Leader-Member Exchange (LMX) within team contexts: a look beyond the leader-member dyad

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LEADER-MEMBER EXCHANGE (LMX) WITHIN TEAM CONTEXTS: A LOOK BEYOND THE LEADER-MEMBER DYAD.

Tese apresentada ao Curso de Doutorado em Administração da Escola Brasileira de Administração Pública e de Empresas para obtenção do grau de Doutor em Administração.

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“Well, I happened to believe you make your own destiny. You have to do the best with what God gave you.

What's my destiny, Momma?

You're gonna have to figure that out for yourself. Life is a box of chocolates, Forrest. You never know what you're gonna get.”

-- Forrest Gump
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ABSTRACT

Leader–member exchange (LMX) theory focuses on the quality of the member’s exchange relationship with the leader. A fundamental tenet of LMX theory is that leaders develop different quality relationships with members in their teams. Research on LMX has almost exclusively focuses on LMX relationships as independent dyads within work groups. However, LMX relationship cannot be fully understood in isolation from the team contexts that shape it. As a result, LMX research has been criticized for failing to consider the role of the social context in the development of members’ perceptions of LMX. This deficiency prompted researchers to call for more research on LMX within the context of teams. Thus, this dissertation answer this call by considering LMX within the team context by exploring theoretical approaches that take into account the social context in which LMX is embedded. Drawing on LMX theory, social comparison theory and social network approach, I address this question through two empirical and independent papers aimed to consider LMX as systems of interdependent dyadic relationships, rather than independent dyads. Overall, the findings of this dissertation corroborate prior arguments that LMX theory represents not only a dyadic phenomenon, but also captures a complex multilevel phenomenon beyond the dyadic relationship. The contributions of these findings are discussed.
Extant research has shown that the dyadic relationship between employees and supervisors plays a significant role in shaping important follower attitudes and behaviors (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012). Thus, the interaction processes between a leader and a follower have been considered one of the central approaches of current leadership research. Increasingly, leadership is observed as an inherently collaborative, social, and relational process (Day, 2001). The leader-member exchange (LMX) theory (Graen & Uhl-Bien, 1995) is a particular approach focusing on the dyadic relationships between leaders and each of their subordinates (Dansereau, Graen & Haga, 1975).

Originally termed vertical dyad linkage (VDL; Dansereau et al., 1975), leader-member exchange theory differs from other leadership theories by its explicit focus on the dyadic relationship and the unique relationships leaders develop with each follower (Gerstner & Day, 1997; Liden, Sparrowe, & Wayne, 1997). Presented as an alternative to general leadership style approaches, LMX theory draws from role theory (Katz & Kahn, 1966) and social exchange theory (Blau, 1964) to explain how dyadic relationships and work roles are negotiated and developed over time through a series of exchanges between leader and member. LMX theory challenges the assumption that leadership is something leaders do towards all of their followers because its fundamental tenet is that leaders develop different quality relationships with followers in their work groups (Ma & Qu, 2010). Scholars suggested a relationship continuum, ranging from low to high. Thus, a leader with fifteen followers can have fifteen distinct leader-member exchange relationships. Some will evolve into high-quality exchanges typified by high levels of mutual trust, liking and respect, and others will be of lower quality and based primarily on the formal employment contract (Graen & Uhl-Bien, 1995).

One feature of the quality of the LMX relationship remain unclear and unexplored in LMX research; this is the relativity of LMX quality. The relativity feature indicates that LMX relationships exist not only in absolute terms but also in relative terms (Hogg, Martin, Epitropaki, Mankad, Svensson & Weeden, 2005). Prior research has primarily studied LMX at the dyad level, largely ignoring the fact that LMX is embedded within the wider social context.
of groups. However, LMX relationships cannot be fully understood in isolation from the group context that shapes the relationships (Hu & Liden, 2013).

I intend in this doctoral dissertation to address this gap by examining the impact of social context on individual and group performance. Specifically, I observe the impact of relative LMX (RLMX; Paper 1) and Leader’s Surrogates (Paper 2) on individuals’ perceptions and behaviors. I expect to contribute to LMX theory in theoretical and practical terms by noting issues not fully answered regarding the fourth evolutionary stages of theorizing development, as identified by Green and Uhl-Bien (1995), which is presented in detail in the next chapter. The remainder of this PhD dissertation is organized as follows. Chapter 2 presents a brief overview of LMX Theory. Chapter 3 presents the Paper 1. And finally, Chapter 4 presents the Paper 2.
CHAPTER 2
Leadership as Relationships: LMX Theory Overview

Originally called vertical dyadic linkage (VDL), LMX theory was developed approximately 40 years ago by Dansereau et al. (1975) as a response to average leadership style (ALS), which assumed that leaders maintain similar relationships with all of their employees. LMX theory separated from this conceptualization by highlighting the means by which leaders differentiated between their subordinates.

Initially based on role theory (Graen, 1976), the concept that work in organizations is accomplished through roles negotiated between new members and their leaders was proposed. Through this negotiation and role development process, varied interpersonal exchange relationships develop between leaders and their members (Cropanzano & Mitchell, 2005). A core concept of the theory is that leaders do not develop the same type of relationship with each follower; instead, relationship quality varies widely among members of a leader’s work group (Graen & Uhl-Bien, 1995). Early research described this as resulting in an in-group and out-group within a work group; however, scholars subsequently suggested, based on social exchange theory (Blau, 1964), a continuum of relationship quality, ranging from low to high. More recent studies have applied social exchange theory to understanding leader-member exchanges; these studies suggest that high-quality exchanges are based on social exchange and are characterized by mutual trust, commitment, respect, interpersonal attachment and unspecified obligations. Low-quality exchanges, in turn, are based on economic/tangible transactions and are characterized by formal, role-defined interactions and predominantly contractual exchanges that result in hierarchy-based downward influence and distance between the parties (Sparrowe & Liden, 1997, Harris, Kacmar & Witt, 2005).

Specifically, social exchange theory posits that individuals provide benefits to others in expectation of receiving benefits of equivalent value in return (Blau, 1964). Social exchanges derive from informal relationships that create personal feelings of trust and obligation. Thus, a social exchange relationship refers to an enduring interaction pattern rooted in mutual obligations and commitment to the other party’s needs (Cropanzano & Mitchell, 2005). The norm for reciprocity (Gouldner, 1960) is a core tenet underlying social exchange relationships. People return favors by engaging in cooperative and rewarding behavior (i.e., positive reciprocity).
Central to the formation of the LMX relationship are the interlocking behaviors that reinforce the reciprocal nature of the relationship (Graen & Cashman, 1975). For example, leaders can offer their positional resources to followers (e.g., bonus, information). If these resources are sufficiently attractive to members, the members may reciprocate with greater than required expenditures of time, energy and effort, assumption of greater responsibility and risk, and concern for the organization (Graen & Cashman, 1975). Where these efforts are attractive, the leader, in turn, may engage in a high-quality exchange. Thus, these relationships exceed the formal authority designated by the organizational hierarchy. If either the leader or the member does not value the resources being offered, however, or if it is determined that the offer is not adequately reciprocated, opportunities to develop high-quality exchanges are likely to be limited (Sherman, Kennedy, Woodard & McComb, 2012). In this case, the relationship may remain at a lower level of LMX development (Dienesch & Liden, 1986; Graen & Scandura, 1987; Uhl-Bien & Maslyn, 2000), and exchanges may be limited to those solely necessary to fulfill contractual obligations (Dulac, Coyle-Shapiro, Henderson, & Wayne, 2008).

According to Graen & Uhl-Bien (1995), the development of LMX theory has passed through four evolutionary stages (see Figure 1): 1) differentiated dyads, 2) LMX relationships and its outcomes, 3) partnership building, which moves beyond the “in-group/out-group” thinking of stage 1 to a more practical and more equitable model for building leadership throughout the organization, and 4) group and network levels, which involves investigating patterns of relationship quality within the leadership structure, considering the criticality of relationships for performance.

<table>
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Figure 1. Stages in Development of LMX Theory. Source: Graen & Uhl-Bien (1995), adapted with modifications
The first stage is the discovery of differentiated dyads. In this stage, researchers found that leaders developed differentiated relationships with their subordinates, a departure from the prevailing approach to leadership, which assumed that leaders displayed consistent behavior towards all subordinates in their work units (Graen & Uhl-Bien, 1995; Schriesheim et al., 1999). The second stage is the investigation of characteristics of LMX relationships and their organizational implications (for example, outcomes of LMX) focusing on the different relationships the leader had within the work unit. The third stage is the description of dyadic partnership building (that is, mature). The third stage changes the emphasis from the leader’s differentiation of subordinates to “how they may work with each person on a one-on-one basis to develop a partnership with each of them” (Graen & Uhl-Bien, 1995; Schriesheim et al., 1999). The final stage is the aggregation of differentiated dyadic relationships to group and network levels; this broadens the scope from the dyad to larger collectives, exploring how dyadic relationships are organized within and beyond the organizational system (Graen & Uhl-Bien, 1995; Schriesheim et al., 1999). In this doctoral research, we intend to advance the understanding of stages 3 and 4 in particular because, in contrast to the earlier stages, knowledge of these stages can still be greatly advanced (Schriesheim, Castro & Cogliser 1999).

Regarding the third stage, Graen and Uhl-Bien provide a model of leadership development: the Leadership Making model (see Figure 2). In this model, the process for leadership making is described in terms of a life cycle of leadership relationship maturity. The process begins with a “stranger” phase in which interactions between the members essentially occur on a more formal basis; this can be characterized as a “cash and carry” economic exchange. Exchanges are purely contractual; leaders provide followers solely with what they need to perform, and followers behave solely as required and do only their prescribed job. These are low-quality relationships. From this phase, an offer/opportunity for an improved working relationship through career-oriented social exchange must be made and accepted (this offer can be made by either party). Once this occurs, the dyads can move to the second stage of relationship development; this is the “acquaintance” stage, in which increased social exchanges occur between the members, and not all exchanges are contractual. When these relationships grow to the next level, they are classified as “mature partnership” exchanges. At this point, exchanges between dyadic members are highly developed These are high-quality relationships. The individuals can rely on each other for loyalty and support. Moreover, the exchanges are not only
behavioral but also emotional (Graen & Uhl-Bien, 1995). In this type of relationship, leaders tend to provide members with resources and opportunities for member career development (Kacmar et al., 2003). In response, members in higher quality LMX relationships “pay back” their leaders not only by fulfilling their contractual role (in-role performance) but also by engaging in extra-role behaviors that benefit the leader and others in the work setting (extra-role performance) (Liden et al., 1997; Settoon, Bennett & Liden, 1996). Based on the leadership making model, LMX quality development should be incrementally positive and stable over time (Bauer & Green 1996; Dienesch & Liden 1986; Vatanen 2003); that is, LMX quality will demonstrate both a positive rate of change across time and subsequent stability.

![Diagram](image)

**Figure 2.** Leadership making model. Source: Graen & Uhl-Bien, adapted with modifications

With regards to the fourth stage, Graen and Uhl-Bien (1995) requested research that focused on how differentiated dyadic relationships combine to group and network levels (Uhl-Bien & Graen, 1992). Such research should include leadership relationships among peers, teammates, and across organizational levels and organizations. Surprisingly, as previously said, most LMX theory studies have focused on the consequences of dyadic leader-member relationships at the individual level of analysis; much less focus has been provided on LMX consequences in the larger social context. Because previous studies have shown the existence and impact of differential
relationships between a leader and his/her subordinates, the next question that arises is “how may this differentiation affect the way subordinates react toward one another and the group as a whole?”. This has led researchers to call for more research on LMX within the context of teams (Anand, Liden & Vidyarthi, 2011; Yammarino, Dionne, Chun, & Dansereau, 2005).

We intend to answer this call by investigating the relativity of LMX. First, applying the logic of Social Comparison theory and LMX differentiation (Henderson, Wayne, Shore, Bommer, & Tetrick, 2008), LMX quality is not only likely to be influenced by the exchanges within a particular leader-member dyad but also likely to be influenced by the relative or comparative exchanges that the leader expends with other LMX relationships within the workgroup (Hu & Liden, 2013). For example, if a subordinate perceives that a leader puts comparatively more effort into relationships with other subordinates than the leader does with that particular subordinate, then the resulting perceptions of unfairness and inequity are likely to undermine the quality of the LMX relationship (Tai, Narayanan & Mcallister, 2012). Because membership in work groups and the treatment of work group members is likely to vary over time, even established LMX dyads should be vulnerable to such social comparisons; this indicates the relativity of LMX quality. This is the background of the first paper.

Second, since LMX quality is not solely a product of independent evaluations of treatment directly offered by the leader, it may be influenced by key people within the team (beyond the leader). Indeed, recent LMX research provides evidence that followers consider information acquired from the social context, particularly those formed from social interactions with some coworkers, when developing perceptions of their own LMX relationships (e.g., Erdogan & Bauer 2010; Henderson et al., 2008). Understanding the role that social context via social network ties plays in shaping employees’ LMX is also a possible way to investigate the relativity (and subjectivity) of LMX perceptions. Therefore, this approach serves as the background of the second paper.
Leader-member exchange (LMX) theory is built upon the assumption that the quality of leader-member relationships varies within a team (Dansereau et al., 1975). As a result, members working with a leader may have different levels of LMX quality (Graen & Uhl-Bien, 1995). To date, most work on LMX has focused on LMX relationships as independent dyads within teams (e.g., Schyns & Day, 2010; Wang, Gan, & Wu, 2016; Little, Gooty & Williams, 2016). This view of independent dyads has had an important limitation because it overlooks the fact that relationships are embedded in a team and thus likely to be influenced by this setting (Hu & Liden, 2013; Yonkeong, 2016; Kauppila, 2016). Indeed, recognizing the importance of extending that original independent dyadic focus to an interdependent dyadic view, Graen and Uhl-Bien’s (1995) called for research that considers how dyadic relationships coexist in a team context and how the variability in the quality of LMX relationships forged within affects individual and team outcomes. However, more than twenty years after this recommendation for LMX research was offered, the implications of differentiated leader-member relationships in the team context for individuals and teams remain largely unknown (Liden, Erdogan, Wayne & Sparrowe, 2006).

The team social context in which dyadic relationships are nested exhibits substantial amounts of social information that facilitate social comparison at work (Brown, Ferris, Heller & Keeping, 2007; Liao, Liu, & Loi, 2010), which is a basic human tendency (Wood, 1989; Festinger, 1954). From a social comparison perspective, remarkable discrepancies make a social cue more salient (Herr, Sherman & Fazio, 1983; Wood, 1989). Therefore, the differential ways leaders treat their subordinates should be an important source of contextual information on which employees rely to make social comparative evaluations. Since Festinger’s (1954) original formulation of social comparison theory, social psychologists have consistently hypothesized that social comparisons are the fundamental psychological processes behind typical aspects of social interpersonal interactions, such as fairness evaluations and causal attributions (Kruglanski & Mayseless, 1990). Thus, some situations inherent to everyday life are fundamentally rooted in social comparison processes, which in turn are associated to individuals’
attitudes and behaviors (Mussweiler, 2003; Greenberg, Ashton-James & Ashkanasy, 2007).

The extant social comparison literature suggests that individuals engage in social comparisons driven by multiple motives and desires, such as self-enhancement and self-improvement (Wood, 1989; Helgeson & Mickelson, 1995; Buunk, Cohen-Schotanus & Van Nek, 2007). Surprisingly, one of the least addressed facets of social interpersonal interactions drawn upon social comparison processes is one that may have a stronger impact in team settings. This facet involves the notion of competition, which is argued to be one form of manifestation of social comparisons (Garcia, Tor & Schiff, 2013). As stated, the social context of teams offers daily salient cues and referent information that forms a basis for social comparisons (e.g., “employee of the month award”, zero sum pay system) (Greenberg, Ashton-James & Ashkanasy, 2007). Through workplace comparisons with teammates, employees obtain an accurate indication of where they stand, thus becoming aware of their current state and others’ states (Brown, Ferris, Heller & Keeping, 2007). These social comparisons shed light on any discrepancies with the “winners” or “losers” and can thus “turn on a competitive mode”, indicating a competitive mindset aimed at reducing or reinforcing discrepancies that might be damaging or favoring to one’s self-concept, respectively (Garcia, Tor & Schiff, 2013). Thus, competition is frequently described as an element that induces individual and team psychological states, leading to particular individual and team outcomes.

With these considerations in mind, we sought in this study to investigate how competition triggered by social comparisons impacts psychological safety and team cohesion, understood as individual and team motivational states, respectively. There are mainly two reasons for choosing these particular variables: a) they both involve perceptions about the social context in which LMX relationships are embedded, and b) although they are believed to emerge from the same phenomenon (i.e., social comparisons), they embody seemingly paradoxical foundational elements in positively influencing performance, and they therefore challenge organizations and leaders seeking an appropriate balance in the struggle between these opposing forces. Since social comparison is grounded in a competitive logic (Garcia, Tor & Schiff, 2013), it may threaten team-level outcomes because of its damaging effects on interpersonal relations (Mathieu & Schulze, 2006). On the other hand, social comparison may boost individual outcomes once favorable comparisons provide individuals with positive psychological states resulting from their evaluation of superiority (Luft, 2016).
Based on the above, we develop and test a multilevel model accounting for how competitive comparisons arising from within-group variation in the quality of LMX unfold and influence individual and team outcomes. We argue that the extent to which a member’s LMX compared to the LMX of teammates (relative LMX, or RLMX; Henderson, Wayne, Shore, Bommer & Tetrick, 2008) is better (or worse) than average dictates the likelihood that such comparisons trigger processes based on competitive motives and thus ultimately shape individual outcomes. Similarly, as social comparisons make visible the degree of within-team variability in the quality of LMX relationships between the leader and members (LMX differentiation, or LMXD; Liden et al., 2006), such comparisons may lead members to perceive each other as competitors (Tse, 2014), which then influence team processes and outcomes. Specifically, we propose that the differential quality of LMX relationships within a team exert two different effects on individual and team performance outcomes. While differentiation at the individual level is expected to improve individual performance for members who have better relationships (high RLMX) by strengthening their psychological safety, differentiation at the team level is expected to harm team performance, since it is argued to disrupt social cohesion among members.

This theoretical combination facilitates a deeper approach to unravel the psychological mechanism and team dynamics through which social comparison processes in terms of LMX relationships translate into individual and team performance outcomes. Moreover, by developing a multilevel model that takes into account the individual within-team perspective, our findings support the notion that LMX process is a complex process that involves multiple elements, loci and mechanisms (Hernandez, Eberly, Avolio & Johnson, 2011) and this should be considered in future research.

Social Comparison and LMX at the individual within-team level: the concept of Relative Leader-Member Relationship (RLMX)

Social comparison was first proposed as a systematic theory by Festinger (1954), although the essence of the social comparison concept can be found in early social psychological research (Suls & Wheeler, 2000; Suls, Martin & Wheeler, 2002). According to Festinger (1954, p.117), “there exists, in the human organism, a drive to evaluate his opinions and his abilities”. Initially with a restricted focus on the comparisons of abilities and opinions within the realm of social psychology, research on social comparison in
recent decades has evolved in a variety of ways, including issues and areas of knowledge (Buunk & Gibbons, 2007; Greenberg, Roberge, Ho, & Rousseau, 2004) while maintaining the basic assumption that comparison processes function to indicate one’s relative position compared to others in the dimension under evaluation (Wood, 1989).

Given the natural inclination for human beings to evaluate their relative social state (Wood, 1996), members of a work team constantly scan their team environment seeking information to help them form comparative judgments and thus to obtain information about their own relative standing (Suls, Martin & Wheeler, 2002). Since the key assumption of LMX theory is that leaders build different relationships with each member of the same team (Graen & Uhl-Bien, 1995). Therefore, in light of social comparison theory, employees are likely to perceive and compare the quality of their own LMX with that of other group members (Henderson et al., 2008). This suggests that when surrounded by differences in the quality of their LMX, employees make interpersonal comparisons, which in turn lead them to be aware of their relative standing in a workgroup. In the LMX literature, an employee’s LMX quality relative to the LMX quality of other teammates within a workgroup is termed as relative leader-member exchange (RLMX).

