014; Eisenberger et al., 2001). Consequently, leaders' abusive supervision brings negative impacts on coworker relationships, which in turn, make a less connected group networks (Mitchell & Ambrose, 2007). This argument was also supported by one of the recent empirical research that found a negative influence of abusive supervision on group members' mutual respect (Schaubroeck, Peng, & Hannah, 2016). To the extent that leaders serve as role models for the behavior and norms of a group, it seems likely that such a contagion effect of aggression would be even more likely if a group's leader is the one initiating the aggressive behavior. If the referent person is their leader with abusive supervision, then the leader's aggressive behaviors can disrupt the formation of dense network between the group members. With higher probability of expressing negative attitudes and behaviors, members' interpersonal trust relationships are not likely to be connected well together. Such groups are likely to lose co-worker trust and reciprocal interactions, and eventually they see themselves with low group identity (Fulmer & Gelfand, 2012). Therefore, I hypothesize as follows:

> **Hypothesis 3a.** Abusive supervision will be negatively related to trust network (i.e., task-based trust & psychological support-based trust) density.

### 2.9.2. Abusive supervision and trust network centralization

As described above, positive leadership behaviors facilitate active resource sharing among the group members (e.g., Bavik et al., 2018), and the basis of this kind of activities is members' mutual trust (Wu, Lin, Hsu, & Yeh, 2009). Group members share their resources with other trustful members by assuming that their help will be returned in the near future. However, this virtuous cycle is only available when there is a cohesive group environment with strong mutual trust between members (Halbesleben & Wheeler, 2015). Abusive supervision, on the other hand, makes members not to share resources among each other by creating less cooperative and trustful environment (Tepper, Duffy, & Shaw, 2001). To support this argument, Wu and Lee (2016) found that abusive supervision is negatively related to a perception of peer trust, which makes poor group trust and hinders knowledge sharing activities among the group members. Authors said that those group members who have been mistreated by their supervisor tend to conserve their resources and avoid any extra-role behaviors. In this case, members are less likely to engage in their performance, which makes disconnected interpersonal networks among the group members, and this will eventually decrease the level of mutual trust. Accordingly, I hypothesize as follows:

**Hypothesis 3b.** Abusive supervision will be positively related to trust network (i.e., task-based trust & psychological support-based trust) centralization.

### 2.10. LMX as an Explanatory Mechanism of Leadership

As previously noted, shared and configural approaches to the explanatory mechanism have operated independently, with a limited attempt at integration. Although a variety of shared mechanisms have been previously proposed, LMX has recently been pointed to as the most important explanatory mechanism associated with leadership

(Gottfredson & Aguinus, 2017). A key contribution of this study will be to determine whether network characteristic explain unique variance in turnover intentions above and beyond the most strongly supported explanatory mechanism, LMX. As explained above, shared perception of LMX is treated as a group-level variable in this study to describe the group's perceived relationship with their leader. This approach has benefits for team-based organizations to understand the interdependence of leader-follower relationships with a broader unit of analysis (Boies & Howell, 2006).

### 2.10.1. Transformational leadership and LMX

Specifically, in a relationship with transformational leadership, Wang et al. (2005) suggested that transformational leaders' focus on the needs of their followers along with their engaging, charismatic personality should result in followers who have stronger relationships with their leader and trust their leader more. Indeed, LMX has frequently been supported as an explanatory of the association between transformational leadership and outcomes (Dirks & Ferrin, 2002; Howell & Hall-Merenda, 1999). A high level of reciprocity between a leader and a follower, which eventually increases unstated mutual expectations and trust each other, is also known as the characteristics of high-quality LMX (Brower, Schoorman, & Tan, 2000). Besides, Graen and Uhl-Bien (1995) said the characteristics of high-quality LMX such as mutual trust, respect, and proactive behaviors are well aligned with the ones from transformational leadership like individualized consideration and leading with inspirations. The authors found that transformational leadership significantly predicted LMX, which in turn, mediated the relationship between transformational leadership and task performance. Following the rationale from the previous findings on the link between transformational leadership and

LMX, I hypothesize as follows:

**Hypothesis 4.** Transformational leadership will be positively related to group-level average LMX.

### 2.10.2. Ethical Leadership and LMX

Similarly, ethical leadership has been shown to enhance LMX quality by inducing a sense of respect and trust toward the leader (Walumbwa et al., 2011). Ethical leaders display honesty, treat their followers fairly, and follow through on commitments to follower, which make ethical leaders to be seen as to develop high quality relationships with their followers and inspire a strong sense of loyalty in them (Erdogan, Liden, & Kraimer, 2006). As followers perceive that their leader is not acting with self-interest, but instead to behave with integrity and for greater good, the leader-follower relationships become stronger than a purely economic exchange agreements (Brown & Treviño, 2006; Brown et al., 2005). Many existing studies have found that ethical leadership is positively related to the high quality of LMX and that LMX mediates the relationship between ethical leadership and organizational outcomes (e.g., Gu, Tang, & Jiang, 2015; Hu et al., 2018; Walumbwa et al., 2011).

Despite the findings on ethical leadership and LMX, there are still scarce number of studies that examined the relationship at the group-level. Walumbwa and his colleagues (2012) found that the group-level average of ethical leadership was positively related to group-level construct (e.g., voice, conscientiousness, and performance). However, a direct examination between the group-level ethical leadership and LMX is still missing. Based on the positive correlation between these two leadership behaviors, I hypothesize as follows:

**Hypothesis 5.** Ethical leadership will be positively related to LMX.

### 2.10.3. Abusive Supervision and LMX

According to Martinko, Sikora, and Harvey (2012), followers' perception of abusive supervision is a subset of their perceived low-quality of LMX. The LMX relationship is initiated from the role expectations and the quality of LMX is determined by the development of mutual exchange relationships. When the followers believe they were mistreated with abusive behaviors, then they tend to rate their quality of LMX low. Due to the negative behaviors from abusive supervision, members with an abusive leader are likely to report that their expectations toward their leader are low, and thus, the quality of the mutual relationship will be low (Martinko, Sikora, & Harvey, 2012). To support this idea, previous literature has noted that out-group members (i.e., low-quality of LMX) reported that they have less interactions with their supervisor, low mutual trust, and lack of rewards and support, which can be aligned with the perception of abusive supervision when followers feel that they are being treated unfairly (Dienesch & Liden, 1986; Martinko, Harvey, Sikora, & Douglas, 2011).

At the group-level, scholars have suggested that abusive supervision can also be a driver of negative group environment by displaying aggressive behaviors (Priesemuth, Schminke, Ambrose, & Folger, 2014). For instance, abusive leaders negatively affect the team as a whole (Duffy et al., 2006) or even a small group of individuals can be negatively affected by observing the leader's abusive behaviors (Greenbaum, Mawritz, Mayer, & Priesemuth, 2013). When followers observe the abusiveness in the same group (e.g., coworker is abused by the leader), they may experience a shared perception of the leader's abusive behaviors even without a direct contact with the negative behavior

(Robinson & O'Leary-Kelly, 1998) Accordingly, when the group members share abusive supervision and experience negative leader-follower relationship, that can be spread across the other members. Thus, I hypothesize as follows:

**Hypothesis 6.** Abusive supervision will be negatively related to LMX.

### 2.11. Group-Level Turnover Intention

Voluntary turnover has been estimated to cost U.S. companies billions of dollars per year due to the high employee turnover (Rosch, 2001). Not surprisingly, substantial attention has been placed on approaches that organizations can use to reduce employee turnover (Podsakoff, LePine, & LePine, 2007). Leadership is often pointed to as a key antecedent of turnover intentions. Indeed, Hogan and Hogan (2001) argued that leadership was the number one reason why employees decide to leave their organization. Similarly, the Work Institute's "2020 Retention Report" (2020) indicated that manager behavior was the number two reason that employees decide to separate from their organization. This study examined the mediating role of LMX, density, and centralization of the relationship among team members between leader behaviors and outcomes.

Previous studies have explained the role of LMX in predicting employees' turnover intention in that the low quality of LMX generates distrust, low job satisfaction, lack of resources, and poor commitment, which in turn, accelerate the followers' turnover rate (Martin, Guilaume, Thomas, & Epitropaki, 2016; Rockstuhl, Dulebohn, Ang, & Shore, 2012). This notion of LMX is also applied at the group-level, where meaningful group-level variance exists to explain between-team effects (Boies & Howell, 2006). Indeed, Nishii and Mayer (2009) found that there was a significant relationship between group's mean LMX and group turnover. In the same vein, this study also expects that

group members' average LMX is negatively related to group-level turnover intention.

**Hypothesis 7.** Group-level LMX perception will be negatively related to group-level turnover intention.

In explaining the relationship between group members' social network density and their turnover intention, scholars argued that members' relationship pattern and density contribute to the group-level outcome (Feeley, Moon, Kozey, & Slowe, 2010). As employees build their relationships with other coworkers, those reciprocal interactions become a social capital, which is used as an important resource to accomplish task objectives (Balkundi & Kilduff, 2006). The trustful relationships between followers can accelerate information sharing and resource allocation activities among the members, and individuals with active reciprocal relationships can perform well with less uncertainty (Blau, 1964; Cropanzano & Mitchell, 2005). More densely connected group members will be able to share more advice and emotional support to each other than group members with lack of connections. This is also supported by the recent empirical research that denser groups showed higher group performance (e.g., Zhang & Peterson, 2011) Given that past studies indicate the critical role that coworker support plays in retention (e.g., Walker, Accadia, & Costa, 2016), a social network characterized by dense trust connections is expected to reduce the likelihood that group members will intend to leave their organization.

**Hypothesis 8.** Group members' trust network (i.e., task-based trust & psychological support-based trust) density will be negatively related to group level turnover intention.

On the other hand, the high level of network centralization is known as a

hindrance to group outcomes. Although there are still ongoing debates around the effects of network centralization (Balkundi et al., 2007; Lechner et al., 2010), it is evident that decentralized group has a positive influence on group outcomes (Contractor et al., 2012). According to the recent study on advice network centralization and group performance, authors argued that highly centralized group impedes the knowledge sharing and information flow since only few individuals are dominating the network relations (e.g., Zhang & Peterson, 2011). Members of a group with a decentralized network will have more access routes to all other members in the same group when they need other members' help, which will increase their group cohesion and reduce turnover intention (Beecroft, Dorey, & Wenten, 2008). Particularly in the trust network context, members in the decentralized group will have more chances to establish mutual trust since the positive leadership experience is likely to be proliferated through connected networks (De Jong et al., 2016). Accordingly, I hypothesize as follows:

**Hypothesis 9.** Work group members' trust network (i.e., task-based & psychological support-based trust) centralization will be positively related to group members' turnover intention.

Based on the preceding discussion that transformational leadership would be related to trust network centralization, trust network density, and LMX, and these three variables would be related to turnover intention, a mediated model is proposed. The influence of transformational leadership, ethical leadership, and abusive supervision on follower turnover intention is proposed to operate through the work groups' LMX, trust density and centralization. Thus, it was hypothesized that

**Hypothesis 10a.** Trust network (i.e., task-based & psychological support-based

trust) centralization will mediate the relationship between transformational and group members' overall turnover intention.

**Hypothesis 10b.** Trust network (i.e., task-based & psychological support-based trust) density will mediate the relationship between leadership behaviors (i.e., Transformational, ethical leadership, and abusive supervision) and group members' overall turnover intention.

**Hypothesis 10c.** Group-level LMX perception will mediate the relationship between leadership behaviors (i.e., Transformational, ethical leadership, and abusive supervision) and group members' overall turnover intention.

# CHAPTER 3

# METHOD

## Research Participants

This study was conducted as a part of a consulting project, which was designed and delivered to three private companies in South Korea. All three companies received an hour-long introduction about the study and agreed to participate. Company A is in Information Technology industry, providing online education services, and 210 employees on 27 different workgroups were surveyed. Company B is a management consulting firm, and 142 employees on 22 different workgroups were surveyed. Company C is a branch of a multinational company, where their headquarter is located in France and 245 employees on 17 different workgroups were surveyed. In total, the survey was sent to 607 respondents from 66 workgroups. All surveys were designed as an online-version and delivered via their company e-mails.

Across all three companies, the survey was delivered to all employees including middle-level managers and executive directors. Each participant received a personal identification number. Because the survey contained questions specific to social network analysis, I received each of the companies' organizational chart to make a roster of individuals nested in each of their workgroups. The main purpose of making this roster was to determine which employee reported to a given supervisor for the social network aspect for the data collection (Scott, 2000). Accordingly, all respondents received a survey that contained a roster of people (e.g., co-workers and supervisors), who were in

their workgroups.

The survey was composed of two sections: One with multiple-choice questions and another with social network questions. In the first section with the multiple-choice questions, survey respondents were asked to respond in each of the items with 4-point Likert scales ranging from 1 (Strongly disagree) to 4 (Strongly agree). In the second section, a roster of each team was provided along with the social network questions, so the respondents were able to select names that applied to each of the questions.

## Measures

### Trust Network Items

Social network metrics were measured with two questions: One for measuring task-based trust, "Select the names of people whom you strongly trust in their cognitive ability, skills, and knowledge when you need some work-related advice" and another for measuring psychological-support trust, "Select the names of people whom you strongly trust in their honesty and depth of empathy when you need some emotional (or psychological) support." All respondents were given a roster of people in the same team. Notably, all team members were instructed to select any relevant names but were instructed not to select their own name. This is known as a sociometric sampling method, which is used to assess the links between individuals within a group (Rubin, Bukowski, Laursen, 2011). Respondents were free to select as many names as they wanted.

### Network centralization

Trust network centralization was calculated with Freeman's (1977, 1979) degree-based centralization index, which requires in-degree centrality as a basis of the calculation. Despite the network centralization is a network-level analysis, it is based

upon the actor-level measure of in-degree centrality (Contractor et al., 2012). As discussed earlier, in-degree centrality measures the extent to which an actor positions in the network. If actor A receives more choices from other members than actor B, then actor A has higher in-degree centrality. In this study, task-based and psychological support-based trust networks were measured, that is, how many members have chosen the a given actor when they need any task-related advice or psychological/emotional support. Based on the number of choices that an actor received from others, each actor's in-degree centrality was calculated. Next, the distance between one actor's in-degree centrality and another actor with the highest in-degree centrality was calculated. All the calculated distances were summed up and then divided by the maximum possible distance (Kang, 2007; Wasserman & Faust, 1994). The process of calculating trust network centralization is written as follows, where $c_i$ stands for the centrality of an actor *i*:

$$C_N = \frac{\sum_{i=1}^{N}(c_{max} - c_i)}{max\{\sum_{i=1}^{N}(c_{max} - c_i)\}}$$

The calculation of all network centralities and centralizations were done by using R package 'statnet' (Handcock et al., 2008; Handcock et al., 2016) and 'igraph' (Csardi & Nepusz, 2006) in R version 3.6.2 (R Development Core Team, 2019).