The concept of RLMX, first outlined by Graen and colleagues (1982) and later operationalized by Henderson et al. (2008), is rooted within social comparison theory, as it relies on a comparative analysis between a focal employee and his or her coworkers. In essence, by integrating social comparison theory with social exchange theory, differences in leader-member exchange relationships go beyond the leader-member dyad and arise from social comparisons within the team. In other words, high- and low-quality within-group relationships exist solely in relative terms; there is no absolute reference point in LMX theory for determining what a high- or low-quality relationship is without referring to a differentiated group context (Henderson et al., 2008).

Therefore, employees with high RLMX standing hold exchange relationships with their leaders that offer unique advantages compared with the experiences of their coworkers and promote differing obligations in the employment relationship. By contrast, employees who are of lower standing relative to others (i.e., low RLMX) have LMX relationships within the team that are worse than average and they may receive fewer benefits and resources from their leaders (Henderson et al, 2008) which in turn influence their attitudes and behaviors at work.
It should be noted that, consistent with Henderson et al. (2008), employees both are aware of the quality of their LMX relationships and form judgments of their RLMX within the team. Thus, employees’ RLMX standing provides them with a point of reference to understand their position relative to other coworkers’ LMX standings (Vidyarthi, Liden, Anand, Erdogan & Ghosh, 2010), even though RLMX is not operationalized as a perceptual measure.

**Social Comparison and LMX at the team level: the concept of LMX Differentiation (LMXD)**

As discussed earlier, LMX theory is built upon the assumption that leaders vary in the extent to which they differentiate among their followers (Graen & Uhl-Bien, 1995). Some leaders may establish high LMX with only a few followers, whereas others may establish high-quality exchange relationships with most group members. In other situations, leaders might establish only low-quality exchange relationships with most members (i.e., a different pattern of LMX distribution; Li & Liao, 2014). In summary, within-group LMX relationships may be differentiated to a greater or lesser extent across organizational work groups, as conceptualized by *LMX differentiation* (LMXD; Liden et al., 2006).

High LMX differentiation suggests that there is a broad range in the quality and nature of LMX relationships within a work group, such that they vary from low to high. In contrast, low differentiation refers to a context in which the quality of exchanges within a work group is more similar or the range of LMX quality is smaller. In groups with a low degree of LMX differentiation, individuals who are relatively closer to their leaders may not experience the same relative advantages that they would if they were in a group with a higher level of LMX variability (Erdogan & Liden, 2002). As such, the concept of LMXD builds upward from the dyad to acknowledge the differences in exchange processes that exist across leader-member dyads within a team.

Again drawing upon social comparison theory, this variability in the quality of LMX relationships forged within teams is likely to be perceived by members and is thus, likely to be target of comparative evaluative processes among them (Vidyarthi, Liden & Anand, 2010). In such evaluative processes, team members develop awareness of others’ social standing in their team’s distribution of LMX relationships.

Empirical research has shown that the greater the degree of LMX differentiation, the more salient it is for comparative judgments made by employees and thus the stronger
the influence on team outcomes is (e.g., Li & Liao, 2014; Sui, Wang, Kirkman & Li, 2015; Bernerth & Hirschfeld, 2016).

Social comparison, competition and performance

According to the social comparison literature, the subjective meaning and psychological implications of comparative judgments made by individuals involves the notion of competition, i.e., a desire to achieve or protect one’s superiority (Festinger, 1954). Competition is a condition underlying the distribution of resources and rewards and it emerges as a result of individuals’ and groups’ common interest in resources that are scarce or at least finite. When unfavorable or favorable discrepancies regarding resource distribution are perceived as a result of social comparison processes, individuals often attempt to reverse or further strengthen those discrepancies in order to achieve a better position relative to the other people with whom they compare. This occurs because people commonly seek to achieve a superior position relative to others (De Botton, 2004; Festinger, 1954).

Indeed, social comparisons have been intrinsically linked to competition, particularly in organizational environments, which are typically competitive (Munkes & Diehl, 2003; Kruglanski & Mayseless, 1990). For example, an employee “wins a promotion” or is “awarded employee of the month” or “ranked number one in performance”. In addition to such organizational initiatives that explicitly promote comparisons among employees, evidence suggests that employees also make social comparisons from many other contextual and less explicit cues (e.g., HR practices; Soon, van Dyne & Begley, 2003). Whether social comparison arises spontaneously or whether it is brought about (or extended) by organizational systems, comparison leads to the same effect: it strongly motivates individuals to be competitive (Camerer & Lovallo, 1999; Moore & Kim, 2003). Therefore, by making sense of their own standing relative to their team (Buunk & Gibbons, 2007), employees feel motivated to differentiate themselves from others in a competitive way and consequently to achieve a superior position, particularly individuals who realize that they are better than average (Larrick, Burson & Soll, 2007).

In this vein, Festinger (1954) outlined that social comparison is a primary driving force behind individual competition. To the extent that social comparison reveals any difference between the focal employee and the comparison target, it motivate the employee to incorporate a competitive mindset aimed at enhancing such discrepancies
that may help one’s achievements (Colpaert, Muller, Fayant & Butera, 2015). Although empirical research has consistently demonstrated the link between social comparison and employee’ attitudes and behaviors at work (Mumford, 1983; Gibert, Giesler & Morris, 1995; Greenberg, Ashton-James & Ashkanasy, 2007), the research has not been closely connected to the concept of competition (see Jia, Lu, Xie & Huang, 2016 for an exception).

We argue in the present study that comparisons relative to the work-unit average (RLMX), or aggregate social comparisons (LMXD), are therefore powerful in shaping a competitive mindset in individuals that enhances their performance through perceptions of psychological safety while undermining team performance by harming team cohesion. Next, we develop the theoretical rationale for these contrasting effects.

**The effects of RLMX on Individual Performance**

A rich body of LMX literature has supported the relationship between LMX and individual performance (see Martin et al., 2010, for a review). Much of this research has based this positive relationship between individual-level LMX and job performance on the argument that employees who receive favorable treatment from their leaders (i.e., high LMX) feel obliged to reciprocate with commensurate attitudes and behaviors that are important to their leaders, such as job performance (Martin, Guillaume, Thomas, Lee & Epitropaki, 2016). Although valid, this argument does not consider the social context within which employees form perceptions of their relationships with the leader.

As previously stated, by comparing how their leaders treat them with how they treat others in the work group, employees may gain additional motivation that guides their attitudes and behaviors (Ames & Archer, 1988; Wood, 1989), particularly their job performance (Murayama & Elliot, 2012). Since organizational resources and growth opportunities are limited, when social comparisons reveal differentiated treatment within the team, employees who perceive themselves as enjoying higher quality LMX experience greater perceptions of support, competence and success, which encourage their engagement in work-related activities and lead to enhanced performance. By contrast, team members low in relative LMX standing might perceive this as a failure experience and they are then more likely to become demotivated and unwilling to employ extra effort to achieve goals since they feel less competent than those in higher positions. In sum, these employees are less motivated to compete with their coworkers to gain a greater share of leaders’ favorable treatment (Kilduff, 2014). In sum, social comparisons
in terms of RLMX may emerge as a unique explanatory variable affecting individual performance beyond the overall quality of the LMX relationship (Vidyarthi et al., 2010), as we detail below.

In accordance with the above reasoning, it is plausible to argue that if members RLMX is high, employees see themselves as victorious, successful, and competent, since they have reached a superior social position compared to others within the team who have failed to do so. This means employees with high RLMX standing are the ‘winners’, and the others are the ‘losers’. Therefore, by having a closer relationship with the leader than that experienced by their co-workers, employees may experience feelings and beliefs of superiority and prestigious status relative to their coworkers (Tse, Ashkanasy & Dasborough, 2012). RLMX thus nurtures individuals’ social status. As high-status individuals have been shown to express great concerns about distinguishing themselves from other teammates and maintaining their existing high status, they may be particularly sensitive to competitive threats to their existing status. Hence, they are more likely to incorporate even stronger competitive feelings to exert extra effort in daily tasks as a status defense/maintenance responses (Chen, Brockner, & Greenberg, 2003; Chen, Myers, Kopelman, & Garcia, 2012; Chen, Peterson, Phillips, Podolny & Ridgeway, 2012). In other words, competitive concerns tied to RLMX should positively predict the adoption of specific aims focused on outperforming or not being outperformed by their peers (Murayama & Elliot, 2012).

Despite this reasonable logic that assumes that the competition activated by social comparison processes will lead to incremental performance at the individual level, we move beyond a focus on this direct effect to a consideration of the psychological process evoked by competitive comparisons that influence performance attainment. At present, there is an absence of theoretical and empirical work on mediational processes in this area of inquiry, and we believe that attending to such mediational processes will help illuminate the nature of the aforementioned relationship (Murayama & Elliot, 2012). Specifically, we focus on the mediating role of psychological safety underpinning the relationship between RLMX and individual performance.

According to LMX theory, leaders tend to develop high-quality relationships with individual members who are perceived as being capable and possessing the potential to perform well (Liden, Wayne, & Stilwell, 1993). Therefore, it follows that high RLMX standing sends signals to individual members concerning their outstanding skills and capabilities compared with the rest of the team (Shuisheng, Wei, & Mingjian, 2016).
These members with high RLMX standing tend to feel a sense of confidence about being better positioned in the eyes of their leader than the rest of the team and consequently to feel less vulnerable in the organizational context.

Moreover, previous research has suggested that the quality of employees’ LMX relationship is likely to influence the amount of uncertainty that they experience (Gerstner & Day, 1997; Rosen, Harris & Kacmar, 2011). Because members with high-quality LMX tend to have stronger social relationships with their leaders, facilitating an open exchanges of information with them (Kacmar, Witt, Zivnuska, & Gully, 2003; Liden et al., 1997), these members enjoy the advantage of gaining more information, which in turn mitigates the levels of uncertainty that they experience in their immediate environment (Rosen, Harris & Kacmar, 2011). In addition, because employees often view their leaders as representatives of the organization (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002), this type of attachment is also important to decrease feelings of uncertainty regarding the broader organizational setting. Therefore, high RLMX standing is expected to make members less individually vulnerable and anxious about future prospects in their employing organization, since they are assumed to have differential access to critical information about organizational politics compared to the access enjoyed by individuals with low RLMX standing. This access should both alleviate the perceived uncertainty surrounding the organizational environment and increase employees’ perceptions of control (Eisenberger et al., 2002).

In line with this reasoning, we argue that the RLMX has a safety signal function. According to the literature, psychological safety has been described as employees’ perceptions of the consequences of interpersonal risks in their workplace (Edmondson, 1999; Nembhard & Edmondson, 2011). Specifically, RLMX refers to members’ perceptions of an interpersonal context in which they “are comfortable being themselves” (Edmondson, 1999, p. 354) and feel that the social context is not threatening (Edmondson, 1999). Within the organizational behavior literature, the psychological safety construct is grounded in Kahn’s (1990) analysis of psychological factors that contribute to employee engagement. Although it is commonly explored as a team-level concept (Edmondson, 1999), research has suggested that psychological safety can exist at both the individual (Ashford, Rothbard, Piderit, & Dutton, 1998; Detert & Burris, 2007) and group levels (Edmondson, 1999; Walumbwa & Schaubroeck, 2009).

Psychological safety refers to perceived freedom in the expression of one’s true self – i.e., whether an individual feels confident in expressing his/her ideas and beliefs
without fear of negative consequences for self-image or career prospects (Edmondson, 1999). It is the ability to “show and employ one’s self without fearing rejection or punishment by colleagues and leader” (Kahn, 1990, p. 708). This is important because the way people feel in a given situation generally influences their subsequent behavior (Kahn, 1990). In a demographically diverse environment, due to individual differences, employees are likely to feel more apprehensive in freely expressing themselves, which further illustrates the importance of psychological safety in such settings.

Essentially, we posit that when RLMX is high, employees are likely to experience higher levels of openness from their leaders, leading them to develop the perception that it is psychologically safe to express and share their thoughts and views. Members who recognize that their views and opinions are allowed may be more psychologically comfortable in engaging in initiatives that aim to change a status quo even when they recognize that others may be resistant to change. Moreover, by accessing more information than others within the team and thus experiencing lower levels of environmental uncertainty, employees with high RLMX standing can make more inferences about their value, worth, and future prospects in their organization compared to individuals with low RLMX. Finally, because RLMX depicts one’s amount of valued resources exchanged with the leader versus that exchanged by coworkers (hence, relative to other group members in a workgroup), members in higher-quality LMX relationships are treated more advantageously. Thus, they are likely to feel less anxiety and fear about their surroundings and to experience increased psychological safety. Therefore, we propose the following:

**H1a: RLMX standing is positively related to individual psychological safety.**

By removing barriers of fear, uncertainty, and lack of confidence in one’s abilities and skills, psychological safety provides individuals with feelings of security to engage in risky behaviors, especially in relation to their leader. Such behaviors may include asking questions, discussing errors and suggesting new work methods, which in turn facilitate superior performance (Li & Tan, 2013). Thus, psychological safety acts as a mechanism behind the influence of RLMX on individual performance.

As discussed earlier, RLMX occurs in a set of differentiated LMX relationships within a social context and represents social status. Thus, RLMX is associated with a competitive mindset that signals to individuals that they are ‘superior to others’.
Moreover, these competitive feelings lead individuals to employ extra efforts aimed at improving performance in order to overcome the threats of coworkers in the workgroup and thereby to ensure higher social status. A better performance is proposed to be facilitated by the lack of fear and uncertainty (i.e., psychological safety) emerging due to the unique competitive advantages that a prominent position provides to members. Therefore, building on the foregoing discussion, we suggest that psychological safety is the mechanism by which RLMX impacts individual performance.

**H1b: RLMX standing indirectly affects employees’ performance through its positive effects on individual psychological safety.**

**The effects of LMXD on Team Performance**

The source and basis of comparisons behind RLMX are derived from group-level LMX differentiation (Henderson et al., 2008). LMX differentiation, which is the variability in LMX quality within a group, is the fundamental premise of LMX theory (Liden et al., 2006; Ma & Qu, 2010). Scholars have often regarded LMX differentiation as a given phenomenon caused by leaders’ limited time and resources, although studies also have revealed that individual factors may shape the extent of LMXD in a team (e.g., Le Blanc & González-Romá, 2012; Ma & Qu, 2010).

The theoretical rationale and empirical findings appear, at first sight, to contrast with regard to whether leaders’ differential treatment of team members helps or hurts team performance (Anand, J. Hu, Liden, & Vidyarthi, 2011; Liden et al, 2006). For example, some scholars have suggested that leaders’ differentiation helps group effectiveness and motivates individual effort (e.g., Halevy, Chou & Galinsky, 2011), whereas others have suggested that this differentiation exerts a negative influence on group performance through disrupting team coordination (Li & Liao, 2014). Although these results are contrasting, they are not incompatible in nature. In fact, these findings reveal the existence of multiple mediating mechanisms with opposite effects (Li & Liao, 2014).

Indeed, Liden et al. (2006) developed two arguments regarding the effect of LMX differentiation on team performance. According to their theorizing, because members inevitably differ in their contributions to the work group, on the one hand, differentiation benefits team performance by allowing team resources to be distributed and utilized in an efficient manner. On the other hand, differentiation can impair team performance by
placing relational boundaries between team players. In this study, drawing on the notion of competition underlying differentiation we highlight the negative effects of LMX differentiation on team performance through its detrimental impact on group cohesion (Festinger, Schachter & Back, 1950).

It should be noted that the concept of leaders treating members differently was traditionally assumed to be an effective strategy for leaders to promote team performance by better allocating their limited energy and scarce resources and more efficiently assigning tasks to subordinates (Dansereau et al., 1975; Graen & Cashman, 1975). Research has just begun to address the potential “dark side”, i.e., the disruptive effects of LMX differentiation on team performance (Ford & Seers, 2006; Le Blanc & González-Romá, 2012; Liao, Liu, & Loi, 2010; Liden et al., 2006; Stewart & Johnson, 2009). In this sense, researchers have addressed the negative impact of LMXD on team performance through different explanatory mechanisms (e.g., justice climate and team coordination). However, despite the increasing body of research focused on this, additional mechanisms should be explored within the context of LMXD.

As we previously stated, the phenomenon of differentiation, which is the central tenet of LMX theory, provides contextual cues that inform employees about the social context in which they work. Therefore, the distribution of LMX relationships forged within teams may drive social comparison processes at the group level (Tajfel, 1978). When provided with social comparison information, members perceive and internalize team norms and conform to behave in accordance with these norms. From this perspective, it seems quite apparent that one “team mindset” (i.e., team members’ collective perceptions), in which thoughts about one’s group are highly available, that is fostered within the team is likely to influence team functioning and outcomes.

Although social comparison research and theory traditionally stress individualistic, psychological purposes of comparison, such as satisfying basic drives, defining and enhancing the self, and alleviating distress or anxiety, Festinger (1954) also used the theory to explain group dynamics among members (Forsyth, 2000). According to the literature, team values, rules, behavioral standards and other types of norms are supposed to emerge from these group-level comparisons (Hogg, 2000).

In line with this reasoning, we suggest that the consequences of group-level social comparisons are influenced by the degree to which members working with the same leader differ in their LMX relationship quality (i.e., LMXD). In other words, when leaders develop differentiated exchanges with their subordinates, the magnitude of the difference
between members’ LMXs (i.e., ranging from low LMXD to high LMXD) likely drives different members’ perceptions of social rules governing internal team processes and interactions as well as subsequent group-based dynamics and behavioral responses.

More specifically, we state that high LMXD within a team provides implicit evidence that the team is not subjected to equality norms (i.e., equal treatment in terms of resources and rewards for all individuals) (Greenberg, 1982; Colquitt & Jackson, 2006). Although it remains empirically unclear whether this advocated LMX differentiation is determined by the principle of equity (i.e., resources distributions should be proportional to the input of each individual), scholars agree that differentiation in LMX relationships within a team ccontrasts with the equality principle (Scandura, 1999; Hopper & Martin, 2008; Gooty & Yammarino, 2016). As a result, despite potential savings for leaders and members individually, the differential treatment of employees intuitively appears problematic for the team as a whole. Indeed, several authors have suggested that such inequalities in reward distribution may negatively affect relations among team members (e.g., Graen & Uhl-Bien, 1995; Liden, Sparrowe & Wayne, 1997; Sias & Jablin, 1995).

For example, Roberson and Colquitt (2005) found that LMX differentiation was negatively related to the development of shared team justice perceptions. As a result, the perception of injustice led individuals to attribute the attainment of resources and success via a high-quality exchange relationship with a supervisor to immoral favors. Consequently, LMX did not function effectively as a positive catalyst for team members’ self-efficacy (Roberson & Colquitt, 2005).

Research has demonstrated that the norm of equality stimulates a cooperative environment that emphasizes team accomplishments, favors perceptions of shared fate and promote supportive behavior, whereby each team member looks out for the interests of others. Therefore, if equality is jeopardized in resource allocation within a team context, the cooperative spirit inherently associated with it is also impaired (Beersma et. al., 2003; Tyler & Blader, 2001). Rather than fostering cooperation, differentiation might instead lead members to adopt a competitive orientation (Beersma et. al., 2003). In this case, the team context is more likely to be competitively structured and based on individual rather than group goals; competition and even antagonism may arise among team members, as individuals compete for a larger proportion of the available attention and resources (Deutsch, 1949; Vecchio, 2005). Such a context may promote disharmony in coworker relationships and encourage teams members to focus on their own
performance rather than assist or share information with other team members (Mohrman, 1992).

Building on the foregoing discussion and empirical evidence, we suggest that when leaders form highly differentiated relationships with employees this situation undermines team cohesion. The concept of team cohesion has its roots in social psychology (Lewin, Lippit & White, 1939); it is one of the most widely studied concepts in small group performance and intra- and intergroup relations (Chiocchio & Essiembre, 2009). Researchers have defined cohesion in a variety of ways (Rosh, Offerman & Van Diest, 2012). For the purpose of this research, in accordance with previous studies, we consider team cohesion to be an index of social integration into workgroups. We define group cohesion as the tendency of a team to stick together and remain united in the pursuit of its objectives (Gully, Devine & Whitney, 1995).