**Network density**

Trust network density was calculated by the sum of all possible ties between actors, divided by the maximum number of ties among the actors within the group (Wasserman & Faust, 1994). The equation for network density is written as follows:

$$\Delta = \frac{\sum_{i=1}^{g} \sum_{j=1}^{g} x_{ij}}{g(g-1)}$$

In the equation, *g* stands for the number of actors in the network group while *i* and *j* are the ordered pair of actors. $x_{ij}$ indicates the direct tie between actor *i* and actor *j*, which makes the sum of all possible ties among the actors. The total possible ties in a network group are denoted as g(g-1) because there are two possible ties between a pair of actors (Wasserman & Faust, 1994; Zohar & Tenne-Gazit, 2008). Network density was computed by using R package 'igraph' (Csardi & Nepusz, 2006) in R version 3.6.2 (R Development Core Team, 2019).

**Shared Constructs**

The remaining constructs were shared group level constructs. In order to justify aggregation, $r_{wg(j)}$ (James, Demaree, & Wolf, 1984) and Intraclass-correlation (ICC) (ICC(1) and ICC(2)) (Bliese, 2000) were computed for each of the variables on a given team. All survey items are presented in Appendix A.

$r_{wg(j)}$ is an index that indicates within-group agreement for a multi-item measure, which ranges from 0 (no agreement) to 1 (perfect agreement), and typically estimates above .70 are considered as sufficient within-group agreement for justifying aggregation (James et al., 1984). This is important estimate for the multilevel modeling in that it provides a justification of aggregating individual-level items to represent a group-level (or higher-level) construct. According to LeBreton and Senter (2008), the equation of estimating $r_{wg(j)}$ is written as follows:

$$r_{wg(j)} = \frac{J\left(1 - \frac{\overline{S}_{x_j}^2}{\sigma_E^2}\right)}{J\left(1 - \frac{\overline{S}_{x_j}^2}{\sigma_E^2}\right) + \left(\frac{\overline{S}_{x_j}^2}{\sigma_E^2}\right)}$$

where $\overline{S}_{x_j}^2$ is the mean of the observed variance for *j* items, and $\sigma_E^2$ is the expected variance with an assumption of no agreement among the raters. In order to compute the $r_{wg(j)}$ estimates of all individual-level measures, a rectangular distribution was used due to 5-Likert response options (e.g., Strongly agree, agree, neutral, disagree, and strongly disagree) (Bliese, 2000; Bliese, 2016).

ICC(1) and ICC(2) indices are also used in the multilevel modeling to estimate within-group and between-group variability, respectively. ICC(1) is interpreted as the extent to which individual ratings are attributable to group membership while ICC(2) estimates the reliability of group means within the group of raters, and both ICC(1) and ICC(2) estimates range from 0 to 1. ICC(1) estimates above .05 indicates a substantial group effect and ICC(2) with .70 or above is considered as sufficient reliability for individual-level response aggregation (LeBreton & Senter, 2008)[1]. The equations for computing ICC(1) and ICC(2) are written as follows:

$$ICC(1) = \frac{MSB - MSW}{MSB + [(k-1) \times MSW)]},$$

$$ICC(2) = \frac{MSB - MSW}{MSB}$$

, where MSB is the between-group mean square estimate, MSW is the within-group mean

[1] According to Fleiss (1986), ICC(2) estimates of below .40 are poor, those from .40 to .75 are moderate to good, and values above .75 are excellent reliability of group-level means.

square estimate, and *k* is the average group size (Bartko, 1976; Newman & Sin, 2009). All $r_{wg(j)}$, ICC(1), and ICC(2) estimates were computed by using 'multilevel' package in R (Bliese, 2016).

**Transformational leadership**

The 7-item Global Transformational Leadership scale (Carless, Wearing, & Mann, 2000) was used to measure transformational leadership behaviors, which consisted of items corresponding to vision, staff development, supportive leadership, empowerment, innovative thinking, led by example, and charisma. Cronbach's alpha for transformational leadership was .90. The median $r_{wg(j)}$ estimate was .95 with a range of .79-.98. ICC(1) was .20 and ICC(2) was .66, which suggested a good agreement to justify aggregation.

**Ethical leadership**

Ethical leadership was measured by the 10-item Ethical Leadership Scale (ELS) (Brown, Treviño, & Harrison, 2005). The five that had the highest factor loadings (above .75) as reported in Brown et al.'s (2005) study were selected in order to shorten the survey. Sample items include, "My supervisor listens to what employees have to say" and "My supervisor sets an example of how to do things the right way in terms of ethics." Cronbach's alpha for the shortened version of ELS was .86, and the median estimate of $r_{wg(j)}$ was .96 with the range of .82-.98. ICC(1) and ICC(2) were .25 and.72, respectively, which indicated sufficient agreement to aggregation.

**Abusive supervision**

Abusive supervision was measured by 15-item abusive supervision scale (Tepper, 2000). Among the 15 items, the four items, which had the highest factor loadings, were

selected and included in the leadership measure. Sample items include, “My supervisor puts me down in front of others” and “My supervisor lies to me.” Cronbach’s alpha for the shortened version of ELS was .87, and the median value of $r_{wg(j)}$ was .95 with a range of .89-98. ICC (1) and ICC(2) were .26 and.74, respectively, which suggested sufficient within group homogeneity to aggregate follower responses to the group level of analysis.

**Leader-Member Exchange (LMX)**

The 12-item multidimensional measure of leader-member exchange (LMX-MDM) (Liden & Maslyn, 1998) was used to measure LMX. The scale measured four different subscales of LMX, which were affect, loyalty, contribution, and professional respect. Among the 12 items, I selected an item per each subscale that had the highest factor loading in order to minimize the overall number of items and to ensure each subscale was represented. Accordingly, I selected one item from each subscale to ensure each of the facets were represented, and all four items’ factor loadings were .86 or higher. Sample items include, “I like my supervisor very much as a person” and “My supervisor defends my work actions to a superior, even without complete knowledge of the issue in question.” Cronbach’s alpha for LMX was .84, and the median value of $r_{wg(j)}$ was .94 with a range of .91-.98. ICC (1) and ICC(2) were .23 and .70, respectively, which were sufficient to justify the aggregation.

**Turnover intention**

Group members’ turnover intention was measured by the average scores of each individuals’ responses on 4-item turnover intention questionnaire (Hom, Griffeth, & Sellaro, 1984). Sample items include, “I would prefer another company to the one that I am in now” and “I think often about quitting my job in this company.” Cronbach’s alpha

for turnover intention was .89, and the median value of $r_{wg(j)}$ was .91 with a range of .72-.98, and the intraclass correlation coefficient values were ICC(1)=.27, ICC(2)=.74, which were sufficient to aggregate.

**Control variables**

Among social network studies, especially when the samples were at the group-level, team size has been recommended as a control variable since its potential influence on outcome variables (e.g., Zhang & Peterson, 2011). In addition, the different characteristics of each organization might affect group outcomes. Thus, the organizations were dummy coded as 1, 0, -1 followed by the effect coding method (Pedhazur, 1982). Accordingly, team size and organization were controlled in all analyses.