Research has demonstrated that because LMX differentiation tends to introduce competitive feelings and relational barriers in teams, LMX differentiation harms team members’ mutual solidarity, disrupts interpersonal harmony and undermines team processes (Sherony & Green, 2002). Such dysfunctional dynamics may jeopardize within-group social integration and therefore diminish group cohesion (Li & Liao, 2014). Thus, we propose the following:

\[ H2a: \text{The degree of LMX differentiation is negatively related to team cohesion.} \]

The effectiveness of a team is described as the result of interrelated activities based on a given mentality or collective consciousness, where members see how their actions are interrelated (Weick & Roberts, 1993). In this sense, as cohesion is typically defined as “a dynamic process that is reflected in the tendency of a group to stick together and remain united in the pursuit of its objectives” (Carron, Brawley, & Widmeyer, 1998, p. 213), it is through team cohesion that a team functions as a collectively unified whole. When a team attains a high level of cohesion, members tend to remain united in the pursuit of the team’s goals, and therefore, the work of all members contributes to a collective goal.

Because team cohesion bind members to each other in a team, it enhances teams’ ability to address contingencies and overcome obstacles. In a sense, it is team cohesion that transforms separate individuals into a combined force better able to address
demanding situations that are beyond the capabilities of individuals (Steiner, 1972). Thus, team cohesion is a key team process that enables teams to achieve good performance (Raver & Gelfand, 2005). In fact, team cohesion has been proposed to be an important determinant of work team performance (Gully, Devine, & Whitney, 1995).

We believe that team cohesion serves as a critical mechanism explaining the effects of the degree of LMX differentiation on team performance, i.e., LMX differentiation shapes team performance by affecting team cohesion (H2a). Therefore, we argue that LMX differentiation indirectly affects team performance. We thus propose the following:

\[ H2b: \text{The degree of LMX differentiation indirectly affects group performance through its negative effects on team cohesion.} \]

The cross-level effects of LMX Differentiation

As discussed earlier, leaders differ in the extent to which they form differential relationships with their subordinates. As variability in LMX differentiation is a contextual factor, it is also argued to affect within-team relationships. Thus, this proposed effect can also be understood from a social comparison perspective.

Specifically, we argue that LMX differentiation can have a cross-level effect, serving as a boundary condition for the psychological process at the individual level. We propose that between-group variability in LMX differentiation is a factor that affects the within-group RLMX-psychological safety relationship previously discussed. RLMX is a social cue that enables employees to assess where they lie in the relational mapping weaved by their leaders via comparison processes. Remarkable contrasts make a social cue more salient, whereas homogeneity leads people to downplay or neglect a social cue’s importance (Greenberg et al., 2007).

High LMX differentiation provides meaningful information for employees to use and consider social comparative evaluation; conversely, low differentiation means that team members have a LMX relationship of comparable quality (Li & Liao, 2014), which renders RLMX a less informative and less valuable social cue in shaping psychological states of safety. Therefore, we propose that in teams with a high degree of LMX differentiation, RLMX acts as a powerful social cue contributing to employees’ psychological safety. By contrast, in teams with a low degree of LMX differentiation, RLMX is a less salient social cue in influencing psychological safety.
Thus, we articulate a moderating effect of LMX differentiation at the individual level. That is, between-group variability in LMX differentiation is a critical contextual factor that affects the within-group RLMX-psychological safety relationship. Due to social comparison, unequal distribution of LMX quality makes RLMX a more salient social cue influencing safety perceptions. Hence, high differentiation delineates remarkable contrasts that make RLMX an even more salient social cue. Thus, we propose the following.

\[ H3: \text{The degree of LMXD moderates the positive relationship between RLMX and individual psychological safety, such that the relationship is stronger as LMX differentiation increases.} \]

**Figure 1.** Theoretical Model

**ORGANIZATIONAL CONTEXT**

**Background**

We gathered empirical data for this study from 28 emergency care units (ECUs) located in Brazil. These health care organizations are under control of the Health Secretary of Rio de Janeiro State. ECUs are part of the Brazilian Unified Public Health System (SUS), which provides public health services to the entire population. The launch of ECUs at the state level in the mid-2000s was aligned with the nationwide healthy policy and aimed to enable the state to respond in a more direct manner to the difficulties associated with the health system and thus to improve health care delivery. Health care
services in ECUs are under the responsibility of social organizations (private sector entities). These organizations work in partnership with the state’s government (public-private partnership; PPP).

Emergency care units are 24/7 services handling many urgent matters and emergencies, such as abnormal blood pressure, high fever, fractures, cuts, heart attacks and strokes. This service helps to reduce queues in hospital emergency units. Indeed, in the current Brazilian health care system, hospitals are responsible for providing emergency care for patients with highly complex demands, and ECUs provide care for patients whose requirements are of low and medium complexity. ECUs innovate by offering a simplified structure with X-ray, electrocardiography, pediatrics, laboratory tests and observation beds.

**Health Care Teams in ECUs**

Health professionals working at ECUs belong to either the nursing or medical staff. This study focused on professionals of nursing teams mainly for two reasons: in contrast to medical teams, nursing teams are fixed teams that work together and are supervised by a formally assigned leader. In terms of composition, these teams are formed by nurses and nursing technicians who work 24-hour shifts, with 120 hours (5 days) off. The nursing staff is responsible for reception, assessment and risk classification protocol and all procedures for providing emergency care prior to and after physician assistance and consultation. The execution of laboratory tests (e.g., blood tests) is also under the nursing staff’s responsibility.

**METHODS**

_Gathering contextual information_

Initially, we took a series of procedures to better understand the context in which health care teams of ECUs are embedded and to learn the specifics of this work environment, such as the language and culture. First, we had some meetings with state officials from the office of the Health Secretary of Rio de Janeiro State to learn more about the overall operation and scope of the ECUs and the healthcare context in Rio de Janeiro State. Basic information such as organizational structure, task organization, and management tools was raised in these meetings. At the same time, we sought to obtain
information from document that could help us understand the reality in which ECUs operate. In this sense, we gathered information about legal regulations and health protocols, news reports, and health statistics related to ECUs, including morbidity and mortality.

Subsequently, we visited three ECUs located in different areas of Rio de Janeiro city to observe the physical environment and to obtain more information about teams’ composition and functioning, work routine, social structure and leadership dynamics. During these visits, we conducted in-depth interviews with the administrative and nursing coordinators. We also were able to observe the health care processes and patient care workflow to understand the team dynamics throughout the patients’ flow in ECUs: assessment, treatment and release. The information we obtained from staff interviews and direct observations was crucial to the data collection design and implementation. We gained insight into the nature of the work in the ECUs in order to better prepare and refine the survey questionnaires, which were pre-tested by a pilot study.

**Pilot Study**

Due to both the inherent complexity of conducting research with teams and the highly technical work in which the nursing teams are engaged, we conducted a pilot test to pretest the validity of the survey content and the collection procedures for one of 28 ECUs. Based on information and knowledge gathered in the previous stage, we decided to administer paper questionnaires during employees’ working time. In our view, this method could help us achieve greater acceptance and participation.

The results and feedback based on the pilot study showed the need to make some adjustments, especially related to the wording of items that were deemed difficult to interpret and survey format that was not smooth. We made such adjustments to ensure more effective and valid responses. Moreover, the collection procedures worked properly and they gave us the confidence to apply them in research. These collection procedures are described below.

**Data Collection Procedures**

Firstly, with the endorsement of the Rio de Janeiro State Health Secretary, we made contact with the 27 administrative coordinators of the ECUs (the ECU served as the pilot test was not included in the data collection). We explained briefly about the research
and asked them for the official roosters of nursing team members who were currently working in ECUs. They sent us team rosters with members’ names. The process of receiving and checking information provided by the ECUs coordinators took approximately one month. Based on that, we prepared the data collection material.

To better organize the collection process, we grouped together all materials related to collection into folders, for each team. On the cover of the folder, we placed a sheet with the team’s key information (ECU name, appointed team leader, team members’ list) so that it would be easy for teams to locate their material and keep everything arranged. Each folder contained the members’ questionnaires (printed with an identification code for each team so that responses could be tracked by team), envelopes with sealing wax, a pen, general information about the research (e.g., the researchers’ contact information) and written instructions detailing the procedures to complete and deliver the questionnaires. We suggested that the questionnaires be made available for participants during their working time. In addition, participants were expected to be told to fill out the survey, place it into an envelope, seal it, and place it in the folder for their team. To avoid resistance to participation, members were not identified in their questionnaires. Nevertheless, we asked and encouraged them to provide demographic information, including their names, so that we could link data from different sources. Moreover, all questionnaires were provided with a consent letter outlining the goals, confidentiality and voluntary participation. In addition, for each ECU, along with the folders mentioned above, we included one envelope addressed to the nursing coordinator containing the nursing coordinator survey.

Once everything was prepared, we scheduled a meeting with all the ECU nursing staff coordinators who are responsible for ensuring the effective overall, day-to-day management of nursing staff in ECUs. During this meeting, we presented the research goals and explained the collection procedures that they should follow. We reinforced the fact that the survey responses would be used for research purposes only and were confidential. They were assured that no one in the Health Secretary’s office would have access to the responses. At the end, we distributed the folders and asked them to both participate and encourage their teams to participate.

This first phase of data collection (Phase 1) took two months. A long period was required because emergency units deal with an unpredictable context and because there is often no time for extra activities. To ensure a high response rate, we sent reminders and kept contact with the coordinators throughout the survey administration period. Upon
completion, the participants responses were directly returned to us. As the surveys were answered in paper form, two months were needed to tabulate the data. Altogether, this first phase of data collection lasted approximately 6 months, including the preparation and pilot study.

Two months after the completion of the survey by the nursing coordinators and teams members, we administered another survey, this time to patients and companions who had been in the care of the nursing teams of all the ECUs. To accomplish this goal, three researchers were thoroughly trained in personally surveying patients and companions after they were attended by healthcare teams. When patients left the ECU, researchers approached and invited ECU users to complete an electronic satisfaction survey on a tablet. Basically, the survey questioned about the level of patients’ and their companions’ satisfaction with different aspects of the ECU, particularly regarding the quality of care directly provided by nursing staff. Researchers attended the same ECUs as many times as necessary to obtain data on all teams. Upon arriving at the ECU, they were informed by the administrative coordinator about the nursing team on duty that day. This allowed us to strictly control the teams covered by the survey and thus to collect data on patient satisfaction from all teams. This second stage of the research (Phase 2) took approximately two months.

**Sample**

As previously said, the data were obtained from three surveys, one given to team members (see Appendix A), one to the nursing coordinator and one to patients (see measures section). The surveys were administered in 27 emergency care units in two phases. Phase 1 surveys were directed to all the ECU’s nursing coordinator (27 in total) and nursing team members (2,510 in total). The team members were nested in 162 teams (team size ranged from 13 to 18 members). Phase 2 surveys were conducted to obtain patients’ satisfaction ratings. A total of 1871 members and 24 nursing coordinators responded to the questionnaires, which means a response rate of 74% and 89%, respectively. Moreover, we obtained satisfaction ratings from more than 3,125 users, including patients and companions. At least 15 users rated each team.

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1 Each team has one appointed leader who did not participate in the survey.
**Measures**

**LMX quality.** To assess the quality of the leader–member relationship, the LMX-7 was used ($\alpha = .77$), as recommended by Graen and Uhl-Bien (1995). This instrument has seven items with responses on a five-point scale. Sample items include “How well does your manager understand your job problems and needs?” and “How would you characterize your working relation with your manager?”

**LMX Differentiation.** Following prior research (Erdogan & Bauer, 2010; Liao et al., 2010), we use the variance in individual-level LMX scores for each team to capture the degree of LMX differentiation.

**RLMX.** We followed the operationalization outlined by Henderson et al. (2008), Tse et al. (2012), Epitropaki and Martin (2013) and Hu and Liden (2013) to assess RLMX. Scores were derived from LMX scores and operationalized as individual-LMX within a team minus the team mean for LMX. In particular, in contrast to Vidyarthi et al. (2010), we elected not to use polynomial regression analysis (Edwards & Parry, 1993) because Edwards’ (1993) original critique of difference scores addressed the problems associated with difference scores between two perceptual variables. However, this is not an issue when simply subtracting the mean from each individual LMX score for a single variable, which is done to calculate RLMX. Inspection of Vidyarthi and colleagues’ (2010) results (see their Fig. 2) confirms that the polynomial results that they obtained are planar (which would not occur if difference scores were a problem).

**Psychological Safety.** We assessed psychological safety using a 3-item scale from Edmondson (1999). The present study viewed psychological safety as a psychological perception of individuals. We therefore modified the original questionnaire. Specifically, we changed “I” to “members”. Sample items are as follows: “I am able to bring up problems and tough issues within my team” and “I feel safe to take a risk on my team”. Respondents completed the measures using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

**Team Cohesion.** To measure each individual’s perception of cohesion in the team we used 4 items of Bollen and Hoyle’s (1990) Perceived Cohesion Scale (PCS). Sample items were “I feel that I belong to this team”, “I am happy to be part of this team” and “this team is one of the best”. As the original scale refers to school groups, we adapted the scale to the purpose of this study by altering the reference point (Chin et al. 1999). That is, we used the team as the referent for the items and nursing team members were asked to respond to the items with this in mind.
Individual Performance. We used employees’ performance appraisal score as the measure of individual performance. It was assigned by the ECUs’ nursing coordinators (to whom the formal team leaders directly reported). We asked to coordinators to rate the performance of the members by using a scale from 0 (bad performance) to 10 (excellent performance). The respondents were informed that they should consider the following criteria in determining an overall performance rating: technical knowledge, efficiency, and initiative. Coordinators were chosen to evaluate individual performance because although they know all professional workings of the ECU, they are less socially tied to them, as their interactions are predominantly with team leaders, and thus, their ratings should be less biased (Breuer, Nieken & Sliwka, 2013).

Team Performance. Although some authors see team performance as an unitary construct and measure it as an overall performance outcome (Wageman, Hackman & Lehman, 2005), we follow others who see it as a multi-faceted construct comprising several indicators (Campion, Medsker, & Higgs, 1993; Cohen & Bailey, 1997; Hackman, 1990; MacBryde & Mendibil, 2003; Van der Vegt & Bunderson, 2005; Van Woerkom & Croon, 2009). Therefore, in this study, we distinguish two performance indicators: team efficiency and patient satisfaction. These indicators are considered critical to define the level of teams’ performance in health care settings such as ECUs.

Team efficiency was measured using the average patient waiting time for nursing services and performance as rated by patients and companions. We were able to obtain the average waiting time statistics (in hours/per day) from the ECU administrative datasets for a period of 30 days (coinciding with the period of the survey). In this study, we defined patients’ waiting time as the number of hours from the time the patient entered the ECU to the time the patient was actually taken by the nursing team to be triaged in terms of risk classification, involving the assessment and assignment of the patients’ level of risk. We averaged the daily waiting time across the 30 days to form a more consistent measure. As an emergency unit should offer timely care for acutely ill or injured patients who require attention as fast as possible, waiting time is a key concern; the longer the waiting time is, the lower the quality of care and the greater the patients’ likelihood of having adverse events.

Patient satisfaction was measured two months after survey administration for ECU nursing workers (Phase 1 surveys), using a new survey (Phase 2 surveys). We asked patients and their companions (at the time of exit from the ECU) to rate the care that they received from the nursing team. Specifically, patients and companions who agreed to
participate answered the following question: “How do you evaluate the overall quality of the care you received at ECU by the nursing staff?”. Responses were given on five-point Likert scale with responses ranging from “very bad” (1) to “very good” (5).

**Control Variables.** At the team level, we controlled for team size because it may influence the interaction and dynamics among team members (e.g., Wheelan, 2009). At the individual-level, we controlled for individual age and sex.

As we previously stated, we measured the independent and dependent variables from different sources and methods and at different points in time. This approach aimed to avoid common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We asked the nursing team members to rate the quality of their own LMX quality with their respective leaders as well as their perceptions of team psychological safety. RLMX and LMXD measures were calculated from LMX quality. For team cohesion, we aggregated team members’ reports. Individual performance was rated by nursing coordinators. Performance indicators (team efficiency and patients and companion’ satisfaction) were measured by different sources and at different times. While team efficiency was measured in an objective way, based on data obtained from the ECUs’ attendance control system relevant to the period of Phase 1 period, patient satisfaction data were obtained at a later point in time.

Moreover, to ensure the equivalence of the translated Portuguese items, translation/back-translation procedures were followed (Sinaiko & Brislin, 1973). In addition, two bilingual doctoral students in management who were fluent in both English and Portuguese reviewed the translated items to ensure that the translation conveyed the appropriate meanings in the Portuguese surveys. Minor disagreements regarding translation were resolved through discussion.

**Confirmatory Factor Analysis**

We conducted a series of confirmatory factor analyses in Amos to examine whether LMX quality (from which we calculated RLMX and LMXD), psychological safety, and team cohesion (all of which came from the same source), captured distinct constructs. The results showed that the hypothesized three-factor model fit the data well, \( \chi^2(62)=275.6, p<.01, \text{CFI}=.95, \text{TLI}=.93, \text{RMSEA}=.05 \). Relative to the hypothesized model, an alternative two-factor model in which indicators of LMX and psychological safety were set to load on a single factor was found to fit the data significantly worse, \( \Delta \chi^2(2)=276.9, p < .01, \text{CFI}=.89, \text{TLI}=.84 \text{ RMSEA}=.07 \). A poor fit was also found for a
second alternative model, in which indicators of team cohesion and psychological safety were loaded on a single factor, $\Delta \chi^2(2)=510.1$, $p<.01$, CFI=.83, TLI=.77, RMSEA=.09; and a third alternative model, in which indicators of LMX and team cohesion were loaded on a single factor, $\Delta \chi^2(2)=473.6$, $p<.01$, CFI=.84, TLI=.78, RMSEA=.08. Furthermore, another alternative one-factor model fit the data worse than the hypothesized three-factor model, $\Delta \chi^2(3)=740.2$, $p<.01$, CFI=.78, TLI=.70, RMSEA=.10. These results support the discriminant validity of the LMX, psychological safety, and team cohesion measures.

Aggregation Analysis

We generated team cohesion values by aggregating individual data to the team level. To test the appropriateness of this procedure, we calculated common aggregation statistics to determine whether aggregation of team cohesion was appropriate (Mierlo, Vermunt & Rutte, 2008). First, we assessed the degree of interrater agreement regarding team-level cohesion by calculating the $r_{wg}(j)$ statistic (James, Demaree & Wolf, 1993). We obtained a mean $r_{wg}(j)$ value of .85 for team cohesion, which is higher than the generally accepted .70 value (Woehr et al., 2015). In addition, we computed intraclass correlations (ICCs) to determine the reliability of team cohesion (Bliese, 2000). We used the ICC(1), or the proportion of between-team variance in the total variance, to examine the degree of variability in responses at the individual level that is attributable to being part of a given team. We used the ICC(2) to examine the reliability of team means. The ICC(1) was .12, and the ICC(2) was .76. The aggregated statistics were consistent with recommended cut-off values. In sum, these values provide adequate support for aggregation (Bliese, Halverson, & Schriesheim, 2002; Woehr et al., 2015).

Analytical Strategy

First, we dropped respondents with incomplete data and teams with unsatisfactory within-team response ratios from our data set. Members were excluded from the individual-level analyses if they did not provide complete data on all variables of interest, if we did not have a coordinator-reported assessment of their in-role performance, or if they could not be matched to a unique team. Teams were excluded (and, consequently, their members excluded) if they presented a within-team response rate lower than 60%. Prior research set this percentage as the minimum within-team response rate for analysis.
(Liden et al., 2006). For reasons such as employee vacation and the hard work that they face every day at work, many teams had response rates below 60%.

Our final sample consists of 1035 employees from 101 teams (the average number of members per team was 10.2). Given this nested data structure, we first calculated ICC (1) to examine whether the variables of interest at both the individual and team levels depended on team or ECU membership. The results indicated that the variables at the team level (team cohesion and team performance), together with the variables at the individual level (psychological safety and individual performance) did not vary significantly across ECUs.

However, psychological safety and individual performance depended on team membership, ICC (1)\textsubscript{psychological safety} = .11, ICC (1)\textsubscript{individual performance} = .29. These results indicated team membership influenced the variance in psychological safety and individual performance, thereby justifying hierarchical linear modeling as the appropriate analytic technique.