**Analyses**

The data was analyzed by using 'lavaan' package in R (Rosseel, 2012). This package provides a function to run structural equation modeling (SEM) with multiple mediation analyses. Since there were three separate independent variables and five distinct mediators with one dependent variable, there were fifteen indirect effects to be tested in the model. Before running SEM, confirmatory factor analysis (CFA) was conducted to examine the best model fit with different number of constructs in each model. Next, SEM was conducted for each model.

# CHAPTER 4

# RESULTS

## Preliminary analysis

Before examining the research hypotheses, confirmatory factor analysis was conducted to test the fit of the four-factor measurement model, which depicts four different leadership variables. As described in Table 2, the hypothesized four factor measurement model provided an adequate fit to the data and the best fit of any of the models tested (CFI=.92, TLI=.91, RMSEA=.08, SRMR=.04) compared to other models. Specifically, this model fits the data significantly better than a three-factor model in which LMX and transformational leadership were set to load on a single factor, a two-factor model in which LMX, transformational leadership, and ethical leadership were set to load on a single factor, and a one factor model in which all four leadership variables were set to load on a single factor. Additionally, one-way analysis of variance (ANOVA) model comparisons offered significant chi-square differences between one-factor model and four-factor model ($\Delta \chi^2$=1330.7, $\Delta$ *df*=6, $p < .001$) as well as between three-factor model and four-factor model ($\Delta \chi^2$=190.2, $\Delta$ *df*=3, $p < .001$), which indicated that the four-factor model provided a better fit to the data (Byrne, 2001).

Table 1 provides correlations among the study variables and controls. Specifically, as seen in the table, two centralizations (i.e., support-based and task-based

trust network centralizations) and two densities (i.e., support-based and task-based trust network densities) were positively correlated to each other, $r$=.26, $p$ <.05 and $r$=.73, $p$ <.01, respectively.

**Model comparison and hypothesis tests**

To analyze the hypothesized mediating models, SEM was undertaken with parameters estimated with maximum likelihood estimation method. The SEM has advantages over techniques (e.g., multiple regression analysis) in that it provides measurement errors, allows for a comparison of the goodness of fit of competing models, accounts for measurement error, and allows the estimating of complex models evaluating multitudes of variables (Byrne, 2013). In that the model proposed here contains multiple latent variables including competing potential mediators, SEM is the appropriate method.

In addition to the hypothesizes model, five alternative conceptual models were examined to see which model represents the best model fit of the data. As presented in Table 3, a baseline model (Model 1), non-mediated model (Model 2), and partially mediated model (Model 3) are compared with the proposed model. The baseline model does not have any covariances between the variables, and the results show very poor model fit. Next, a model with no mediators (Model 2) and three partially mediated models were specified (Models 3-5). The non-mediated model has all paths from independent and proposed mediator variables to a dependent variable. This model fit was improved from the baseline model (CFI=.96, TLI=.82, RMSEA=.12, SRMR=.11), yet it still did not show a close fit with the data. In each of the three partially mediated models,

only one leadership variable was directed to the mediators, with the remaining two leadership variables having only direct effects on turnover intention. All three partially mediated models, on the other hand, showed a better fit with the data. When transformational leadership was directed to mediators, the model fit improved (CFI=.83, TLI=.80, RMSEA=.18, SRMR=.15). Likewise, the model that connected ethical leadership variable with mediators also showed a slightly better model fit (CFI=.88, TLI=.84, RMSEA=.15, SRMR=.12) as well as the partial model with abusive supervision variable (CFI=.82, TLI=.79, RMSEA=.17, SRMR=.14). However, despite the improved model fit indices from all three partially mediated models, they still indicated an inadequate fit to the data (see Jackson, Gillaspy, & Purc-Stephenson, 2009). Finally, the proposed research model was tested, and the result showed an acceptable fit with the data (CFI=.93, TLI=.92, RMSEA=.08, SRMR=.06), which was significantly improved from the other models. Thus, this model was retained for the hypothesis tests.

In this study, team size and the organization in which the data were collected served as control variables (e.g., Bernerth & Aguinis, 2016; Eisenbeiss, Knippenberg, & Boerner, 2008; Werner & Lester, 2001). These two variables were correlated with network density variables. Team size was correlated with support-based trust density ($r$ = -.55, $p$ < .01) and task-based trust density ($r$ = -.53, $p$ < .01), and organization was also correlated with support-based trust density ($r$ = .24, $p$ < .05) and task-based trust density ($r$ = .37, $p$ < .01). Hence, these two control variables were included as control variables in the analysis model where network density was mediators of leadership variables and the

intent to quit.

**Hypothesis Tests**

As depicted in Figure 3, the three leadership styles (i.e., transformational leadership, ethical leadership, and abusive supervision) were expected to relate with the mediators (trust network density, centralization, and LMX). First, direct paths from the three leadership variables to mediators and the outcome variable were tested. Hypothesis 1a and 1b suggested that transformational leadership is positively related to trust network density and negatively related to trust network centralization. As shown in Figure 4, transformational leadership was significantly related to support-based trust network centralization ($\beta$ =-.34, $p$ <.05) but not to the other network variables. All other relationships were not significant. Therefore, only Hypothesis 1a was rejected and Hypothesis1b was partially supported.

Hypothesis 2a predicted that ethical leadership is positively related to both task-based and support-based trust network density while Hypothesis 2b predicted a negative relationship between both task-based and support-based trust network centralization. As expected, the result showed that ethical leadership was positively related to task-based trust network density ($\beta$ =.44, $p$ <.05) but not support-based trust network density. Neither network centralization variables were significantly related to ethical leadership, thus, only Hypothesis 2a was partially supported.

In Hypothesis 3a and 3b, abusive supervision was expected to have a negative relationship with trust network density and a positive relationship with trust

centralization, respectively. However, abusive supervision showed non-significant relationships for both task-based and support-based trust network density. Similarly, the relationship did not show significant relationships to either task-based or support-based trust network centralization. Therefore, Hypothesis 3a and 3b were not supported.

Hypothesis 4, 5, and 6 predicted significant relationships between the three leadership behavior variables (transformational leadership, ethical leadership, and abusive supervision) and LMX. As proposed, the results showed significant positive relationships from transformational ($\beta$ =.73, $p$ < .01) and ethical leadership ($\beta$ =.76, $p$ < .01) to LMX and a significant negative relationship from abusive supervision ($\beta$ = -.36, $p$ < .01) to LMX. Thus, Hypothesis 4, 5, and 6 were all supported.

Hypothesis 7 and 8 proposed that trust network density and LMX have negative relationships with turnover intention while Hypothesis 9 proposed that trust network centralization has a positive relationship with turnover intention. As expected, LMX was related to turnover intention ($\beta$ = -.42, $p$ < .01); thus, Hypothesis 7 was supported. Next, both task-based and support-based trust network density were negatively related to turnover intention ($\beta$ = -.34, $p$ < .01, $\beta$ = -.44, $p$ < .01, respectively). Thus, Hypothesis 8 was fully supported. Finally, only support-based trust centralization was a significant predictor of turnover intention ($\beta$ = .24, $p$ < .05) whereas task-based centralization was not. Accordingly, Hypothesis 9 was partially supported.