We conducted our analyses using hierarchical linear modeling (Raudenbush & Bryk, 2002). Taken together, the ICC results did not show a meaningful effect of ECU membership although the work teams were nested within ECUs. Hence, we specified a series of two-level models to examine our hypotheses involving the individual-level variables.

To examine our mediation hypotheses, we followed the procedures outlined by Baron and Kenny (1986). Moreover, we also subjected our mediating hypotheses to the Sobel (1982) and bootstrapping tests, as this approach is known for examining indirect effects more directly and rigorously (Preacher & Kelley, 2011). In regard to testing the hypothesis exclusively pertaining to the team-level variables, we conducted path analysis.

To facilitate comparisons of the magnitudes of effects at each level stemming from differently scaled variables, we standardized level 1 and level 2 predictors. In effect, this amounts to applying the grand mean centering technique, which has been recommended for testing both direct and cross-level mediating effects (Hofmann & Gavin, 1998).

The effect sizes for multilevel analyses were computed by comparing each step’s new value of total variance (Level 1 plus Level 2 variances) with the total variance of the null model (i.e., intercept-only model). According to Snijders and Bosker’s (1999), this effect size is calculated as follows: \( Pseudo \ R^2 = \frac{(\text{Var}_{\text{null model}} - \text{Var}_{\text{current model}})}{\text{Var}_{\text{null model}}} \).
This ratio (pseudo-R2) represents the percentage of the total variance in the dependent variable that was accounted for by the additional predictors (Snijders & Bosker, 1999)

RESULTS

The descriptive statistics, standard deviations and correlations among all the study variables are displayed in Table 1, while the results of the multilevel models employed to examine the hypotheses are shown in Table 2 (individual level) and Table 3 (team level).
Table 1. Means, correlations and reliabilities

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>S.D.</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tr>
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<td></td>
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<td></td>
</tr>
<tr>
<td>1 Age</td>
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<td>20</td>
<td>63</td>
<td>8.35</td>
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<td></td>
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<tr>
<td>2 Gender&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1035</td>
<td>.215</td>
<td>0</td>
<td>1</td>
<td>.41</td>
<td>-.04</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3 RLMX</td>
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<td>.59</td>
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<td>-.00</td>
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<td>4 Psychological Safety</td>
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<td>-.08</td>
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<tr>
<td>5 Individual Performance</td>
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<td>.09</td>
<td>.18</td>
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<td>6 Team Size</td>
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<td>18</td>
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<td>-.06</td>
<td>-.04</td>
<td>.00</td>
<td>-.06</td>
<td>-.01</td>
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<td>-.14</td>
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<tr>
<td>8 LMX Differentiation</td>
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<td>1.37</td>
<td>.24</td>
<td>-.00</td>
<td>-.02</td>
<td>.02</td>
<td>-.16</td>
<td>-.10</td>
<td>.11</td>
<td>-.55</td>
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<td></td>
<td></td>
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<tr>
<td>9 Team Cohesion</td>
<td>101</td>
<td>4.19</td>
<td>3.06</td>
<td>4.96</td>
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<td>.02</td>
<td>-.04</td>
<td>-.02</td>
<td>.18</td>
<td>.08</td>
<td>.05</td>
<td>.47</td>
<td>-.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Team Efficiency&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>.20</td>
<td>.09</td>
<td>.43</td>
<td>.06</td>
<td>-.02</td>
<td>-.01</td>
<td>.03</td>
<td>.02</td>
<td>.17</td>
<td>-.20</td>
<td>-.00</td>
<td>-.05</td>
<td>-.07</td>
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</tr>
<tr>
<td>11 Patient Satisfaction</td>
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<td>3.65</td>
<td>2.16</td>
<td>4.78</td>
<td>.53</td>
<td>.04</td>
<td>-.03</td>
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<td>-.04</td>
<td>-.10</td>
<td>.14</td>
<td>-.11</td>
<td>.19</td>
<td>-.26</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Coded 0=female; 1=male; <sup>b</sup>In hours
Table 2. Hierarchical Linear Modeling Results: Main, Indirect and Interactive Effects

<table>
<thead>
<tr>
<th></th>
<th>Psychological Safety</th>
<th></th>
<th>Individual Performance</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
<td></td>
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<tr>
<td>Intercept</td>
<td>.02 (.03)</td>
<td>.02 (.03)</td>
<td>.11 (.07)</td>
<td>.03 (.06)</td>
</tr>
<tr>
<td>Level 1: control variables</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.08 (.03)**</td>
<td>-.08 (.03)**</td>
<td>-.08 (.03)**</td>
<td>-.02 (.03)</td>
</tr>
<tr>
<td>Gender</td>
<td>.07 (.03)**</td>
<td>.07 (.03)**</td>
<td>.07 (.03)**</td>
<td>.08 (.03)**</td>
</tr>
<tr>
<td>Level 2: control variables</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>-.03 (.03)</td>
<td>-.03 (.03)</td>
<td>-.01 (.03)</td>
<td>.04 (.02)</td>
</tr>
<tr>
<td>Team LMX</td>
<td>.28 (.03)***</td>
<td>.53 (.03)***</td>
<td>.49 (.04)***</td>
<td>.09 (.06)</td>
</tr>
<tr>
<td>Level 1: independent variables</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RLMX</td>
<td>.47 (.03)***</td>
<td>.30 (.06)***</td>
<td>.09 (.02)**</td>
<td>.09 (.02)**</td>
</tr>
<tr>
<td>Psychological Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2: independent variable</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMX Differentiation</td>
<td>-.13 (.07)†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-Level interactions</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>RLMX x LMX Differentiation</td>
<td>.15 (.04)***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wald $\chi^2$  
Prob $>\chi^2$  
$R^2$ (Level 1)  
Change in $R^2$ (Level 1)  

$^{a}N=1035$ members (Level 1) and 101 teams (Level 2); Standard errors are in parentheses. ***$p<.001$; **$p<.01$; *$p<.05$; †$p<.10$. 

### Table 3. The indirect effect of LMX Differentiation on Team Performance via Team Cohesion

<table>
<thead>
<tr>
<th>Variable</th>
<th>Team Cohesion</th>
<th>Team Performance</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
<td>Model 4</td>
</tr>
<tr>
<td>Control Variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>.02 (.11)</td>
<td>.09 (.09)</td>
<td>-.13 (.10)</td>
<td>-.13 (.09)</td>
</tr>
<tr>
<td>Independent Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMX Differentiation</td>
<td>-.54***</td>
<td></td>
<td>-.00 (.09)</td>
<td>-.12 (.11)</td>
</tr>
<tr>
<td>Team Cohesion</td>
<td></td>
<td>-.16 (.09)†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj R²</td>
<td>.00</td>
<td>.25</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.25</td>
<td></td>
<td>.02</td>
<td></td>
</tr>
</tbody>
</table>

aN=101. ***p<.001; **p<.01; *p<.05; †p<.10.
Hypothesis Testing

Hypothesis 1a predicted a positive relationship between RLMX and psychological safety. We examined this hypothesis in Model 2, in which RLMX was added as an individual-level predictor, after control variables were included in the Model 1. As expected, a significant main effect of RLMX on psychological safety was found (γ = .47, p<.), and therefore, H1a was supported.

Hypothesis 1b predicted that psychological safety is a mediator linking RLMX to individual performance. To examine this hypothesis, four models were estimated (Model 4-7). First, we entered control variables at both the individual and team levels into Model 4 in order to partial out their effects. In Model 5, RLMX was added as a Level 1 predictor, and the results supported a positive effect of RLMX on individual performance. We then introduced psychological safety into Models 6 and 7 to investigate whether psychological safety shows a significant relationship with individual performance before (Model 6) and after (Model 7) controlling for the effect of RLMX.

The results supported the four conditions of Baron and Kenny’s (1986) mediation analysis. The first condition, which states that the variation in the mediator variable should be significantly accounted for by the independent variable, was tested and confirmed by Hypothesis 1a. The second condition, which requires that the independent variable predict the dependent variable, is satisfied by Model 5, which shows that RLMX has a significant and strong influence on individual performance (γ = .09, p<.01). The third condition, which asserts that the variation in the dependent variable should be accounted for by the mediator variable, was satisfied by Model 6 (γ = .14, p<.01). The fourth condition, which states that the mediator variable should show a strong relationship with dependent variable after controlling for the effect of the independent variable, was met according to Model 7 (γ = .13, p<.001).

Together, these findings suggested that the four conditions of Baron and Kenny’s (1986) approach were met for establishing mediation, therefore supporting Hypotheses 1b. At this point, although our analysis using Baron and Kenny’s (1986) approach supported Hypothesis 1b, we had not yet directly tested the mediating mechanism that we proposed to examine the connection between RLMX and individual performance. To provide further support for our hypothesis as well as a more rigorous examination, we performed Sobel and bootstrapping tests to explore the indirect effects. Rather than inferring mediation, the Sobel test provides a direct examination of the indirect effects by testing the product of the two path coefficients involved in the mediation. The Sobel test
yielded consistent results for the indirect effect of RLMX on individual performance through psychological safety ($\beta = .03, p < .001$). Although the Sobel test is frequently adopted, it has limitations because of its questionable premise that the distribution of the indirect effect is normal. In fact, this assumption is tenuous, as the distribution of the product of coefficients is known to be non-normal, even when the variables constituting the product are normally distributed (MacKinnon et al., 2002). As a remedy, bootstrapping is recommended for testing mediation. Bootstrapping avoids power problems derived from asymmetric and other nonnormal sampling distributions of an indirect effect (Edwards & Lambert, 2007). Bootstrapping is the most powerful and reasonable method for obtaining confidence intervals to test indirect effects (Preacher, Rucker, & Hayes, 2007). Consistent with previous findings, the bootstrapping results indicated that there was an indirect effect of RLMX on individual performance through psychological safety, as the 95% confidence interval was [.016, .051], which does not include zero. Taken together, these set of findings lent strong support to Hypothesis 1b.

We tested the team-level hypotheses through multiple regressions in which team size was a control variable. The path analysis results are summarized in Table 3. We proposed in Hypothesis 2a that LMXD would be negatively related to team cohesion. As shown in Model 2, the degree of LMX differentiation was negatively related to team cohesion ($\beta = -.54, p < .001$), therefore supporting H2a.

To test H2b, which predicted that team cohesion would mediate the relationship between LMXD and team performance (measured by team efficiency and patients’ satisfaction), we again followed the procedures established by Baron and Kenny (1986). As H2a was supported, the first condition of Baron and Kenny’s approach for establishing mediation was met. To test the other three conditions, we estimated Models 3 to 8.

The second condition was tested in Model 3 (DV=team efficiency) and Model 6 (DV=patient satisfaction). We observed that team cohesion marginally predicts team efficiency ($\beta = -.16, p < .10$) but significantly predicts patient satisfaction ($\beta = .22, p < .05$). Then, we tested whether the independent variable predicts the dependent variables. The results showed that, overall, LMXD had non-significant relationships with both team efficiency (Model 4; $\beta = -.00, p > .10$) and patient satisfaction (Model 7; $\beta = -.00, p > .10$).

---

2 We bootstrapped with 5000 interactions to construct bias-corrected confidence intervals for the significance tests of the indirect effects.
3 Please note that team efficiency was measured by waiting time (hours). Thus, a negative beta means a reduced waiting time which thus indicates greater team efficiency.
Scholars (Shrout & Bolger, 2002) have argued that meaningful indirect relationships may exist even when the relationship between an independent and dependent variable is non-significant. In fact, Kenny, Kashy and Bolger (1998) asserted that a significant direct effect of the independent variable on the dependent variable is not fundamentally required.

Thus, we continued to test Baron and Kenny’s (1986) conditions in establishing mediation. In this sense, Models 5 and 8 were estimated to evaluate the fourth and last condition; i.e., we sought to determine whether the relationship between the mediator – team cohesion – and dependent variables – team efficiency and patient satisfaction – would remain significant after controlling for the independent variable – LMXD. As we expected, the relationships between team cohesion and both team efficiency (Model 5; $\beta = -.22, p > .05$) and patient satisfaction (Model 8; $\beta = .28, p > .10$) were shown to be significant even after controlling for the effects of LMXD. Therefore, although we did not find a significant relationship between the degree of LMX differentiation and team performance, the results showed that the degree of LMX differentiation had a negative indirect relationship with team performance via team cohesion. In sum, this set of findings suggested that there might be another pathway that positively links the degree of LMX differentiation to team performance.

As we did when examining mediation hypothesis involving the individual-level variables, we again conducted Sobel and bootstrapping tests in an effort to complement the Baron and Kenny (1986) approach with more rigorous and informative mediation analyses. These tests again produced evidence of mediation. Specifically, the indirect negative effect of the degree of LMX differentiation on team performance through team cohesion was supported by the Sobel test (DV=team efficiency: $\beta = .50, p<.05$; DV=patient satisfaction: $\beta = -.60, p<.05$). Moreover, the bootstrapping test corroborated this finding by generating a 95% confidence interval [.08, .91] for team efficiency and [-1.2, -.01] for patient satisfaction, both excluding zero. The consistency of these results derived through different methods demonstrated the robustness of our findings and offered compelling evidence in favor of Hypothesis 2b. Finally, it should be noted that neither the direct effect nor the total effect of LMXD on team performance was significant. It is possible that we were not able to detect such effects of LMXD even though we were able to obtain a significant indirect effect via team cohesion, as the statistical power is higher in the test of the indirect effect than it is in the test of the total and direct effects. As described by Kenny and Judd (2014) as well as others, tests of direct
and total effects have relatively low power, especially in comparison to tests of the indirect effect. Moreover, the effect of the LMXD may be masked by offsetting the indirect effect(s). We discuss this alternative explanation in the next section.

Finally, to test Hypothesis 3, we introduced the cross-level interaction term between LMXD and RLMX. In support of Hypothesis 3, the results suggested that as the degree of LMXD increased within teams, the relationship between RLMX and psychological safety became more strongly positive ($\gamma=0.15$, $p<0.001$). To further explore this interaction, we plotted the moderating effect and conducted simple slope tests (Aiken & West, 1991). Figure 1 shows that RLMX had a stronger positive relationship with psychological safety ($\gamma=0.67$, $p<0.001$) under the condition of higher LMX differentiation (one standard deviation above the mean), while in the condition of low LMX differentiation (one standard deviation below the mean), the effect of RLMX on psychological safety was not as strong ($\gamma=0.32$, $p<0.001$). Therefore, Hypothesis 3 was supported.

DISCUSSION

With this study, we primarily intended to develop a theoretical model that depicts the critical role of social context in understanding the relationship between leaders and members and its outcomes. Although the existing body of leadership research has
revealed the importance of a leader’s role in contributing to employee attitudes and behaviors (for example, Lam, Xu & Chan, 2015), this work largely overlooked the influence of the surrounding social context of a given leader-employee relationship.

This observation is even more surprising when applied to the LMX phenomenon. LMX theory is grounded in the basic assumption that members working with the same leader may have relationships with their leaders that significantly differ in quality (Graen & Uhl-Bien, 1995). Within teams, then, some members have higher-quality relationships with their leader than others do (Henderson, Liden, Glibkowski, & Chaudhry, 2009; Liden & Graen, 1980). Hence, team members under the supervision of the same leader are exposed to other LMXs that coexist in the workgroups. As individuals have a natural tendency to make social comparisons between themselves and others (Festinger, 1954), an observation that coworkers have different levels of LMX quality is highly likely to influence the focal employee’s behaviors in the team as well as the way the team functions as a whole. Nevertheless, previous LMX research has mainly focused on the perspective of absolute levels of LMX (i.e., individual assessment of LMX quality), ignoring the fact that people will compare the quality of their exchange with that of others in the same team and that these social comparisons processes will impact individual and team effectiveness.

Therefore, drawing on LMX and social comparison theories, we aimed to respond to calls for more attention to the role of the workgroup social context in leadership research (Osborn et al., 2002). By examining contextual LMX constructs, we were able to delineate how they unfold to shape performance outcomes in teams, thus extending the LMX literature.

Taken together, our findings suggest several theoretical implications for LMX literature. Consistent with our hypotheses, we found that the exchange between the member and the leader is not independent but interdependent, as the dyadic relationship is embedded in the larger social system of the workgroup (Graen & Uhl-Bien, 1995).

Specifically, our results showed that high RLMX standing is positively associated with psychological safety perceptions. High RLMX standing signals leaders’ particular interest and trust in members. The implication is that members with high RLMX tend to experience feelings of superiority, positive self-concept, a sense of confidence and respect in occupying a better social position than others on the team and in enjoying the advantages of gaining more attention and support from the leader. Such support alleviates their fear, uncertainty, ambiguity in social interactions, and concerns about the
negative reactions of others and suggests to members that the interpersonal atmosphere is safe. In addition, we found that psychological safety plays a mediating role in the association between RLMX and employee performance. Because RLMX nurtures individuals’ social status through feelings of superiority, the higher individuals’ RLMX is, the more concerned they are about distinguishing themselves from other teammates and maintaining their existing high status. Hence, the competitive concerns tied to RLMX stimulate individuals to outperform or avoid being outperformed by their peers (Murayama & Elliot, 2012). By taking advantage of the perception of psychological safety at work, members with high RLMX more fully utilize their capabilities, skills and resources to increase their performance. Therefore, by exploring employees’ relative LMX standing compared with others’ LMX relationships in teams as well as the psychological process linking RLMX and job performance, we extend current LMX research revealing how social comparison processes occur in a social context of differentiated relationships between leaders and followers in teams, and we respond to previous calls for research on the intervening process that might explain relationships between RLMX and performance outcomes (Henderson et al., 2008; Vidyarthi et al., 2010).

Despite the beneficial effects of the competitive drive fostered by differentiation in LMX within the group for individual performance, our results also suggested that such differentiation can be detrimental to group functioning. We found empirical support for the indirect and negative effect of LMX differentiation on team performance, via team cohesion. This result suggests that because LMXD promotes LMX status differences, it is likely to create relational separation and harm the bonds among team members, who may categorize themselves into different subgroups (e.g., in-group vs. out-group), making social integration and team cohesion difficult (Hogg & Terry, 2000; Mannix & Neale, 2005; Fischer & Roseman, 2007). Moreover, in contexts of high differentiation, members are likely to have greater individual concerns about whether they have high-quality relationships, as these relationships will give them better opportunities and valued resources. In other words, members have a strong tendency to engage in social comparison processes, giving rise to within-team competition, which impairs team cohesion (Boos, Frueniel & Belz, 2015). In line with previous empirical studies, our results corroborate the view that when team cohesion is weak, the team is less motivated to perform well and less able to coordinate activities for successful performance (Beal et al., 2003). Given the scarcity of studies investigating the relationship between LMX
differentiation and team outcomes and given the inconsistent results obtained by these studies (Paik, 2016), the results reported here represent clear empirical evidence supporting the idea that LMX theory should be investigated at the team level to move into the fourth, team-level stage of development (Graen & Uhl-Bien, 1995).

Although our results supported the indirect effect of LMXD on team performance via team cohesion, we did not find a direct relationship between LMXD and team performance. This result is important from a theoretical point of view because no consistent results to date have revealed the nature of the main effect of LMXD on team performance. While some researchers have found a positive direct relationship (e.g., Li & Liao, 2014), others have found no support for main effects (e.g., Liden et al, 2006). Such mixed findings have led scholars to argue that the effect of LMXD on team performance is contingent on situational factors (e.g., Le Blanc & González-Romá, 2012; Herdman et al., 2014).

Together, these findings shed light on the contrasting multilevel effects associated with differentiation in LMX quality between leaders and members within teams. While differentiated leadership triggers a competitive mindset that can be good for individuals since it increases psychological safety perceptions, which in turn help improve performance, it can also be bad for teams since it violates the equality rule (Li & Liao, 2014; Deutsch, 1975). Different leadership quality thus promotes within-group competition for resources, which in turn reduces team cohesion and consequently impairs team performance (Deutsch, 1975).

In addition, we detected the cross-level contingent effects of LMX differentiation on the relationships between variables embedded within the individual level. Our results suggested that the relationship between RLMX and psychological safety varies as a function of the degree of LMX differentiation. These findings also have important theoretical implications since they emphasize that the influence of social comparisons at the individual level largely hinge upon social comparisons at the team level. In other words, the effect of LMX in relative terms on the individuals within a team is dependent on how the differentiation phenomenon impacts the team as a whole.

Our findings also contribute to LMX theory by identifying intervening processes that may explain the relationships between LMX contextual variables and performance outcomes (Henderson et al., 2008; Lide et al., 2006; Vidyarthi et al., 2010). The framework that we tested is a meaningful step toward delineating the multilevel mechanisms through which differentiated leadership affects performance outcomes.
Furthermore, by revealing these mechanisms, we not only add to the LMX literature but also make valuable additions to the research on group processes and psychological safety literatures.

Finally, in methodological terms, by proposing an LMX model that operates at the individual and group levels, we respond to calls from leadership scholars for multilevel studies of leadership processes (DeChurch, Hiller, Murase, Doty & Salas, 2010). Moreover, our approach of collecting data from multiple sources and waves increased our confidence in the relationships found. Therefore, our findings contribute to improving the rigor of leadership research.

PRACTICAL IMPLICATIONS

Overall, our findings offer an account of how differentiated leadership affect the performance of employees and teams. Therefore, any leader seeking to build strong performance standards within her/his team, must be conscious of how differentiated treatment simultaneously – and paradoxically – shapes individual and team performance.

Leaders should observe that team members compare their own relationship with the leader in the context of the relationships that other members have with the leader. Based on within-group social comparisons with team members as the reference point, members with high relative LMX standing place a high value on their relative status within the work group’s hierarchy of influence, especially in a high differentiation context, which provides them with a competitive impetus for ensuring this position of superiority. It activates the motivational forces that drive employees to engage in their work roles. This suggests that a certain degree of differentiation may be efficient at promoting better individual performance. At the same time, leaders should be cautious about adopting practices that indicate severe differentiation because if leaders build very unequal relationships with followers, this practice ultimately jeopardizes team performance.

In sum, interestingly, the current results suggests that a leader’s differentiation in relationships with team members, in terms of social exchanges, appears to be a double-edged sword, good for increasing individual performance and bad for decreasing team performance. Accordingly, by demonstrating both the advantage and disadvantage, we encourage organizations to offer training programs and forums in which leaders can exchange experiences and suggestions in order to find the optimal balance in relation to the degree of differentiation.
LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Our study has several limitations that present opportunities for future research. First, we collected data from a single organizational context, which brings both strengths and limitations. The advantage of the current design is that it reduces the variability of external conditions (confounding factors). However, such a design might limit the generalizability of our findings because participants were all from the same professional branch. For the purpose of cross-validation, it would be interesting to see in future research whether the findings of this study can be generalized to the functioning of teams outside of the healthcare setting.

Second, our model implies causal relationships between the variables of interest, but the present research design (i.e., collecting data in a naturally occurring environment) cannot conclusively rule out alternate directionality. Moreover, we gathered data from employees and nursing coordinators at one time; thus, our ability to claim causality between the individual-level variables is limited. It is possible that coordinator perceptions of individual performance may have influenced one’s LMX standing. Acknowledging the limitations of this field design, we call for experimental and longitudinal research to replicate our findings.

Third, in line with previous research on the relative standing of LMX in work teams, we focused on the comparison between one’s own LMX and the LMX of average teammates. However, we do not claim that there is no other possible comparison referent for individual members to compare their LMX. It is possible that individual employees within teams may not have access to information on all colleagues, and thus, they may be able to compare with some but not all of their colleagues in the same group. Thus, it may be valuable to adopt a social network approach to determine who is the most salient referent for social comparisons of LMX relationships within work groups (Shah, 1998). As Goodman and Haisley (2007) indicated in their review, the existing literature pays little attention to the question regarding what kinds of referents should be selected in the organizational context and why. Thus, further research on the selection of different referents in the social comparisons of LMX is encouraged.

Fourth, another interesting step for future researchers may involve exploring other mediating mechanisms that link RLMX to individual performance as well as LMXD to team performance. Our study emphasized the importance of individual and group psychological processes (psychological safety and team cohesion, respectively) as
bridges that relate comparative LMX variables to performance outcomes. This approach allowed us to provide a unified and parsimonious social-psychology theory-based perspective to unravel the processes through which RLMX and LMX differentiation translate into individual and team performance, respectively. However, it is possible that both LMXD and RLMX influence individual and team performance via multiple mechanisms. Future research may uncover other mediators to refine our theoretical model. In addition, other outcomes resulting from RLMX and LMXD should be considered. This study focused on performance outcomes. However, individual members may demonstrate other behavioral reactions to differentiation within-teams, such as co-worker helping behavior and turnover intention (Chen, Yu & Son, 2014); therefore, further theory development would benefit from the investigation of other individual and team outcomes.

Fifth, although we explored one mechanism that links LMXD to team performance, past research has demonstrated that the effect of LMXD appears to be highly contingent on situational factors (for a review see Yonkeong, 2016). For example, Haynie and colleagues (2014) found that LMXD was detrimental to task performance only in the presence of a weak distributive justice climate. We urge future researchers to include potential moderators, such as justice climate and task interdependence to generate a more complete picture of the complex phenomenon of differentiated leadership.

Sixth, we measured multilevel LMX-related constructs – LMXD and RLMX – in an objective manner: the within-team variance (or standard deviation) of a measure of LMX (LMXD) and the subtraction of the team’s mean LMX from an individual’s LMX score (RLMX). In fact, most researchers have been operationalized both constructs objectively (e.g., Epitropaki & Martin, 2013; Henderson et al., 2008; Hu & Liden, 2013; Vidyarthi et al., 2010). However, the LMX literature contains more than one objective conceptualization for both constructs. For example, Boies and Howell (2006) used the $r_{wg}$ score on LMX-7 items to operationalize LMXD. We advocate that objective operationalization may generate a more accurate measure; however, the question regarding which objective operationalization is methodologically preferable remains unanswered. A thorough methodological discussion should be conducted in future research.
CONCLUSIONS

Taken together, our findings suggest that LMX phenomena generate multifold ramifications for the functioning of individuals and teams. Our multilevel integration enables scholars to see both the positive and negative repercussions of LMX phenomena that span individual and team levels of analysis. Therefore, we conclude that incorporating the social context via constructs that capture the multilevel nature of LMX relationships is a particularly useful contribution to LMX theory. Specifically, understanding the effects of RLMX and LMXD on performance illustrates that social comparison and processes matter in the LMX process at both the individual and team levels. Furthermore, our study shows that viewing leadership variables as absolute and individual-level constructs could lead researchers to misinterpretations. Accordingly, we hope that our work can strengthen the bridge between social comparison theories and LMX research.
Leader-member exchange (LMX) theory contends that leaders develop unique social exchange relationships of varied quality with each of their subordinates, such that some members enjoy high-quality relationships with the leader while other members have low-quality relationships (Graen & Uhl-Bien, 1995). LMX quality has proven relations with a broader range of performance dimensions (for a meta-analysis see Martin, Guillame, Thomas, Lee & Epitropaki, 2016). The pattern of findings suggests that the higher the LMX quality, the better work performance (Martin et al., 2016; Gerstner & Day 1997). Hence, it has been assumed that leaders must employ efforts to develop high-quality LMX relationships with all of their followers (Graen & Uhl-Bien, 1995). But leaders’ ability to form high-quality LMX is constrained by leaders’ limited time, power, personal and organizational resources (Cogliser & Schriesheim, 2000; Graen & Scandura, 1987; van Breukelen, Van der Leeden, Wesselius & Hoes, 2012), members’ individual differences and organizational factors (for reviews see Erdogan & Liden, 2002; Liden, Sparrowe & Wayne, 1997). This suggests that LMX differentiation, i.e., within-team variation in LMX quality, is unavoidable (Ma & Qu, 2010; Liden, Erdogan, Wayne & Sparrowe, 2006).

However, recent LMX research provides evidence that the perceived quality of a focal LMX relationship is not solely a product of independent evaluations of treatment directly offered by the leader. Instead, followers’ consider information acquired from the social context, particularly those formed from social interactions with coworkers, when developing perceptions of their own LMX relationships (e.g., Erdogan & Bauer 2010; Henderson, Wayne, Shore, Bommer & Tetrick, 2008; Henderson, Liden, Glibkowski, & Chaudhry, 2009; Zagenczyk, Purvis, Shoss, Scott & Cruz, 2015; Takeuchi, Yun & Wong, 2011; Omilion-Hodges & Baker, 2013; Vidyarthi, Liden, Anand, Erdogan & Ghosh, 2010). Although previous research calls for more studies addressing the role of social context, particularly coworkers, in determining employees’ perceptions of LMX relationships (Graen & Uhl-Bien, 1995; Ashkanasy & O’Connor, 1997; Sherony & Green, 2002), to date this issue has yet to be adequately addressed.
To respond these calls we investigate the role played by surrogates in influencing followers’ perceptions regarding their LMX relationships. Surrogates are described as leader’s closest and more trusted subordinates that actively engaging in non-coercive impression management behaviors in the workplace that facilitate a positive image of the leader (Galvin, Balkundi & Waldman, 2010; Weber & Moore, 2013; Wong & Boh, 2010). We propose that surrogates may have an impact on the amount of perceived variability in the quality of LMX relationships (i.e., LMX differentiation) (Boies & Howell, 2006; Homans, 1961; Salvato & Corbetta, 2013; Howell & Shamir, 2005), which in turn affects team performance. The form of surrogates’ influence on LMX differentiation is argued to be determined by the structural patterns of surrogates’ social interactions, that is, the social network ties that connect surrogates to others within team and define their position in the team network.

Specifically, we propose that the higher the surrogates’ prestige position in the informal team advice network, the lower team members – in particular low-LMX members – perceive that differentiated LMX relationships exist within the team. Surrogates who are perceived as prestigious individuals are seen as popular, close and accessible coworkers, with whom other members are likely to identify, thus reinforcing the legitimacy to surrogacy behaviors and reducing the in-group versus out-group membership distinction (Graen & Uhl-Bien, 1995). Second, the higher the surrogates’ brokerage position, the greater members’ perceptions of their leader’s differentiated treatment of them. Brokers are individuals who had higher levels of power and status (Burt, 2000), which enhances differences among team members and elicits more pronounced perceptions of in-group versus out-group demarcation. We further expect that these relationships are contingent on network topology that embodies the LMX relationships (network diameter and density). Lastly, once LMX-based in-groups and out-groups are formed, relational boundaries are introduced into teams, which ultimately jeopardizes team performance (Anand, Hu, Liden, & Vidyarthi, 2011; Li & Liao, 2014).

The current article serves to enhance LMX theory in several ways. First, we extend the LMX literature by examining the role that social context (in the form of surrogates network centralities) plays in shaping members’ perceptions of LMX differentiation. The role of third parties influencing evaluations of dyadic relationships, in particular LMX relationships, has not been thoroughly investigated (Tse, 2015; Ma & Qu, 2010; Vidyarthi et al., 2010). Moreover, by investigating the role of surrogates using a social network lens, we contribute to advance LMX theory to its fourth stage of development, as identified by
Graen & Uhl-Bien (1995), in which LMX relationships are conceptualized as a system of relationships within a group or organization (Scandura, 1999). Second, our model unveils antecedents of LMX differentiation and team performance not previously studied. LMX differentiation has been regarded as an important avenue of research in the literature, and it has recently attracted more attention in relation to examining its implication on both individual and team outcomes (see Boies & Howell, 2006; Liao, Liu & Loi, 2010; Stewart & Johnson, 2009; Paik, 2016). However, empirical studies investigating LMX differentiation as a consequence of a larger network of relationships are still relatively scarce (Paik, 2016). Finally, to our knowledge, this is the first study that operationalizes surrogates and integrate such idea into LMX research. Therefore, we both contribute to the emergent literature into the role of third-party individuals besides the leader in influencing distant follower perceptions of the leader (Galvin et al., 2010; Weber & Moore, 2013; Wong & Boh, 2010) and shed light on the role that third-party individuals plays in LMX relationships.

**THEORY AND HYPOTHESES**

**Leader-Member Exchange Differentiation**

LMX differentiation, a core element of the LMX-model (Liden et al., 2006; Henderson, Liden, Glibowski, & Chaudry, 2009; McClane, 1991), has become an increasingly studied topic in LMX research (Cogliser & Schriesheim, 2000; Le Blanc & González-Romá, 2012; Paik, 2016; Bolino & Turnley, 2009; Harris, Li, & Kirkman, 2014; Hooper & Martin, 2008; Kauppila, 2015; Li & Liao, 2014; Liao et al., 2010; Liden, Erdogan, Wayne, & Sparrowe, 2006; Ma & Qu, 2010; Nishii & Mayer, 2009; Tse, 2014; Li, Fu, Sun & Yang, 2016). Conceptualized as the degree of differentiated LMX relationships within a group (Henderson et al., 2008; Liden et al., 2006; Wayne, Liden, & Sparrowe, 1994), LMX differentiation has generally been argued to affect individual- and team-level outcomes (e.g., Harris et al., 2014; Ma and Qu, 2010; van Breukelen et al., 2012). High LMX differentiation within a work group indicates a broad range of overall LMX quality, whereas low LMX differentiation implies a small range of overall LMX quality within a work group (Henderson et al., 2009). Although substantial knowledge regarding the antecedents and outcomes of leader–member exchange (LMX) differentiation has been accumulated in the last years, numerous questions related to this topic remain underexplored (Paik, 2016).
At first glance, it may seem contradictory to assert that LMX differentiation is a core element of LMX theory, since it has long been a common tenet that leaders should develop similar and positive relationships (i.e., high quality exchanges) with all of their subordinates (Graen & Uhl-Bien, 1995; Schyns, 2006; Scandura, 1999), which implies that differentiation should be avoided. This is because high LMX quality has been found to elicit many profound and desirable individual outcomes (e.g., job satisfaction, organizational commitment, organizational citizenship behaviors) (see Dulebohn, Bommer, Liden, Brouer & Ferris, 2012; Ilies, Nahrgang & Morgeson, 2007 for reviews). However, fundamental to LMX theory is also the idea that leaders are not able to develop high quality relationships with all team members. Leaders face time and resource constraints which leads them to give priority to some members (Graen & Uhl-Bien, 1995; Le Blanc & González-Romá, 2012), based on diverse factors, such as similarity, traits, competence, and others. As stated by Graen and Uhl-Bien (1995, p.227), “the differentiated relationships result from resource constraints on the managers that required them to develop a cadre of trusted assistants to help in the functioning of the work unit”. Therefore, leaders tend to develop high-quality relationships with only a few subordinates within a workgroup and these relationships are assumed to serve as channels for leaders to distribute organizational information, job-related orientations, benefits, and support to subordinates (Tse, Ashkanasy & Dasborough, 2012).

LMX researchers have demonstrated that relational problems such dislike, disrespect, distrust and rejection among team members increase when a team leader engages in more varied levels of LMX (Hooper & Martin, 2008; Sias & Jablin, 1995; Tse, Lam, Lawrence & Huang, 2013). Such lack of interpersonal harmony is likely to be detrimental to team performance as a whole (Li & Liao, 2014). However, given that differentiation by the leader seems to be somewhat inevitable (Graen & Uhl-Bien, 1995; Dansereau et al., 1975), attention should be directed to factors that may affect how it is perceived by members.

Recent research has argued that employee’ perceptions of LMX relationships are not solely a product of independent evaluations of treatment offered by the leader, but are also shaped by the social context (e.g., Erdogan & Bauer 2010; Henderson et al. 2008). That is, the formation of LMX perceptions extends beyond what actually occurs in dyadic exchange, so it is not merely psychological but also a social process influenced by information that employees acquire from the social context (Liden, Wayne & Stilwell, 1993; Zagenczyk, Scott, Gibney, Murrell & Thatcher, 2010). The information that
members obtain from the social context may alter how they interpret and make attributions regarding leaders’ exchange behaviors and thus the perceived quality of exchanges established with them (Rentsch, 1990). This is particularly true once leader behaviors are inherently subjective (Zagenczyk et al., 2010). Therefore, by investigating how perceptions of members’ LMX quality may be affected over and above the actual quality of the relationship itself, we will be able to demonstrate how differentiation established by leaders is not perceived or, at least, less perceived.

In line with this reasoning and following recent theoretical development in the leadership literature with respect the influence that inter-follower relationships may exert on leadership processes (e.g., Clapp-Smith, Vogelgesang & Avey, 2009; Lai, Rousseau & Chang, 2009; Takeuchi et al., 2010; Zagenczyk et al., 2015), we explore the role of surrogates in influencing overall LMX quality within a team. Our approach departs from the traditional assumption of LMX quality as being determined exclusively by the actual exchange behaviors (Sparrowe & Liden, 1997). Rather, we move to a more integrative approach in which the perceptions the members have of exchanges they establish with leaders – over and above the quality of the relationship itself – are far more influential in determining the LMX quality and that these perceptions are influenced by the social context surrounding leader-member dyads, particularly, in terms of social influence of surrogates.

The Nature of Surrogates

The notion of leader’s surrogates first appeared in the charismatic leadership literature. Galvin, Balkundi, and Waldman (2010) suggested that leader charisma was communicated to distant followers through the behavior of their surrogates, individuals who enhance perceptions of leader charisma by disseminating leader’s messages, vision and behaviors in a favorable light and publicizing, promoting, defending their leader and modelling followership (Galvin et al., 2010). Subsequently, studies from other literatures relied on the notion of surrogates (or other very similar) to build their reasoning (e.g., Avolio, Sosik, Kahai & Baker, 2014; Salvato & Cobetta, 2013; Weber & Moore, 2014; Ashforth, Schinoff & Rogers, 2016). However, more studies are needed to fully understand the conceptual underpinnings of the concept of surrogates.

Originating from Latin, the term surrogate is generally used both to describe a formal role – one appointed to act in the place of another in an official manner – as to designate a more informal role – one that serves as a substitute for another person of his/her own
accord. Often used in the political realm, political surrogates describe the influential individuals who build support and credibility for politicians. For example, during the 2016 presidential campaign in the United States, surrogates of Hillary Clinton, such as Michelle Obama and Bill Clinton, promoted and supported the candidate through public speeches in an attempt for her to be perceived as a capable president.

We use the term surrogate in a similar vein to the above usage. Based on previous research, we describe surrogates as those followers who actively engage in non-coercive impression management behavior that facilitates a positive image of a leader (Galvin et al., 2010; Weber & Moore, 2013). Surrogacy phenomenon is manifested through surrogates’ behaviors, which encompasses promoting the leader, defending the leader, and/or providing a model of followership for others (Galvin et al., 2010). Such behaviors have been traditionally associated with assertive and defensive image presentation/construction in the impression management literature (Goffman, 1959; Roberts, 2005). However, surrogate behavior focuses on managing others’ impressions of the leader, rather than of the self. Surrogate behavior fits within the broad category of interpersonal citizenship behavior, or OCBI (Bowler & Brass, 2006; Organ, 1997). This category captures citizenship behaviors that specifically benefit an individual—in this case the leader—and, in the long run, have the potential to positively influence the organization (LePine, Erez, & Johnson, 2002; Williams & Anderson, 1991). Surrogates become especially useful for leaders who have subordinates with whom they have distant relationships and/or little contact (Napier & Ferris, 1993; Bass, 1990) caused by time pressures and resource limitations (Weber & Moore, 2013).

**The forms of Surrogate Behavior**

A rich body of literature integrating social comparison theory (Festinger, 1954), and LMX theory (Graen & Uhl-Bien, 1995) have elucidated that within-group LMX social comparisons shape employee perceptions and behaviors as well as team dynamics and outcomes (Vydyarthi et al., 2010; Hu & Liden, 2013). In particular, under high levels of LMX differentiation, social comparison reveals to the members there is a social hierarchy within the team, where members gain different levels of status and trust granted by team leaders (Sparrowe & Liden, 2005). When leaders engage in LMX differentiation, two basic categories are argued to emerge: those who are being favored with higher quality LMX (the in-group) and those who have to settle for lower quality LMX (the out-group; Dansereau et al., 1975). In contrast to out-group members, trusted in-group
members tend to receive more information, interaction, support, and benefits from the leader (Dienesch & Liden, 1986; Erdogan & Liden, 2002). The separation between in-group and out-group members defines the influence hierarchy among the followers, such that in-group members can exert power over out-group members (Erdogan & Bauer, 2010; Sparrowe & Liden, 2005). This pattern of LMX configuration tends to introduce relational boundaries and divide team members (Li & Liao, 2014).