**Mediation analysis**

Hypothesis 10a, 10b, and 10c predicted that two different trust network metrics

and LMX mediate the relationship between leadership behaviors and group members' turnover intention. As suggested by Baron and Kenny's (1986) mediation analysis (see Frazier, Tix, and Barron (2004) and Gunzier, Chen, Wu, and Zhang (2013) for contemporary explanations of mediation analysis in SEM), indirect effects of each mediator were examined by using paths from independent variables to mediator (path a), paths from mediator to dependent variables (path b), and paths from independent variables to dependent variables (path c). Table 4 describes the result of indirect effects that contained five different mediators (i.e., LMX, Task-based and Support-based trust network density, and Task-based and Support-based trust network centralization), which are bootstrapped for 5,000 samples and reported with bootstrap confidence intervals (Tofighi & MacKinnon, 2011). According to the results, all three leadership styles had significant indirect effects on turnover intentions through LMX, supporting LMX as a significant mediator of the association between the three leadership styles and intent to quit. In contrast, the only significant indirect effect involving the network indexes was for the effect of ethical leadership through task-based trust network density (estimate = -.15, $p < .05$). In addition, the indirect of transformational leadership on turnover intention through support-based trust network centralization approached significance (estimate = -.085, $p < .10$). Abusive supervision did not have any significant indirect effects through the network indexes.

# CHAPTER 5

# DISCUSSION

The primary purpose of this study was to investigate team network indexes as explanatory mechanisms of the associations between three different leadership styles and turnover intentions. Three primary patterns of results emerged. First, this study shows that transformational and ethical leadership are related to the characteristics of their followers' social network and that different leadership styles have a differential impact on followers' social network. Next, the results show that the characteristics of work groups' trust network is related to group-level turnover intention, after controlling for LMX. Finally, despite these favorable findings, the results also show that LMX, not characteristic of followers' social networks, were responsible for transmitting the effect of leadership styles on followers' intent to quit.

In order to address these findings, multiple types of leadership and social network metrics were used in this study to understand the mechanisms of leadership proliferation in the followers' social network.

## Theoretical implications

This study offers four overarching theoretical contributions to the literature. First, this study advances our understanding of the impact of different leadership styles on their followers' social network. Specifically, this is the first study to link ethical leadership and

abusive supervision to follower social network characteristics, and in doing so, showed that ethical leadership does have an impact on the follower's task-based trust network density but not abusive supervision. These findings suggest that ethical leaders shape their workgroup by fostering a sense of trust to seek out assistance on work-related tasks. This might be one avenue by which ethical leaders foster effective group performance (e.g., Walumbwa et al., 2011), by helping followers feel psychologically safe enough to ask one another for help on job tasks. Interestingly, in contrast to past studies that have linked transformational to advice and communication network density of their followers (e.g., Zohar & Tenne-Gazit, 2008), this relationship was not supported in the present model. However, importantly, the bivariate relationship between transformational leadership and task-based trust density was significant. Thus, the non-significant effect likely emerged because of the inclusion of other leadership styles in the model. In other words, the present results suggest that ethical leadership, not transformational leadership, is the more important predictors of network density, at least as far as trust density is concerned. This conclusion is further supported by the much stronger bivariate correlations between ethical leadership and density. This is an important contribution, as past research linking leadership to work group network characteristics has exclusively focused on transformational leadership; yet the present results reveal ethical leadership to be the more important antecedent of follower network density. On the other hand, once the other forms of leadership were accounted for, abusive supervision was unrelated to social network characteristics. Thus, and somewhat surprisingly, although abusive

supervision has previously been shown to be deleterious to follower outcomes (e.g., Tepper, 2000), this effect does not seem to incur due to abusive supervision harming the trust that followers have in another.

Next, this study is the first to link leadership variables to network centralization. In doing so, the results showed that transformational leaders are associated with a decrease in support-based trust network centralization, and this effect holds even after controlling for the association between other leadership styles and network centralization. These findings suggest that transformational leaders are particularly adept at fostering egalitarian groups, in which one individual follower is not the primary source of support but instead the responsibility for being socially supportive is distributed evenly across work-group members. In sum, the present research advances our understanding of leadership and social networks by clarifying which types of leadership are related to work group social network characteristics and which are not.

The second contribution involved a direct comparison of the set of configural explanatory variables (trust network centralization and density) to a more traditional shared variable in predicting work group members' turnover intentions. Despite evidence that leader behaviors do have an impact on the characteristics of their group's network, there was minimal evidence that network characteristics mediated the relationship between leader behaviors and followers' intent to quit. Specifically, of the five potential mediated relationships examined, the only significant indirect effects were for the mediating role of task-based trust network density on the relationship between ethical

leadership and group member's intent to quit. Although the indirect effect of transformational leadership on intent to quit through task-based trust network centralization approached significance, it did not meet statistical significance by conventional standards. On the other hand, group-level LMX mediated the association between all three leadership styles and intent to quit.

There are a few potential explanations for this pattern of results. First, LMX is a leadership variable whereas the network variables are variables related to the characteristics of the team. Thus, it stands to reason that an intrinsically leadership-oriented variable would be the more important explanatory mechanism. Next, because leadership behaviors, LMX, and turnover intent were measured at the same time by the same respondents, these variables might have been more subject to method variance than the network variables which are statistically computed. Thus, the mediating role of LMX might in part of reflecting greater method variance in these relationships. On the other hand, I conducted supplemental analyses that included only the network characteristics as mediators (e.g., LMX was omitted), and the results were largely the same: only one significant indirect effect was supported. Thus, the inclusion of LMX in the model did not cause as reduction in importance of the network characteristics. In other words, the method variance does not appear to be a viable explanation for the support for the mediating role of LMX relative to network characteristics. A final possibility is that some other outcome (e.g., follower voice, group performance, follower citizenship behaviors) might have yielded more favorable results for the network characteristics but that

network characteristics are simply less important mediators of leader behaviors and intent to quit. Unfortunately, the present data do not allow for a clear determination of which explanation is the most responsible for the null effects observed here. However, given the significant associations between leadership styles and network characteristics, further research examining the interplay between leadership, social network variables, and outcomes is warranted.

The third contribution of this study is the support for the conceptualization of network characteristics using two different types of trust (task-based and support-based trust). As discussed in the literature review, employees may generate the form of mutual trust with colleagues in two different ways: One is when they need advice for work and another one is psychological help. Given the results from this study, the network variables derived from task- and support-based trust were relatively weakly related, especially for centralization. These findings suggest that the degree of centralization of trust within a work group depends on whether the trust is based on support for tasks or social support. In addition, the results showed that leadership variables were differentially related to task- and support-based trust networks, meaning that the different leadership styles are associated with increases in different types of trust networks, supporting that task- and support-based trust networks have distinct nomological networks. Further, the task-based trust density, support-based trust density, and support-based centralization were significant predictors of work group intent to quit. Together, these findings provide strong evidence for differentiating between task- and support- based network

characteristics.

The fourth contribution is the direct comparison of LMX and the trust network indexes as predictors of turnover intentions. Although the trust network characteristics did not mediate the association between leadership variables and turnover intentions, task- and support-based trust networks explained unique variance in turnover intentions and did so beyond each other and beyond LMX. Thus, these findings underscore the important role that work groups' trust network plays in follower intentions to quit.

**Practical Implications**

Findings from this study also provide several implications for managers and organizations. First, this study demonstrates that different leadership behaviors may have unique contributions to the formation of followers' trust network. Organizations seeking to build a cohesive network characterized by trust would be advised to emphasize ethical leadership through selection and training. Particularly, since ethical leaders are effective in generating advice seeking behavior (i.e., dense task-based trust network), organizations must educate ethical leadership to their leaders, which in turn, reduce group members' turnover intention. On the other hand, managers who are concerned with single followers being the primary source of social support in their work groups would be advised to emphasize transformational leadership.

Second, the current study highlights the importance of LMX in explaining the leadership effects on group members' turnover intention. As discussed in the previous literature (e.g., Gottfredson & Aguinis, 2017) and in the current research, LMX is the key

explanatory mechanism that accounts for the association between leadership and group performance. This present results underscore that this effect also holds for turnover intentions. Thus, leaders fostering high quality exchange relationships with their followers is a key method by which organizations can reduce potential turnover in their work groups. However, the results also showed that ethical leaders reduce turnover intention by fostering task-based trust density. Thus, promotion of ethical leadership can be a valuable approach to reducing follower turnover intention through both increases LMX and increase trust density among followers. In addition, the current research model also showed that even with LMX in the model, high trust network density and low centralization reduced the group members' turnover intention. This means that while collective LMX could help reducing members' turnover intention, group members' trust network could also mitigate this negative outcome. Thus, in cases in which it is not possible to foster ethical leadership and high quality LMX or when follower turnover potential is a particular concern, organizations might instead seek to increase trust network density and decrease centralization.

Lastly, organizations concerned about turnover should pay attention to trust networks in general and the two different types of trust network (i.e., task- and support-based). Specifically, organizations should consider measuring task- and support-based network characteristics in order to identify work groups at risk of greater turnover. This information might be especially valuable to organizations going through a major transition or those that employ traditionally high turnover occupations.

**Limitations and Future direction**

These important considerations must be addressed in light of several limitations. First, since the data were collected from the surveys distributed to individuals, common method variance (CMV) (Lindell & Whitney, 2001) is possibly associated with leadership variables (i.e., transformational leadership, ethical leadership, and abusive supervision), LMX, and outcome variable (i.e., turnover intention). On the other hand, social network metrics might be less impacted by CMV since all the network indexes are calculated statistically prior to hypotheses testing (e.g., Wang & Kanungo, 2004). Nevertheless, future research exploring procedural remedies like obtaining measures of predictors and criterion separately or collecting data from different sources is needed (Podsakoff, McKenzie, Lee, & Podsakoff, 2003).

Second, the outcome variable was measured by asking individuals' intention to quit rather than collecting actual turnover data. Although turnover intentions are moderately related to actual turnover, these variables are not interchangeable (Tett & Meyer, 1993). Future research exploring leadership, network characteristics, and actual voluntary turnover is needed to determine if the present results generalize to actual turnover.

Third, due to the space constraints in the survey as a result of participants complete the social network analysis ratings, the current study used reduced versions of the leadership measures. However, the CFA supported the measurement model, each leadership construct was reliably measured, and all individual-level measures were able

to be aggregated to group-level construct. In addition, the leadership scales were correlated with one another in similar magnitudes as past research examined (e.g., DeRue et al., 2011; Hoch et al., 2018).

Fourth, the social network metrics in this study were measured by sociometric sampling method by asking participants to select the names that applied to each question. In other words, all network-level measures were based upon the individual-level measure of in-degree centrality and then the group-level measures of density and centralization were computed based on the centrality measures (Contractor et al., 2012). This method is useful to identify incoming ties that a single actor receives from other actors, yet it lacks in providing additional information such as frequency or strength of ties (Scott, 2000). Future research can gain more configurations of team network by incorporating more features of social network measures.

Lastly, although this study did show that leadership was related to social network metrics and that social network metrics were related to turnover intentions, only one of the six potential indirect effects were significant. Because of the focus on leadership, other potentially important antecedents of social network indexes were not examined. Thus, this study does not speak to what variables do have indirect effects on turnover intentions through social network characteristics. Therefore, future research exploring other potential antecedents is needed. On the other hand, it is possible that leadership variables have significant indirect effects on other important outcomes through trust network characteristics. Thus, additional research is needed to address this possibility as

well.

**Summary and Conclusions**

In sum, the findings show that leaders can have an influence on the characteristics of their followers' social network, but that LMX is a more important explanatory variable than the configural variables. On the other hand, the sole indirect effect was observed in the association of ethical leadership and turnover intention, but not in the transformational leadership model, which has been supported by past research. Finally, task- and support-based network indexes are distinguishable and have unique effects on follower turnover intentions. Together, these findings underscore the importance for organizations to understand work groups' trust-based networks and for researchers to focus attention on antecedents of work groups' trust-based network.

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Table 1. Descriptive statistics and intercorrelations for variables

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Team size | 9.05 | 5.87 | - | | | | | | | | | | |
| 2. Organization | .08 | .77 | -.41** | - | | | | | | | | | |
| 3. Transformational leadership | 2.92 | .39 | -.07 | .17 | (.90) | | | | | | | | |
| 4. Ethical leadership | 2.82 | .38 | -.27* | .29* | .85** | (.86) | | | | | | | |
| 5. Abusive Supervision | 1.53 | .42 | .15 | -.01 | -.41** | -.63** | (.87) | | | | | | |
| 6. LMX | 2.90 | .37 | -.27* | .21 | .68** | .65** | -.33** | (.84) | | | | | |
| 7. TT network centralization | .23 | .11 | .05 | -.09 | -.15 | -.12 | .03 | -.15 | - | | | | |
| 8. ST network centralization | .21 | .14 | -.05 | .01 | -.20 | .10 | -.22 | -.15 | .26* | - | | | |
| 9. TT network density | .32 | .15 | -.55** | .24* | .24* | .41** | -.23 | .27* | -.06 | -.04 | - | | |
| 10. ST network density | .41 | .20 | -.53** | .37** | .18 | .31** | -.25* | .03 | .04 | -.01 | .73** | - | |
| 11. Turnover intention | 2.33 | .48 | .01 | .21 | -.37** | -.34** | .35** | -.38** | .19 | .26* | -.07 | -.12 | (.89) |

*Note*. $N = 66$ teams. LMX=Leader Member Exchange, TL=Transformational Leadership, TT=Task-based Trust, ST=Support-based Trust. Numbers in parentheses on the diagonal indicates coefficient alpha reliability estimates.
* $p < .05$, ** $p < .01$.

Table 2. CFA comparison between leadership variables factor models

| | $\chi^2$ | ***df*** | **CFI** | **TLI** | **AIC** | **BIC** | **RMSEA** | **SRMR** |
|---|---|---|---|---|---|---|---|---|
| Baseline model | 6112.39 | 190 | .00 | .00 | 22000.96 | 22085.45 | .25 | .40 |
| One factor model | 1966.99 | 170 | .70 | .66 | 17895.56 | 18064.54 | .15 | .10 |
| Two factor model | 1180.54 | 169 | .83 | .81 | 17111.11 | 17284.32 | .11 | .07 |
| Three factor model | 826.47 | 167 | .89 | .87 | 16761.04 | 16942.70 | .09 | .05 |
| Four factor model | 636.30 | 164 | .92 | .91 | 16576.87 | 16771.20 | .08 | .04 |

*Note*. *N*=607, CFI=Comparative Fit Index, TLI=Tucker-Lewis Index, AIC=Akaike Information Criteria, BIC=Bayesian Information Criteria, RMSEA= Root Mean Square Error of Approximation, SRMR=Standardized Root Mean Square Residual.