Empirical research has shown that a high level of LMX differentiation is perceived as violating the principle of equality, which plays an important role in shaping members’ justice perceptions in teams (Colquitt & Jackson, 2006; Liao et al., 2010; Meindl, 1989; Scandura, 1999). Such leadership practices, once perceived as unfair, make low-LMX members feel disappointed, frustrated, and angry and hence reduce their identification with the leader and team (Hooper & Martin, 2008; Gooty & Yammarino, 2016).

Moreover, scholars suggested that because of the advantage afforded to high-LMX members, feelings of envy may be common among low-LMX subordinates (Bass, 1990; Yukl, 1994; Vecchio, 1995, 2000). Prior research on LMX differentiation has also documented that employees who have a low-quality relationship with their leader tend to report more negative events than their colleagues with a high-quality LMX relationship (Sias & Jablin, 1995) and to experience strong feelings of favoritism (Harris, Li & Kirkman, 2014). Moreover, Maslyn and Uhl-Bien's (2001) findings indicate that employees in lower-quality LMX relationships often desire better relationships with their leaders. Similarly, Sparrowe & Liden (1997) maintain that extreme differentiation may lead some employees to feel disenfranchised. In short, lower-quality LMX relationships tend to be associated with a variety of negative outcomes which most often hinder leadership.

In this sense, surrogates may be fundamental to meet the social facilitation functions they serve (Weber & Moore, 2013) and to prevent the aforementioned perceptions and behaviors among particularly members with lower-quality relationships. Surrogates are expected to provide explanations, justifications and excuses for leader differentiation in order to reformulate employees’ perceptions concerning differentiated treatment (Galvin et al., 2010). For example, surrogates may describe the challenges behind time and resources constraints, as an attempt to get low-LMX members to take a bigger-picture perspective so as to create an increased understanding regarding the leader’s differentiation. By providing explanations for the leader’s actions of differentiating, surrogates can get the lower-LMX members to understand leader’s
motives. Moreover, by defending leader’s position, decisions and actions, surrogates are likely to clarify misconceptions and dampen potentially harmful information that might damage the leader’s reputation. While providing justifications regarding decisions or policies that the leader has enacted, and publicly demonstrating trust for the leader, surrogates must lead followers to be more trusting of the leader and less skeptical of his or her initiatives (Galvin et al., 2010). The subsequent effect may be a positive perception of the leader on the part of low-quality followers, which, in turn, can lead them to see their LMX more positively.

Furthermore, surrogates’ behaviors may take the form of promoting the leader, which involves publicizes positive qualities, behaviors and traits of the leader (Bolino, Kacmar, Turnley & Gilstrap, 2008; Roberts, 2005). For instance, surrogates may engage in storytelling about the leader. By providing stories about the leader, surrogates are able to better personalize the leader, which in turn may help lower-LMX members to feel they are close to the leader and have a connection to his or her vision (Hatch, Kostera & Kozminski, 2006) and consequently to make positive attributions about the leader's exchange behaviors. Likewise, stories are useful to remember specific situations where leader acted for the greater good of the team (Hatch et al., 2006). Finally, surrogates can also emphasize similarities between leader and team members such that lower LMX-members can socially categorize themselves into, and then identify with, the overall group (Sluss & Ashforth, 2007). This is expected to reduce social categorization process on the basis of different LMX quality, thus reshaping perceptions of differentiation (Harris et al., 2014).

The capacity of surrogates to intervene in followers’ perceptions and thus benefit leadership effectiveness can be explained by the informal social influence processes (Ho, 2005; Ho & Levesque, 2005; Ibarra & Andrews, 1993; Meyer, 1994). According to the literature, individuals’ perceptions are modified primarily through interpersonal processes that occur with other individuals in the boundaries of informal social networks (Erickson, 1988). Specifically, scholars assert that perceptions and interpretations are shaped by social cues and information provided by key social referents embedded in social structures (Ho & Levesque, 2005; Rice, 1993; Takeuchi et al., 2011). Prior research has found that individuals’ referents tend to be people with whom one frequently communicates and ask opinion (individuals with prestigious), and people who occupy high-status positions within a group (Friedkin, 1993, 2006; Shah, Dirks, & Chervany,
Accordingly, we note the importance to bring to light the social network approach.

The importance of surrogates’ social network position

Social networks have been defined as “patterns of connectivity and cleavage within social systems” (Wellman, 1988, p. 26). The social network approach emphasizes interpersonal relationships between actors, rather than attributes of actors (Wellman, 1988). Social relations are different from individual attributes because, unlike an individual attribute such as a person’s age, a relationship involves more than a single individual. Indeed, the individual’s social ties are embedded in larger social networks and may have implications beyond the individual level.

Relationships help individuals gain information and resources, exercise influence, and seek social support (Kilduff & Tsai, 2003; Burt, 1992, 2000). Thus, the position that an individual occupies in the informal network may have mixed implications for the individual and team social networks they are a part of. In addition to emphasizing the importance of network position, the social network approach also highlights the content of the interpersonal relationships in these informal webs of social relationships (Kilduff & Tsai, 2003). In this sense, advice ties - i.e., instrumental relationships through which employees share job- and organization related information (Ibarra, 1993) – have proven to be especially important to the strength of social influence exerted by advice givers (Chiaburu, 2009; Chiaburu & Harrison, 2008). Thus, advice ties tend to have strong implications for power and influence (Brass, 1984; Lincoln & Miller, 1979).

Thus, following previous theory and research, we suggest that surrogates’ network position (surrogates’ prestigious and brokerage positions) helps to explain how surrogates’ behaviors may impact team members perceptions – especially low-LMX members’ perceptions (e.g., Gardner & Avolio, 1998; Meindl et al., 1985; Pastor, Meindl & Mayo, 2002; Balkundi & Kilduff, 2005). We rely on a social network approach to therefore illuminate the ways in which surrogates’ social positions among coworkers can affect the extent to which LMX relationships are perceived to vary within a team. A key assumption of our proposal is that surrogates use their network positions in the advice network to influence the overall employees’ perceptions of LMX quality. Although surrogate role is performed by a focal individual (or some), that individual(s) must be embedded in a larger social collective (Granovetter, 1992) so that surrogacy behaviors
can be observed by others (Galvin et al., 2010). Without a central position in the informal social networks of the team, there may be a void in such behaviors.

**Surrogates’ Prestige and LMX Differentiation**

A relevant advice network position for surrogates should be network prestige, described as the extent to which an individual is sought out for advice by others. Network researchers refer to this as in-degree, which is the number of times an individual is nominated by others (Wasserman & Faust, 1994). This network measure assesses prestige, capturing the extent to which one is popular in the network (Wasserman & Faust, 1994). Prestigious and popular surrogates are those who are “socially preferred and socially visible” within their teams (Scott, 2013, p. 163) and are “generally accepted” by their peers (Scott & Judge, 2009, p. 21). Moreover, surrogates in a high-prestige position are seen as accessible and close individuals (Friedkin 2006).

These conditions may instill in employees, especially in low-LMX members, a sense of identification with surrogates – feelings of “they are like us” – or as a part of members’ group (Martin, 2016). Therefore, prestigious surrogates contribute to blur the boundaries of a priori group categorization based on LMX differentiation (i.e., low-LMX as leader’s out-group versus high-LMX, including surrogates, as leader’s in-group). That is, surrogates who enjoy prestige in their team social network contribute to make group memberships less salient (Henderson et al., 2009; Ma & Qu, 2010; Tajfel & Turner, 1986). When the in-group and out-group division is less clear, employees are less likely to evaluate their LMX based on this distinction (Ma & Qu, 2010). This is likely to make surrogates’ behaviors better accepted and more likely to influence members’ perceptions.

Moreover, the more a surrogate is sought out for advice, the greater the surrogate’s opportunities to effectively talk about and transmit a positive image of the leader (Mayo & Pastor, 2007), that is, to engage in behaviors aimed at to create a positive image of the leader (Galvin et al., 2010). Because the information and advice by prestigious surrogates are considered credible and reliable (Lam & Schaubroeck, 2000; Mayer, Davis, & Schoorman, 1995; Thomas & Griffin, 1989; Balkundi, Barsness, & Michael, 2009; French & Raven, 1959), they are more likely to influence members’ perceptions. In other words, surrogates who are well liked and consistently sought out for advice by other members will be target of positive attributions. As a consequence, they will retain greater levels respect (Henrich & Gil-White, 2001) and trust from coworkers (Steckler & Tracy, 2014) and thus they will serve as social referents for others. This may occur, for example,
by modeling followership (Galvin et al., 2010; Weber & Moore, 2013), that is, by providing social cues that informs and clarify the appropriate behaviors for exchanges with the leader. By facilitating followership (Lipman-Blumen, Chaleff & Riggio, 2008; Bandura, 1977), surrogates ensure more positive overall perceptions of LMX-quality among followers (Huang, Wright, Chiu & Wang, 2008; van Gils, van Quaquebeke & van Knippenber, 2009), which implies less LMX differentiation.

Furthermore, prestige in informal networks allows surrogates to better defend the leader, which also contribute to positively influence the perceptions of and attributions made by members, in particular low-LMX members, in relation to the leader and the exchange relationship established with him/her (e.g., Newman, 2005). Surrogates who have high prestige in team informal networks will have a high level of direct contact with low-LMX members who seek them out for advice, which opens opportunities to surrogates engaging in leader’s defensive behaviors (e.g., Mullen, Johnson, & Salas, 1991). For instance, a poor performance appraisal may enhances low LMX members’ perceptions of unfairness. This association has been found on LMX research (e.g., Duarte, Goodson & Klich, 1993). Surrogates with informal direct ties to these members will tend to mitigate this negative perception, for example, by providing them background information and criteria regarding the appraisal was made, dampening the potential effects of poor performance appraisal on LMX-quality as perceived by those members.

In sum, because of the increased influence among team members, we expect to find lower levels of LMX differentiation within teams where the surrogates occupies a prestigious position in the team’s informal advice network. Based on that, we propose:

**Hypothesis 1:** The higher the surrogates’ prestige in the team advice network, the lower the degree of LMX differentiation in the team.

**Surrogates’ Brokerage and LMX Differentiation**

While surrogates in a high prestige position are close and popular to others (Knoke & Burt, 1983), those who occupy a brokerage position (i.e., brokers) – often referred to as structural-hole bridging (Burt, 1992) – manifest signals of power and dominance-based status (Stovel & Shaw, 2012; Brass & Burkhardt, 1993; Cheng, Tracy, Foulsham, Kingstone, & Henrich). Brokerage exists when an individual is socially tied to two unconnected others. In other words, if two employees, E1 and E2, are connected only through a surrogate B, then the surrogate B has some control over any resources that flow
between E1 and E2. In effect, the surrogate B can act as a broker between E1 and E2. The idea is that surrogates who are "between" other employees, and on whom other employees must depend to conduct exchanges, will be able to translate this broker role into power and status (Burt, 2005; Astley & Sachdeva, 1984).

Accordingly, social network literature has posited that a brokerage position has a particular relevance for information flow (Brass & Burkhardt, 1993; Freeman, 1979; Rowley, 1997). Therefore, along this line of reasoning, it has been proposed that there is a value to have individuals – including, but not exclusively leaders – who occupy brokerage positions in the team (e.g., Galunic, Ertug & Gargiulo, 2012), since they collect and channel scarce information in ways that make things happen. In this sense, by having both access to the leader and control of information in the networks, surrogates in a high-brokerage position tend to act as ‘boundary spanners’, bridging two unconnected followers or the leader and distant followers, if at all. (Burt, 1992).

Therefore, structurally, brokers are expected to tap diverse information pools that might have critical performance implications (Burt, 1992). Moreover, brokering also bestows bigger rewards on individuals in brokerage positions, such as promotions and pay raises (Burt, 2004; 2005). However, from a relational point of view, the presence of brokers may be detrimental to the team, by keeping individuals/subgroups apart and enhancing a social hierarchy among team members. Although this dual aspect of brokerage finds theoretical support in the brokerage theory, the topic is currently underdeveloped. In fact, while much has been written on the value of brokering – that is, the benefit that the broker obtains from its position for him/her and for the brokered parties (e.g., Galunic et al., 2010) – less attention has been paid to the “costs” of brokers (Stovel & Shaw, 2012; see Cummings & Cross, 2003; Balkundi, Kilduff, Barsness, & Michael, 2007 for exceptions).

We argue that a brokerage position may hinder the effectiveness of surrogates’ behaviors for two main reasons. First, power differences between brokerage surrogates and other employees can lead to perceived social distance between them, who are at first (or formally), at the same level (e.g., Hogg, 2001; Hogg & Reid, 2006). Social distance and perceived similarity to others are often inversely related (Liviatan, Trope & Liberman, 2008). According to social identity theory (Tajfel & Turner, 1979, 1986), through social comparison, the members of a lower status group recognize the relative superiority of another group (Bettencourt, Charlton, Dorr & Hume, 2001). Perceptions of dissimilarities lead to the belief that others are part of a different social category, or “not
like us” (Tajfel & Turner, 1986). To the extent that surrogates are seen as socially distant and wielding significantly more power and status, they activate group membership distinction and are seen as members’ out-group (Martin, 2016). Since people are motivated to view their in-group positively, and to positively distinguish their group from out-groups (Crocker & Luhtanen, 1990; Tajfel & Turner, 1986), surrogates who enjoy high levels of brokerage are likely to have less influence on members’ perceptions.

A study in behavioral contagion (Gino et al., 2009) found that people were likely to go along with behaviors they saw in-group members doing (even though the behavior violated norms about what one should do), because their behavior represented norms about “what we do”. In contrast, out-group member behaviors and influence were not followed and accepted because refraining from out-group behaviors satisfied their motivation to positively distinguish their in-group from the out-group. Therefore, the above arguments make us to believe that surrogates’ influence, for example, modeling followership or defending the leader, may not be effective.

Moreover, given that a broker—due to his/her greater access to information, control over resources, or structural power—has a clear opportunity to “gain” at the expense of either or both of the individuals/groups for whom he/she is brokering, surrogates in brokerage position are less likely to be regarded as trustworthy (Stovel, Golub & Milgrom, 2011). That is, in cases of brokerage, employees are highly dependent on the broker, who in the sort run offers the only feasible path to reach each other. This dependency should be associated with employees’ uncertain and may cast suspicion about the surrogates’ behaviors (Galvin et al., 2010). For example, distrustful employees should appear reticent to believe in explanations, justifications, and excuses for leader actions and behaviors (i.e., leader’s defense) as well as in positive information made by surrogates (i.e., leader’s promotion). Therefore, those behaviors may be viewed with suspicion and do not spread through a group. More than that, they could engendering friction, disenchantment, relational separation and conflict (Friedman & Podolny 1992, Stovel et al. 2011), making employees apart of surrogates and reinforcing perceived LMX differentiation within the team. Overall, these arguments suggest the following.

Hypothesis 2: The higher the surrogates’ brokerage in the team advice network, the higher the degree of LMX differentiation in the team.

The moderating effects of network topological characteristics
Although surrogates’ behaviors performed in different network positions are likely to impact team-level perceptions of LMX relationships, it is important to understand factors that may condition these relationships. Since surrogates are embedded in the social structure of teams, the configuration of social interactions among team members may facilitate or constrain surrogates’ degree of influence resulting from their position, thus leading to a greater or lesser impact of their behaviors. Therefore, the establishment of surrogates’ behaviors impact cannot be simply modeled as a direct function of their network position; rather, they should be investigated also as dependent upon social structure. In fact, social network literature has argued that the topology of network affects the spread of individuals’ activities (Jonczyk, Lee, Galunic, & Bensaou, 2016; Reagans & McEvily, 2003). Drawing from this theoretical logic, we investigate the role of network distance and network density as network topological features that serves as boundary conditions for the relationships between surrogates’ network position and LMX differentiation.

**Network distance.** Distance can tell us a great deal about the pattern of social connections in a team network. Network social distance indicates the distance of the longest shortest path in the network, that is, the number of intermediaries’ ties in the shortest possible path for the two individuals who are farthest away from one another (Scott, 2000). Therefore, network distance is a proxy of how close or distant individuals are.

As said, a large distance in a team network indicates the presence of many intermediaries between two members. In networks with large social distance, members are not all closely connected, that is, they do not have direct and frequent contact with each other, which means a degree of dispersion in the network. Prior research held that dispersion of team members may exacerbate social categorization into subgroups within the team (Griffin & Hauser, 1996). This is because individuals collect together in groups that are characterized by frequent social ties (Freeman & Webster, 1994; Brands, 2013). Freeman (1992) proposed that individuals rely on categorization schemas to make sense of the patterns of interactions that occur around them, grouping individuals who they see interacting frequently together. Therefore, members’ own direct ties are grouped together and those members who are not directly tied to them (and between them) are perceived to be forming diverse subgroups, according their own direct social ties (Kumbasar, Romney, Batchelder, 1994).
Therefore, in network with large distance, the prestige of surrogates’ become even more important, since it will likely operate in a context of internal divisions and clear boundaries between subgroups. When members become involved in cliques within a larger group, the unity of structure is disrupted (Markovsky & Chaffee, 1995; Markovsky & Lawler, 1994) and differentiation is more likely to be perceived. Members who are grouped in different subgroups do not share a same group membership (Jones, 2004); rather, their social identities are created based on this membership distinction (Swann, Jetten, Gómez, Whitehouse, & Bastian, 2012). Distinct group memberships is posited to elicit perceptions of dissimilarity among members along different attributes, including LMX relationships (Brewer & Gardner, 1996). The higher the network distance, the greater surrogates who have prestige in team networks will experience opportunities to reshape perceptions of LMX differentiation within the team. Therefore, the advantage of occupy a prestigious position for building lower differentiation perceptions through surrogates’ behaviors should be enhanced under a network where there are higher sub grouping phenomena (Sui, Wang, Kirkman & Li, 2016; Huber & Lewis, 2010; Carton & Cummin, 2012). By virtue of such prestige, surrogates gain access to the various subgroups, and, as a result of their behaviors, may contribute more heavily to overcome the boundaries that create perceptions of differentiation. In networks marked by less distance, social categorization processes are much less likely, and thus the effects of surrogates’ prestige in increase positive perceptions regarding the leader and the treatment offered by him/her are less evident.

Hypothesis 3a: The relationship between surrogates’ prestige and LMX differentiation become stronger when the distance of the team network increases.

Network density. Network density is a basic aspect of a social network structure. It reflects the compactness or closeness of team member interactions with each other (Carson, Tesluk & Marrone, 2007). The more ties each group member enjoys with other group members, the greater the density of the team network. From a social network analysis perspective, network density is equivalent to group cohesion, i.e., a denser network is taken to be more cohesive) (Wise, 2014; Scott, 2000). Dense networks are considered beneficial to the employees and teams because they generate trust and foster cooperation among members. Higher density teams’ networks are found to be positively related to feelings of positive affect and negatively related to feelings of negative affect.
Similarly, network density is related to safety climate strength (Zohar & Tenne-Gazit, 2008) and team potency (Tröster, Mehra & van Knippenberg, 2014).

The higher the internal network density, the more each group member seeks advice from other members in the group. Because of the greater exchange among members, more similarity is perceived and less categorizations process take place. Hence, when members are interconnected through advice ties, the direct interaction should increase peer perceptions of trustworthiness and proximity. Members are perceived as similar others and social categorization process are not activated. As such, LMX differences may be not salient.

In this case, surrogates acting as brokers are even more harmful. In environment of generalized trust (i.e., high density), the distrust tied to someone demonstrating power and higher status is even stronger. The more distrust perceived to surrogates, the less surrogates’ behaviors will have positive effects in LMX differentiation.

Hypothesis 3b: The relationship between surrogates’ brokerage and LMX differentiation become stronger when the density of the team network increases.