Table 3. Fit indices of the conceptual research models

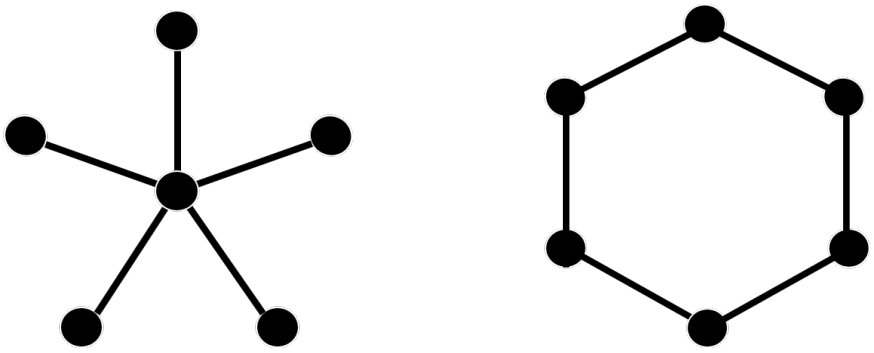
| | $\chi^2$ | df | CFI | TLI | AIC | BIC | RMSEA | SRMR |
|---|---|---|---|---|---|---|---|---|
| Baseline model | 136.14 | 30 | .68 | .65 | 1658.02 | 1721.52 | .23 | .20 |
| Non-mediated model | 22.07 | 11 | .96 | .82 | 1797.82 | 1918.25 | .12 | .11 |
| Partially mediated model | | | | | | | | |
| TFL model | 46.42 | 10 | .83 | .80 | 1935.83 | 2023.41 | .18 | .15 |
| ETHC model | 37.78 | 10 | .88 | .84 | 1918.92 | 2006.51 | .15 | .12 |
| ABUS model | 35.52 | 10 | .82 | .79 | 1964.31 | 2051.90 | .17 | .14 |
| Hypothesized model | 41.12 | 15 | .93 | .92 | 1791.84 | 1912.27 | .08 | .06 |

*Note*. *N*=66, TFL=Transformational leadership, ETHC=Ethical leadership, ABUS=Abusive supervision, CFI=Comparative Fit Index, TLI=Tucker-Lewis Index, AIC=Akaike Information Criteria, BIC=Bayesian Information Criteria, RMSEA= Root Mean Square Error of Approximation, SRMR=Standardized Root Mean Square Residual.

Table 4. Indirect effects of ethical leadership and abusive supervision to turnover intention

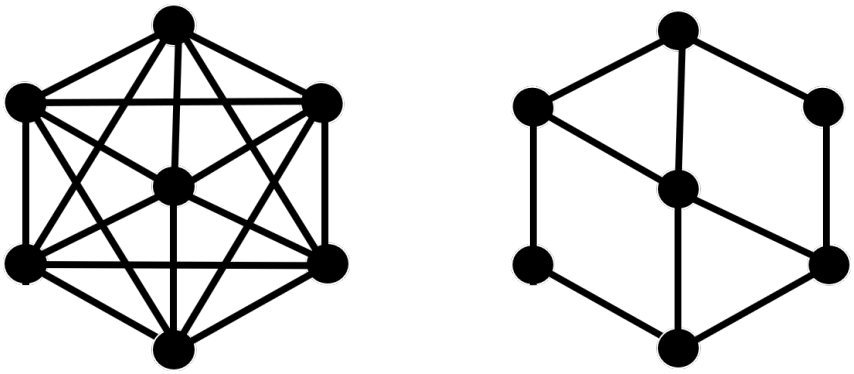
| Indirect effects | Estimate | Standard Error | z-value | p-value | 95% CI |
|---|---|---|---|---|---|
| TFL→LMX→TI | -.370 | .103 | -3.601 | .001 | [-.572, -.169] |
| TFL→TT Cent→TI | -.021 | .023 | -.927 | .354 | [-.065, .023] |
| TFL→ST Cent→TI | -.085 | .045 | -1.874 | .061 | [-.174, .004] |
| TFL→TT Den→TI | -.059 | .047 | -1.265 | .206 | [-.033, .151] |
| TFL→ST Den→TI | -.040 | .061 | -.651 | .515 | [-.159, .080] |
| ETHC→LMX→TI | -.376 | .123 | -3.054 | .002 | [-.617, -.134] |
| ETHC→TT Cent→TI | -.019 | .024 | -.807 | .420 | [-.066, .027] |
| ETHC→ST Cent→TI | -.015 | .037 | -.391 | .696 | [-.088, .059] |
| ETHC→TT Den→TI | -.150 | .066 | -2.281 | .023 | [-.021, -.278] |
| ETHC→ST Den→TI | -.106 | .070 | -1.523 | .128 | [-.243, .031] |
| ABUS→LMX→TI | .159 | .067 | 2.363 | .018 | [.291, .027] |
| ABUS→TT Cent→TI | -.008 | .020 | -.413 | .680 | [-.047, .031] |
| ABUS→ST Cent→TI | -.062 | .044 | -1.404 | .160 | [-.148, .024] |
| ABUS→TT Den→TI | .015 | .050 | .308 | .758 | [-.082, .113] |
| ABUS→ST Den→TI | .045 | .067 | .677 | .498 | [-.086, .176] |
| Total effect | -.291 | .293 | -.995 | .320 | [-.865, .282] |

*Note*. TFL-Transformational leadership, ETHC=Ethical leadership, ABUS=Abusive supervision, LMX=Leader-member exchange, TI=Turnover intention, TT Cent=Task-based trust network centralization, ST Cent=Support-based trust network centralization, TT Den=Task-based trust network density, ST Den=Support-based trust network density.



(a) (b)

Figure 1. *High (a) and low (b) network centralization*



(a) (b)

Figure 2. *High (a) and low (b) network density*

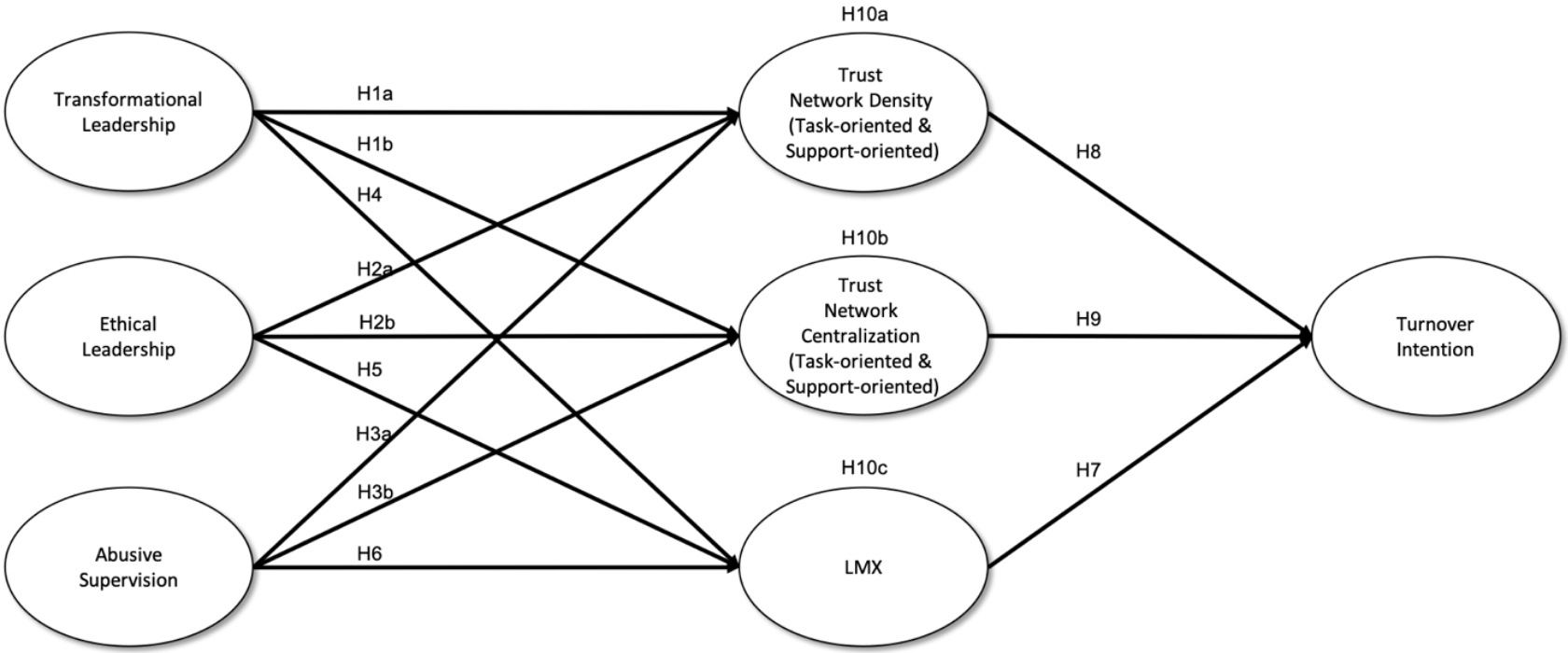
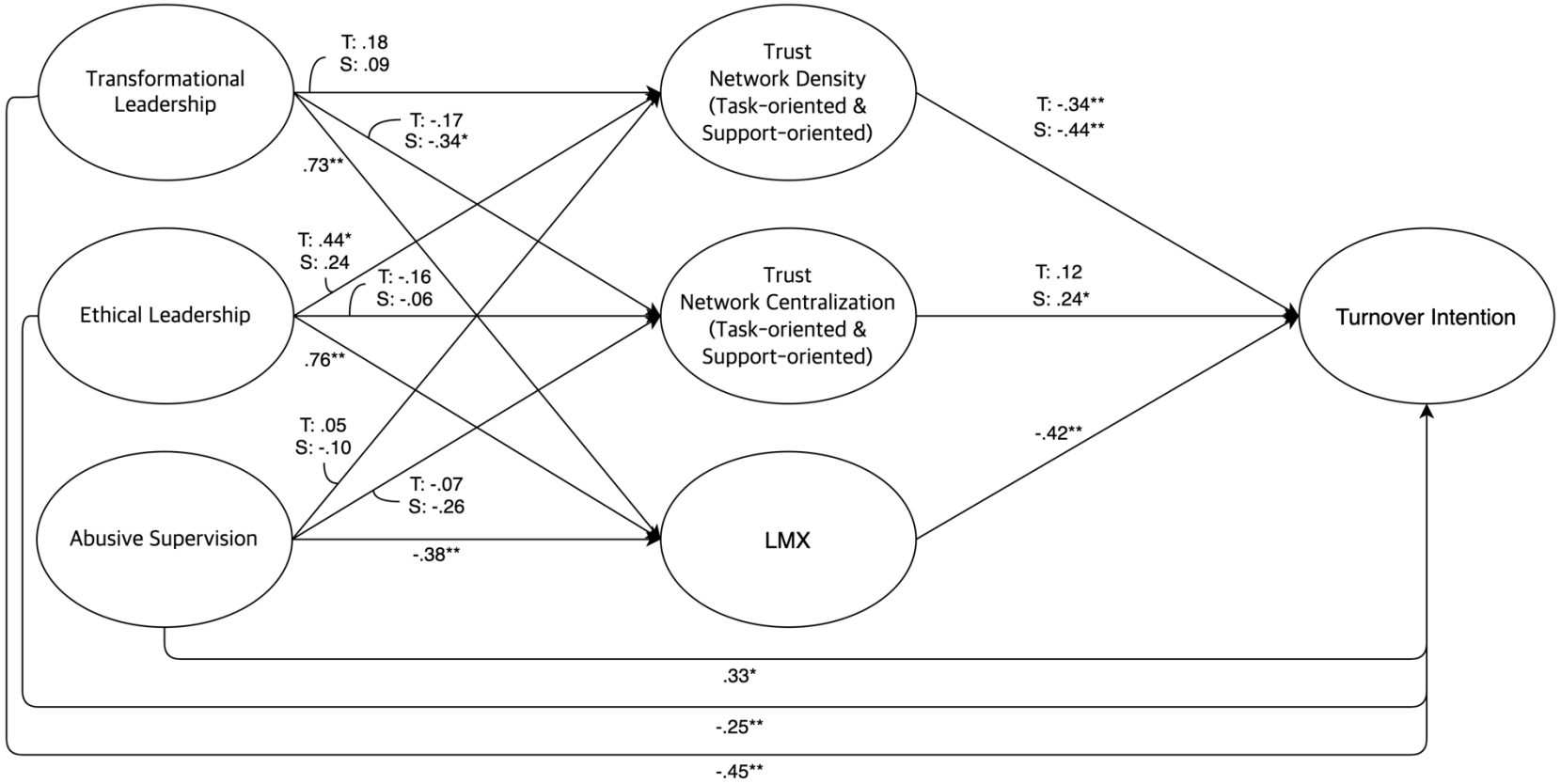



Figure 3. *Proposed research model.*




*Note*. T: Task-based, S: Support-based.

Figure 4. *Proposed research model with regression estimate*

# APPENDIX A

Leadership types, sub-dimensions, and questionnaires used

| Leadership types | Sub-dimensions | Questionnaire |
|---|---|---|
| LMX | Affect | I like my supervisor very much as a person. |
| | Loyalty | My supervisor defends my work actions to a superior, even without complete knowledge of the issue in question. |
| | Contribution | I do work for my supervisor that goes beyond what is specified in my job description. |
| | Professional respect | I am impressed with my supervisor's knowledge of his/her job. |
| Transformational | Vision | My supervisor communicates a clear and positive vision of the future. |
| | Staff Development | My supervisor treats staff as individuals, supports, and encourages their development. |
| | Supportive Leadership | My supervisor gives encouragement and recognition to the staff. |
| | Empowerment | My supervisor fosters trust, involvement, and cooperation among the team. |
| | Innovative thinking | My supervisor encourages thinking about problems in new ways and questions assumptions. |
| | Lead by Example | My supervisor is clear about his/her values and practices what he/she preaches. |
| | Charisma | My supervisor instills pride and respect in others and inspires me by being highly competent. |
| Ethical | | My supervisor listens to what employees have to say.<br>My supervisor has the best interests of employees in mind.<br>My supervisor makes fair and balanced decisions.<br>My supervisor can be trusted.<br>My supervisor sets an example of how to do things the right way in terms of ethics. |
| Abusive supervision | Active-aggressive | My supervisor ridicules me.<br>My supervisor puts me down in front of others. |
| | Passive-aggressive | My supervisor breaks promises he/she makes.<br>My supervisor lies to me. |