The indirect effect of surrogates’ network position on team performance

Team performance refers to “the extent to which a team accomplishes its goals or mission” (Bell, 2007, p. 595). Team performance is argued to be a key criterion for leadership effectiveness. Liden et al. (2006) argue that LMX would be seen as an incomplete theory of leadership to the extent that it were not able to offer an account of how leaders affect the performance of their groups. In fact, the team-level outcome variable most explored in LMX studies has been team performance (Paik, 2016).

Regarding the relationship between LMX differentiation and team performance, to date there is no consensus about the direction of the main effect (Paik, 2016), which unveils the complex relationship between the variables (Tse, 2014). While some initial studies have found evidence that LMX differentiation is positively related to team performance under certain conditions (e.g., Henderson et al. 2008; Liden et al. 2006), more recent studies have raised the notion that differentiated leadership in groups may hurt team performance (Li & Lao, 2014; Sui et al., 2016; Wu, Tsui & Kinicki, 2010). Actually, LMX research is still been confronted with the question whether LMX differentiation is detrimental or beneficial to team performance (Tse, 2014).
While not disregarding research concerning the plausible positive relationship between LMX differentiation and team performance depending on certain contextual conditions or via specific mechanisms, we base our argument in the opposite direction. That is, we argue that LMX differentiation will diminish team performance. LMX differentiation triggers asymmetric perceptions of interpersonal treatment between subgroups as it indicates members’ relative standing with leaders. Therefore, differentiated LMX represents social categories used to form self- and other perceptions, leading to categorization (Anand et al., 2011; Hogg et al., 2004). Categorization produces subgroups (i.e., “us” and “them”), and members in teams with identity-based subgroups will experience identity threat from, and inter-subgroup bias against other subgroups, giving rise to competition, friction (Carton & Cummings, 2012; van Knippenberg et al., 2004) and problematic interpersonal relations and behaviors (Anand et al., 2011; Hogg et al., 2004). Therefore, to the extent LMX differentiation enhances social categorization processes, it prevents a unified team identity from emerging (Earley & Mosakowski, 2000).

Prior research has conceptually stated and empirically shown when team members identify with their teams as a whole, they are more likely to exert effort because the team’s success or failure becomes their own personal interest (see Tyler & Blader, 2000 for a review). On the other hand, the multiplicity of subgroups identity will give rise to a relational separation that downplay the motivation to engage and cooperate in behaviors that benefit the team (Harris et al., 2014; Paglis & Green, 2002), which leads to poor team performance.

As we argued above, surrogates’ network position (i.e., surrogates’ prestige and surrogates’ brokerage) may influence the degree of perceived LMX differentiation. Likewise, research on social network has shown that team performance can be explained by network positions of specific individuals, such as team leader (Friedkin & Slater, 1994; Mehra, Dixon, Brass & Robertson, 2006; Balkundi et al., 2009). For example, in line with our reasoning, Balkundi and colleagues’ (2009) findings indicated that although leader’s prestige may facilitate team processes directly associated with performance, brokerage at the individual level may actually hamper the collective. Overall, studies have found that the position of certain individuals in the social structure shapes the opportunities and constraints to action and determines their private and collective performance (Sparrowe & Liden, 1997, 2005; Galunic et al., 2012; Mukherjee, 2016; Carboni & Ehrlich, 2013).
Thus, we believe that the association between surrogates’ different network positions and team performance can be explained through the impact on LMX differentiation.

Therefore, given that we have hypothesized the effects of surrogates’ prestige and brokerage in perceptions of LMX differentiation (i.e., Hypothesis 1 and 2) and the argued negative relationship between LMX differentiation and team performance, we expect that LMX differentiation carries these network position effects to team performance. We thus hypothesize a mediating role for LMX differentiation. This mediating role highlights that surrogates’ network position is important to be studied because it can affect team performance through employees’ enhanced or reduced perceptions of LMX differentiation within the team; that is, surrogates’ prestige or brokerage shapes team performance through affecting LMX differentiation.

Based on our logic, we predict an indirect effect of surrogates’ position (i.e., surrogates’ prestige and surrogates’ brokerage) on team performance. Specifically, we propose the following:

*Hypothesis 4a: Surrogates’ prestige has a significant indirect effect on team performance through LMX differentiation.*

*Hypothesis 4b: Surrogates’ brokerage has a significant indirect effect on team performance through LMX differentiation*

Our theoretical model is presented in Figure 1.
METHOD

Research Setting and Sample

To test our hypotheses, we conducted a field study drawing on nursing professionals working on Emergency Care Units (ECUs) from Rio de Janeiro, Brazil. ECUs are entities under control of the Health Secretary of Rio de Janeiro State. They are part of the Brazilian Unified Public Health System, a national institution to serve the entire population.

We sampled nursing teams, which includes nurses and nursing technicians. These professionals work 24-hours work shifts, with 120-hours (5 days) off. The team members are fixed. They are supervised by a formally assigned leader. Services provided by nursing staff include assessment and risk classification protocol, laboratory tests (e.g., blood test), image tests (e.g., X-ray), patients’ health care (e.g., carrying out the requisite treatments and medications) and administrative services (e.g., Maintaining reports of patients’ medical histories).

Nursing team members were required to complete a paper-and-pencil survey. They filled in the questionnaire during breaks, at the beginning or at the end of their shifts. Respondents were told that the purpose of the survey was to investigate their experiences with the organization and their perceptions of their interactions with the members and the leader of their teams. They were informed that their responses would remain confidential.
The survey took 10–15 min to complete. The questionnaire was composed by three parts (see Appendix A). First part was composed by latent variable items (LMX and team performance). These items were measured on a five-point scale ranging from ‘strongly disagree’ to ‘strongly agree’. As we conducted our analysis at the team level, responses from team members across the units of analysis (i.e., teams) were aggregated.

Second part was intended to collect network data. We gathered complete network data for team advice networks using a common technique used previously (e.g. Ho, Rousseau & Levesque, 2006; Ibarra, 1993; Umphress et al. 2003; Zagenczyk et al. 2010). Specifically, we measured the ego-advice network by asking respondents to indicate the colleagues to whom they went for work-related help, advice and knowledge. Because we measured respondents’ typical and routine relationships, there is little risk of recall errors (Freeman et al., 1987). The reliability of these measures is further enhanced by the fact that we provided respondents with a list of team members names as a recognition aid. Individual responses were combined to arrive at complete network data for each of the teams’ networks. Network data was submitted to social network analysis (SNA). SNA is a set of theories, tools, and processes for understanding the relationships and structures of a network. The “nodes” of a network are the people and the “links” or “edges” are the relationships between people. SNA practitioners collect network data, analyze the data (e.g., via SNA software), and often produce maps or pictures that display the patterns of connections between the nodes of the network. The metrics the SNA software produce are commonly used to understand and evaluate networks (Hoppe & Reinelt, 2010). In this study, the network metrics (detailed below) were calculated and gathered from Gephi4, a social network analysis software. Finally, the third part of the questionnaire gathered respondents’ demographic information.

We distributed surveys to 162 teams (team size ranged from 13 to 18 members). We received employees’ surveys from 147 different teams. Since the response rate achieved in social networks studies is critical because the objective is to provide an estimate of the social structure of the organization, we apply a cut-off criteria of 80% (Ferrin, Dirks & Shah, 2006) concerning within-team response rate. For instance, for a

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4 Gephi is an open-source dedicated network analysis software used in data visualisation which has been used in a number of disciplines and various purposes (Kaimal et al. 2010; Leydesdorff and Rafols 2012; Montes, Seoane, and Laxe 2012; Rossano, Chouhan, and Macleod 2013). Before Gephi’s calculations, we had to prepare two files in Excel (for each team): a ‘nodes’ file and ‘edges’ file. The nodes file included all members of the team. The edges file contained information about the advice ties between the members. Both nodes and edges files were subsequently imported into the software Gephi.
team composed of 15 members, we should compute at least 12 members’ complete surveys of that team to include the team in the sample. After checking the responses to the surveys, there were 43 teams in which at least 80% of its members returned the survey in a complete way. Their mean group size was 15.37 members ($SD = 1.09$).

**Measures**

**Identifying Leader’s surrogates**

Prior studies, while addressing the role of surrogate behavior, did not clearly determine how they are identified. According Galvin and colleagues (2010, p. 484), “Individuals who are closer to the leader are more likely to be exposed to signals (both direct and ambient) from the leader (e.g., organization wide speeches, team meetings, and one-on-one discussions) that are aimed at engaging those individuals in surrogate behavior. […] Individuals who are in a positive exchange relationship with the leader are likely to feel that they should respond to these calls to action”. Similarly, Wong and Both (2010), when investigating what they called “manager’s advocates” – a similar notion to leader’s surrogates – stated the following:

“a focal manager’s advocates are likely to be people who have received large amounts of support from the focal manager. That support increases both their knowledge about the focal manager’s trustworthiness and their willingness to communicate positive information about him or her. Because individuals who have received high amounts of support from a focal manager have had direct experience with that person’s reliability, they develop increased knowledge about and confidence in the focal manager’s trustworthiness. In addition, the support received from the focal manager creates a “social debt” that enhances the other individuals’ willingness to recognize and disseminate positive information (Lin, 2001). We do not contend that recipients of large amounts of support from a manager will reciprocate only by propagating positive information about him or her, but that the receipt of such support provides both the motivation and knowledge to voice positive information about the manager when they are explicitly asked to recommend someone or in their casual conversations with others.

The aforementioned research suggest that individuals with exceptional social exchange relationship with the leader will tend to engage in surrogate behaviors. Therefore, it seems that one way of operationalize surrogates is through LMX-quality measure (Graen & Uhl-Bien, 1995). In a high-quality LMX, the leader provides greater
tangible and intangible benefits to the member compared to low-LMX quality (Erdogan & Enders, 2007). In fact, LMX research has consistently reasoned that high-LMX members are more empowered (Yukl & Fu, 1999) and they are often given additional responsibility, autonomy, increased and supportive communication with their leaders, work-related information, mentoring, coaching and other developmental and support processes (Michael, Harris, Giles, & Field, 2005; Scandura et al., 1986; Scandura & Schriesheim, 1994).

Since social exchanges form the basis of high-quality relationships (Casimir, Ng, Wang & Ooi, 2014; Wayne, Shore & Liden, 1997; Settoon, Bennett & Liden, 1996), there is a perceived obligation on the part of members to reciprocate high quality LMX relationships (Blau, 1964; Gouldner, 1960; Settoon, Bennett, & Liden, 1996), by holding attitudes and engaging in behaviors intended to help the leader (for meta-analyses, see Dulebohn et al. 2012; Gerstner and Day 1997; Ilies et al. 2007). In other words, based on the social exchange model, an employee who is treated fairly by his or her leader would be willing to provide reciprocal favors to his or her leader (Liden & Graen, 1980; Loi, Mao, & Ngo, 2009). Empirical evidence confirms that high-quality LMX relationships foster employee attitudes and behaviors that are beneficial to managers and organizations (Settoon et al., 1996; Wayne et al., 1997; Gerstner & Day, 1997; Dienesch & Liden, 1986; Scandura & Graen, 1984; Wayne et al., 2002). In sum, highest-LMX members in the leader’s in-group enjoy a great extraordinary social proximity to the leader and should act as their allies, advocate, squires, or as we preferred here, surrogates\(^5\).

Therefore, in order to assess the quality of the LMX, the LMX-7 was used ($\alpha=.71$), as recommended by Graen and Uhl-Bien (1995). It has seven items with responses obtained on a five-point scale. Sample items include “How well does your manager understand your job problems and needs?”, “How would you characterize your working relation with your manager?”.

After computing the LMX for each member in each team, we identified surrogates as those members who had their LMX mean at least 1SD above the group mean. We

\(^5\) While not disregarding the possibility of surrogates be formally appointed by the leader, in this paper we consider surrogates as individuals who engage in surrogate behavior without prompting from the leader, that is, they act of their own volition (Galvin et al., 2010). Likewise, although substantial contact with the leader on a daily basis is not a prerequisite for engaging in surrogate behavior (Baker & Dutton, 2007), suggesting that surrogates may be external to the team (or even to the organization), we limit the surrogate role to the direct reports of leaders (i.e., leader’s subordinates). In the discussion that follows we develop our reasoning about those within the team we argue to act as surrogates and to what extent they are likely to be a compelling source of influence over others perceptions.
consider that these members are those who have the closest and highest attachment to the leader, and so, they will tend to serve as leader’s surrogates more than any other. The number of surrogates within the teams ranges from 0-4 (M=2.4). Since we investigated the role of surrogates’ network position, we excluded from the sample (n=1) the teams in which surrogates were not identified.

Following prior research (Erdogan & Bauer, 2010; Liao et al., 2010), we use the variance in the individual-level LMX scores for each team to capture the degree of *LMX differentiation*.

**Social Network metrics**

**Surrogates’ prestige.** We calculated the surrogates’ indegree centrality in the team advice network to operationalize the surrogates’ prestige. In-degree centrality assesses the direct number of ties, that is, the number of co-workers coming to the surrogates for advice (Wasserman & Faust, 1994). For example, a surrogate who is sought for advice by many others co-workers has a high in-degree centrality in the team advice network. Social network literature has pointed out that in-degree centrality provides a measure of prestige and influence (Freeman, 1979; Balkundi et al., 2006). For teams with more than one surrogate, we averaged all the surrogates’ in-degree values to form a single measure of surrogates’ prestige. As team sizes varied in our sample, we therefore standardized (i.e., normalized) values for surrogates’ in-degree centrality so that they could be compared across teams.

**Surrogates’ brokerage.** We operationalized the extent to which surrogates bridged unconnected team members by calculating the normalized betweenness centrality (Freeman, 1979) of the surrogates in the advice team networks. Betweenness centrality indicates how often one individual is likely to be an important relay point between other network members (Wasserman & Faust, 1994). That is, it measures the extent to which an individual serves as a potential ‘go-between’ for other pairs of individuals in the network by occupying an intermediary position on the shortest paths connecting other actors” (Kilduff & Tsai, 2003). Like we did for surrogates’ prestige measure, for teams with more than one surrogate, we averaged all the surrogates’ betweenness values to form a single measure of surrogates’ brokerage. Also, we used normalized betweenness centrality’ values so that we could compare across teams of varying sizes.

**Network Distance.** Network diameter was the network topological metric used to measure network distance. Diameter is the distance, in number of nodes (i.e., team
members), between the two farthest nodes of the network, that is, from one extreme of
the network to the opposite extreme. Long diameters indicate more “steps” must be
traversed for information to travel from one end of the network to the other.

Network Density. Density was measured by the number of advice-seeking ties
that exist in each team network divided by the maximum possible number of advice-
seeking ties that could exist in that network. A high density means that a large percentage
of team members in the network interacts with each other.

Team Performance. In this study, team performance was assessed by 4 items of
the “Healthcare Organization Survey for team members” (RAND, 2010). Throughout the
items respondents were asked to make judgments about the “quality of care and services”
provided by their teams. In the items, “quality of care and services” referred to how well
the organization performs the many activities and functions involved in patient care. The
term “quality of care and services” is not limited to the technical quality of care provided
to patients; rather, “quality of care and services” is a broader, more general category that
includes not only the technical quality of care, but also includes how well patient service
needs are meet. This is a critical indicator to define the level of teams’ performance in
health care settings such as ECUs. Sample items are: “My team is involved as a whole in
developing plans for improving quality” and “My team does a good job of assessing
current patient needs and expectations”. The coefficient alpha was .61. Team members’
scores were averaged to form the team performance measure.

Control Variables. Group size, number of surrogates, leader gender and task
interdependency were included as control variables. Task interdependency was measured
by three items from Van Der Vegt, Emans and Van de Vliert’s (2001) scale. Team
members’ scores were averaged to form the task interdependency measure.

RESULTS

Table 1 displays the correlations, means, and standard deviations of all the
variables.

<table>
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<td>Control</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Team Size</td>
<td>15.37</td>
<td>1.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Number of Surrogates</td>
<td>2.34</td>
<td>0.84</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
As expected, surrogates’ prestige is negatively and significantly correlated with LMX differentiation ($r = -0.32$, $p < .05$). Team networks who had highly prestigious surrogates tended to have less perceptions of LMX differentiation. As we proposed, surrogates’ brokerage is positively correlated to LMX differentiation. However, the correlation is not significant ($r = -0.02$, $p > .10$). Consistent with the theoretical and empirical underpinnings of social network research (Ibarra & Andrews, 1992; Valente, Coronges, Lakon & Costenbader, 2008; Wölfer, Faber & Hewstone, 2015), the highest observed correlation ($r = 0.52$, $p < .001$) was between social network measures of centrality, i.e., betweenness (brokerage) and in-degree (prestige) centralities. This is because centrality indices were derived from the same relational matrices. Correlations between the centrality measures of 0.52 in the advice network was not deemed large enough to indicate multicollinearity problem. We used multiple regression analyses to test our hypotheses. Regression results are presented in Table 2.

Hypothesis 1 predicted that teams with surrogates who had high prestige would have lower levels of LM differentiation. Findings from our regression analyses provide support for this hypothesis (see Model 2 in Table 2). Teams with more prestigious surrogates reported lower levels of LMX differentiation ($\beta = -0.38$, $p < .05$).

Hypothesis 2 predicted a positive relationship between surrogates’ brokerage and LMX differentiation. We expected that teams with surrogates acting strongly as brokers would experience higher levels of LMX differentiation. Contrary to our expectations, we found a nonsignificant direct effect of surrogates’ brokerage on LMX differentiation (see Model 2 in Table 2), which provides no support for Hypothesis 2 ($\beta = 0.02$, $p > .10$).

---

*Regressions were carried out using Stata 13.1*
Table 2. Direct and Moderating Effects

<table>
<thead>
<tr>
<th></th>
<th>LMX Differentiation</th>
<th>Team Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>.19</td>
<td>.25</td>
</tr>
<tr>
<td>Number of surrogates</td>
<td>-.05</td>
<td>.06</td>
</tr>
<tr>
<td>Task interdependency</td>
<td>-.04</td>
<td>-.00</td>
</tr>
<tr>
<td>Leader’s gendera</td>
<td>-.10</td>
<td>-.12</td>
</tr>
<tr>
<td>Main</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surrogates’ prestige (SP)</td>
<td>-.38*</td>
<td>-.54**</td>
</tr>
<tr>
<td>Surrogates’ brokerate (SB)</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td>Network Distance (NDist)</td>
<td></td>
<td>-.17</td>
</tr>
<tr>
<td>Network Density (NDens)</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>LMX Differentiation</td>
<td>-.33*</td>
<td></td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP x NDist</td>
<td>-.56*</td>
<td></td>
</tr>
<tr>
<td>SB x NDens</td>
<td></td>
<td>.51*</td>
</tr>
<tr>
<td>R2</td>
<td>.04</td>
<td>.05</td>
</tr>
</tbody>
</table>

N=43; ***p<.001; **p<.01; *p<.05; †p<.10.aGender was coded as 0=female; 1=male

To facilitate comparisons of the magnitude of effects stemming from differently scaled variables, we entered standardized predictors to the estimate models.

Regarding Hypothesis 3a, which posited the interactional effects of surrogates’ prestige and network distance, the results are shown in Models 3 of Table 2. Findings from our regression analysis reveal that the interaction effect of surrogates’ prestige and network distance is negatively and significantly associated with LMX differentiation (Model 3: $\beta = -.56$, $p < .05$). Thus, Hypothesis 3a is supported. To advance further interpretations, we performed simple slopes tests and plotted the significant interaction effect for two levels of network distance, defining the low level as minus one standard deviation from the mean and the high level as plus one standard deviation from the mean. Figure 2 shows the results. In keeping with H3a, surrogates’ prestige is negatively and significantly associated with LMX differentiation when network distance is high ($b = -1.10$, $SE = .36$, $t = 3.06$), and becomes nonsignificant when network distance is low ($b = .01$, $SE = .23$, $t = 0.06$).
Similarly, the interaction of surrogates’ brokerage and network density had a significant coefficient in Model 4 ($\beta = .51, p < .05$), indicating support for Hypothesis 3b. Figure 3 illustrates the nature of this interaction (plotted at one SD above and below the mean). Surrogates’ brokerage predicted higher perceptions of LMX differentiation in teams that were high in network density ($b=1.35$, SE = .67, $t=1.96$). When network density is low, surrogates’ brokerage had a marginally significant, negative relationship with LMX differentiation ($b= -.68$, SE = .36, $t=1.88$). Interestingly, although nonsignificant, this marginal effect was in the opposite direction we predicted. In other words, in teams with low density, surrogates’ brokerage could be good for the team.
To test Hypotheses 4a and 4b, we did not use the conventional Baron and Kenny (1986) approach to mediation nor did we use Sobel’s test, both of which need large samples (MacKinnon, Lockwood, & Williams, 2004). Instead we used the bootstrap method that involves random sampling of the data several times and testing for mediation each time (Preacher & Hays, 2008). This method is applicable when working with a small sample size (Shrout & Bolger, 2002), and has previously been used within teams research (Wong, 2008). Estimates from this method are more robust and form the basis of the different confidence intervals (CI) that are reported. The results reported in Table 3 suggest that the indirect effect of surrogates’ prestige on team performance through LMX differentiation is statistically significant (95% CIs) contain zero.

Table 3. Bootstrapping-based Mediation of Surrogates' Network Positions on Team Performance through LMX Differentiation

<table>
<thead>
<tr>
<th></th>
<th>Direct effect</th>
<th>CI (95% conf.)</th>
<th>Indirect effect</th>
<th>CI (95% conf.)</th>
<th>Total Effects</th>
<th>CI (95% conf.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LLCI</td>
<td>ULCI</td>
<td>LLCI</td>
<td>ULCI</td>
<td>LLCI</td>
</tr>
<tr>
<td>Surrogates' Prestige</td>
<td>.22</td>
<td>-.0692</td>
<td>.5201</td>
<td>.12</td>
<td>.0014</td>
<td>.2927</td>
</tr>
<tr>
<td>Surrogates' Brokerage</td>
<td>-.27</td>
<td>-.5577</td>
<td>.0303</td>
<td>-.01</td>
<td>-</td>
<td>.1439</td>
</tr>
</tbody>
</table>

*** p <.001; **p<.01; *p<.05

DISCUSSION

It is well established in job attitudes literature that employees’ variation in perceptions of work-related situations can be explained by the social context in which they are formulated (Salancik & Pfeffer, 1978; Ibarra & Andrews, 1993). The formation of employees’ perceptions and attitudes in a job environment is an information-processing activity as a function of the information available to them through their social relationships (Ibarra & Andrews, 1993). In this sense, team members’ perceptions of LMX-quality as well as the consequences of this quality are likely to be strongly influenced by the social context in which the relationship exists, and not solely by the LMX relationship itself (Cogliser & Schriesheim, 2000; Takeuchi et al., 2011). Based on that, the goal of our study was to extend LMX research by examining how and under what
conditions surrogates – as an important contextual factor – affect team performance through the influence on members’ perceptions of to what extent LMX relationships within their teams differ (i.e., LMX differentiation).

Specifically, we found that when surrogates occupy a prestige position (Freeman, 1979) in their team social network, they have the potential to be especially influential in diminishing perceptions of LMX differentiation and thus, augmenting team performance. Surrogates are highly trusted and close followers who are willing to help leaders overcome the challenges of leadership (Weber & Moore, 2013). Attempts to improve members’ perceptions of their own LMX relationships should be part of the surrogates’ actions, since leaders face constraints to develop and maintain high-quality exchanges with all subordinates (Graen & Uhl-Bien, 1995). However, willingness is necessary but not sufficient condition for surrogates to enhance members’ perceptions of LMX quality. Surrogates must enjoy social influence within their team to be able to (re)shape members’ perceptions (e.g., Ho & Levesque, 2005), including LMX perceptions. Our results show that prestige in team advice network gives surrogates this influential condition because it elicits credibility, popularity, trustworthiness and members’ identification. Moreover, since LMX differentiation has been associated with relational problems that undermines team performance (Cogliser & Schriesheim, 2000; Ford & Seers, 2006; Hooper & Martin, 2008; Schyns, 2006; Colquitt, Noe, & Jackson, 2002; Li & Liao, 2014; Sherony & Green, 2002), by contributing to improve overall LMX in a team – in other words, by reducing LMX differentiation – prestigious surrogates are indirectly contributing to an increased team performance. Our study also provides compelling evidence regarding this indirect effect of surrogates’ prestige on team performance.

On the other hand, our study failed to confirm that surrogates’ brokerage is related to a greater perception of LMX differentiation and this, indeed, warrants discussion. Although the structural benefits of brokerage for teams, related to span across structural holes (Burt, 1992; Freeman et al., 1979,1980; Krackhardt, 1990), have been documented in empirical research (e.g., Lingo & O'Mahony, 2010), we followed a novel body of research which advocates that brokerage is not entirely beneficial (e.g., Flynn & Wiltermuth, 2010; Balkundi et al., 2009). A brokerage position enhances individuals’ power due to their greater access to and possible control over relevant resources (Brass, 1984; Sozen, 2012; Brass & Burkhardt, 1993; Pfeffer, 1992). As such, we contended that power would emphasize status differentials and social hierarchy among members (Lemaine, Kastersztein, & Personnaz, 1978; Tajfel, 1972, 1978), thus reinforcing the
perceptions of LMX differentiation. However, the results shed light on the complex effects of brokerage, since they suggest the structure of team networks (i.e., network density) creates the condition for such detrimental effects of brokerage. According to our findings, deleterious effects of surrogates’ brokerage on LMX differentiation emerge only when the team network is highly dense. More than that, and interestingly, the results show (with a marginally significant effect) that surrogates’ brokerage can be beneficial for teams with low density.

First, as we previously discussed, in situations where dense networks exist, there are more numerous ties connecting team members. High interconnectivity suggests team cohesion, social harmony, social integrgration, shared perceptions of fairness, common identity, trusting relationships, psychological safety climate (Tröster et. al., 2014; Blau, 1997; Schulte, Cohen, & Klein, 2012; Oh, Chung, Labianca, 2004; Reagans, Zuckerman, McEvily, 2004; Coleman, 1988). Surrogates who acts as brokers in this context will be even more salient in shaping perceptions of LMX differentiation because they will be more easily recognized as dissimilar compared to the rest of the group. We found support for this reasoning.

However, the marginally significant effect of network density in reducing the impact of surrogates’ brokerage on LMX differentiation suggests that brokerage, actually, has multiple roles, who should be activated depending on the surrounding context. In contrast to the previous reasoning, when a team experiences low density, there are few social interactions, and members should be located in isolated subgroups, whose formation must be related to the differentiated treatment received from the leader. It seems that, in this case, because brokers bridge across holes in the network and bring together groups of members that were previously and strongly isolated (Burt, 1997; Sozen, 2012), they will gather some value in taking this role. As a consequence, members are likely to experience lower perceptions of suspicion or distrust and thus, to be more approachable to surrogates’ influence. That is, a team may react differently to surrogates’ brokerage depending on how social relations within the team are established. That is, how members assimilate and interpret surrogates in a brokerage position depend on the network structure.

This contingent-based perspective of brokerage role is consistent with some caveats and empirical evidences previously issued by scholars (e.g., Xiao & Tsui, 2007). But thus far, studies have largely been focused on the positive effects of brokerage. An important exception is Podolny & Baron’s study (1997). The authors investigated the
importance of structure and content of individuals’ networks for upward intra-organizational mobility (i.e., promotion). They found that a function of brokerage across structural holes are beneficial for ties that convey resources and information and negative for ties that transmit identity and expectations. They conclude that “all structural holes are not of the same color; some are ‘white holes’, propelling the individual upward through the organization and providing socioemotional benefits, while others are clearly ‘black holes’, holding individuals at a particular rank in the organization and causing negative psychological consequences” (Podolny & Baron, 1997, p. 689). This conclusion gives clues for a better understanding of our “paradoxical” findings.

Yet, the moderating effect of network distance reinforces the idea that social structure may facilitate or hinder the impact of surrogates’ position in influencing members’ perceptions, discussed above. Moreover, this finding brings insights into under what conditions surrogates’ prestige it really important and necessary.

On the basis of the above findings we conclude that surrogates’ informal positions in a team advice network are importance for (un)locking their behaviors and consequences. Also, our study show that the interplay between informal position and informal network structure hold critical contextual conditions for the impact of surrogates behaviors on members’ perceptions of LMX differentiation and ultimately, team performance. Last, but not least, the finding that a surrogate, that is, a third part in LMX relationship, matters for members’ perceptions of their own LMX relationships, suggests the need for finer-grained approaches in LMX research that take context into account. Particularly, it is relevant to investigate the role of key people embedded in the members’ social network when determining how LMX perceptions are formed, beyond the LMX itself (Wong & Boh, 2010; Weber & Moore, 2013; Galvin et al., 2010).

THEORETICAL IMPLICATIONS

The current article serves to enhance LMX theory in several ways. Our fundamental contention in this research was that the development of overall perceptions of LMX quality in a team is not solely a product of independent evaluations of treatment offered by the leader, but are also shaped by the social context in which the relationship exists (Cogliser & Schriesheim 2000). In particular, our research highlights the role of leader’s surrogates in influencing the perceptions of LMX differentiation in a team that, in turn, leads to increased team performance. Researchers must acknowledge that agents
“external” to the dyad may affect how the exchange itself is perceived. Accordingly, we suggest social exchange and, specifically, LMX research, should account for the social influence stemming from key individuals, like surrogates, with whom each dyadic partners have the opportunity to interact with or closely observe into the conceptualization of contexts in which dyadic exchange takes place.

Moreover, by investigating the impact of surrogates on LMX differentiation through a social network perspective, we advance LMX theory to its fourth stage of development, as identified by Graen & Uhl-Bien (1995), in which LMX relationships are conceptualized as a system of relationships within a group or organization (Scandura, 1999). This approach provides insights into how leaders may benefit from, and avoid damages of the team network’s structure concerning LMX relationships. We show that depending on surrogates’ position, surrogates’ behaviors may be valuable or costly to perceptions of LMX differentiation and team outcomes, and consequently, to leadership efficiency. Empirical studies investigating LMX differentiation as a consequence of a larger network of relationships as well as a predictor of team-focused outcomes are still relatively scarce (Paik, 2016). Yet, by revealing surrogates’ prestige and brokerage as factors that can affect LMX differentiation and, also explaining how the configuration of team network may facilitate or hinders the impact of surrogates, our study has contributed to identifying potential antecedents of LMX differentiation, thus improving our understanding of the nomological network of LMX differentiation.

Finally, by identifying surrogates through a LMX-based measure, we both contribute to the emergent literature into the role of third-party individuals besides the leader in influencing distant follower perceptions of the leader (Wong & Boh, 2010; Galvin et al., 2010; Weber & Moore, 2013) and shed light on the role that third-party individuals with extraordinary LMX plays in other LMX relationships. To our knowledge, this is the first study that both operationalizes surrogates and integrates such idea into LMX research.

**PRACTICAL IMPLICATIONS**

Many leaders and organizations may view LMX evaluations as individual-level perceptions based exclusively on the quality of the real exchanges between the leader and the member. However, our findings indicate that the formation of such perceptions are more complex, and subject to be influenced by the social context (cf. Ho & Levesque,
2005), in particular, by social information cues given by key third parties (in our study, surrogates) within the team network (cf. Wong & Boh, 2010). Therefore, leaders and organizations need to be concerned not just with the dyadic relationship itself, but rather they should recognize the influence coming from the surrounding team context in which the relationship is embedded, especially considering that an increasing number of organizations have adopted team-based structures.

Findings suggest that it is valuable for leaders to have prestigious surrogates when the team network is sparse (members are distant each other). In this case, surrogates’ efforts to create a positive image of the leader and so, better and more homogeneous perceptions of LMX relationships, were even more important, as they could directly advice and shape the perceptions of a greater number of individuals who are not working together very closely, and probably, with insufficient information and understandings about leader actions and decisions. Surrogates with prestigious in a sparse team network means that surrogates are the “legitimate hot spot” for everyday advice for a lot of members. Hence, the surrogates’ prestige in such informal social structure can act as a leadership enhancer. Therefore, leaders may rely in them to effectively spread explanations, practices, justifications, expected behaviors and thus, prevent possible misattributions related to the LMX relationships.

On the other hand, the findings presented here also serve as a caution for leaders. Surrogates may, even unintentionally, undermine leader’s effectiveness by contributing for increased levels of LMX differentiation, which in turn impairs team performance. Surrogates who broker among subordinates signals latent power over team members, who could not identify with them and interpret their actions and behaviors with suspicions. It might be difficult to change surrogate’s social position in an already formed team network. Therefore, leaders should seek ways to neutralize the potential negative impact of surrogates who act as brokers. In short, surrogates’ position in the team social structure and the topological features of that social structure appear to jointly strengthen or undermine the leadership effectiveness, and thus, should receive closely attention from leaders as well as the organization.

LIMITATIONS AND FUTURE RESEARCH

Despite its strengths, the current study also has some potential limitations. One limitation of our study is its use of cross-sectional data, which limits our ability to draw
definitive conclusions about causality. Perceptions of LMX differentiation may cause changes in the surrogates’ position instead of the surrogates’ position influencing team members development of LMX perceptions and outcomes. However, we assume that ties precedes LMX perceptions as social ties (and the network structure) tend to stabilize quickly once the members are given opportunities to interact (Kossinets & Watts, 2006; Newcomb, 1961). LMX perceptions, in contrast, tend to develop as leader and team members work together over time, that is, LMX perceptions is a developmental process negotiated over time (Cropanzano & Mitchell, 2005; Venkataramani, Green & Schleicher, 2010; Graen & Uhl-Bien, 1995; Graen & Cashman, 1975; Bauer & Green, 1996; Maslyn & Uhl-Bien, 1995). Nevertheless, future research using a longitudinal design would allow for stronger statements about the direction of causality.

Given that our sample of 43 teams (even though it included more than 400 individuals) we did take necessary precautions to avoid Type II errors and at the same time conform to prevailing research standards. To avoid rejecting hypotheses that are potentially true, we used adjusted R2 and employed the bootstrap method (Wong, 2008) to test mediation as traditional approaches to mediation would not be sensitive to such a sample size (Preacher, & Hayes, 2008). However, we acknowledge we lost statistical power dropping a lot of teams in our sample (Barcikowski, 1981) due high levels of within-team non-response. It was assumed a trade-off between lower statistical power and higher the reliability of network measures. Prior research has documented that the average correlations between observed and actual network centrality measures tend to be higher than 60% when the within-group response rate is above 80% (Costenbader & Valente, 2003). Therefore, as the core premise of our model was based on network measurement, we choose to drop teams in which the within-group response rates was below 80%. Although the results obtained supported most of the study hypotheses and previous research have used even smaller samples when testing models similar to ours (e.g., Le Blanc & González-Romá, 2012; Balkundi et al., 2009) replications of these results with larger sample sizes would therefore be desirable.

Two other limitations are as follows. First, the data may be susceptible to common method variance as we asked team members to self-report their perceptions of LMX quality and team performance. Therefore, future studies can take additional steps to alleviate the concern of common method variance. For example, researchers can collect data on LMX differentiation by asking team leaders to evaluate their social exchanges with each team member. Future work can also use objective measures to assess team
performance. Second, the sample of teams used in our study was composed of only one type of team. This limits the generalizability of our results. It would be interesting to see if the results of this study can be generalized to the functioning of teams outside the health care setting.

Specifically regarding the brokerage concept, network scholars have recognized it encompasses distinct types of brokerage roles (Spiro, Acton & Butts, 2013; Gould & Fernandez, 1989). For example, a broker is called a *coordinator* if both the broker and the unconnected individuals broker bridges belong to the same subgroup while a broker is referred to as a *gatekeeper* when he/she belongs to the same subgroup of one of the parties involved in the brokerage. While we restrict ourselves to a more general view of surrogates’ brokerage, without investigate its underlying roles, exploring the surrogates’ brokerage types suggests potentially fruitful avenues for future work. For instance, surrogates brokering members from the same subgroup (e.g., two nurses) versus different groups (e.g., one nurse and one nursing technician) may have different influence over members’ perceptions. Moreover, future research also needs to explore the implications of other surrogates’ positions in the informal team networks, such as core periphery (Borgatti & Everett, 1999) or eigenvector centrality (Bonacich & Lloyd, 2001), for team members perceptions and outcomes. Future research could also explore how different types of ties, such as friendship or negative ties may enhance or weaken the surrogates’ influence. These different kind of ties may also have significant implications for surrogates behaviors and the influence they hold over other individual team members or the team as a whole (cf. Marineau, Labianca & Kane, 2016; Zagenczyk et al., 2015).

Some variables of potential relevance were not included in the present study. Any non-inclusion in this study was done to achieve research approval and an acceptable response rate, since as we said, response rate in social network research is critical. For example, although we were able to include leader gender and team size, team composition in terms of various forms of diversity is another team-level variable recommended by Henderson et al. (2009) in research of LMX differentiation. Likewise, individual characteristics have been documented to contribute to the formation, content of ties and structure of social networks (e.g., Totterdell, Holman & Hukin, 2008). Therefore, future research should attempt to include other control variables that could influence the main variables of the model.

In addition, the model and empirical test of this research were developed at the team-level and focused on structural patterns of teams. Future studies can take other
approaches, for example, multilevel perspective (Zappa & Lomi, 2015), to develop a more nuanced understanding of how network positions of surrogates and network structure affect individual members in teams.

REFERENCES


Chen, Y., Peterson, R. S., Phillips, D. J., Podolny, J. M., & Ridgeway, C. L. (2012). Introduction to the Special Issue: Bringing Status to the Table-Attaining,


Prepare(a) participante,

Você está participando de uma pesquisa da Fundação Getúlio Vargas sobre comportamento no trabalho. Para isso, você deverá responder as questões a seguir considerando suas atividades no trabalho e as relações com os membros de sua equipe e com o seu líder de plantão.

Não existe resposta certa ou errada e suas respostas serão tratadas de forma anônima e confidencial, isto é, em nenhum momento será divulgado o seu nome em qualquer fase do estudo. Os dados coletados serão utilizados apenas nesta pesquisa e serão analisados de maneira agregada.

Sua participação é voluntária, isto é, a qualquer momento você pode recusar-se a responder qualquer pergunta ou desistir de participar e retirar o seu consentimento. Sua recusa não trará nenhum prejuízo em sua relação com os pesquisadores, com a FGV, ou com qualquer outra instituição relacionada a esta pesquisa.

Não se espera riscos nem custos de qualquer natureza relacionados à sua participação. Os procedimentos dessa pesquisa estão de acordo com as normas éticas e científicas estabelecidas pela FGV.

O preenchimento leva em torno de 10 a 15 minutos e a pesquisa está dividida em três páginas.

Ao responder esse questionário você declara que concorda com os termos acima citados.

Desde já agradeço a sua participação.

Liliane Furtado.

Escola Brasileira de Administração Pública e de Empresas – EBAPE/FGV

Caso você tenha dificuldade ou dúvidas em relação à pesquisa, você pode entrar em contato com a pesquisadora responsável: Fundação Getúlio Vargas – Praia de Botafogo, 190. Rio de Janeiro – RJ, 5º Andar. E-mail: pesquisa.upa@gmail.com
QUESTIONÁRIO PARA MEMBROS DAS EQUIPES

Para responder esse questionário, pense no seu dia a dia, nas suas atividades no trabalho e as relações com os membros de sua equipe e no seu líder de plantão.

Utilizando a escala abaixo (1 a 5), assinale o quanto você concorda com cada uma das afirmativas:

1 = Discordo Totalmente; 2 = Discordo; 3 = Nem discordo nem concordo; 4 = Concordo; 5 = Concordo Totalmente

1. Sinto-me seguro para fazer sugestões no trabalho. 1 2 3 4 5
2. Eu tenho tanta confiança no líder do plantão que eu o defenderia e justificaria suas decisões perante outras pessoas se ele não estivesse presente para fazer isso. 1 2 3 4 5
3. Sinto-me livre para dar minhas opiniões em relação ao trabalho. 1 2 3 4 5
4. O líder do plantão não reconhece meu potencial. 1 2 3 4 5
5. O líder do plantão me “salvaria” de algum problema no trabalho (caso tivesse autoridade para isso), mesmo significando assumir o problema para ele. 1 2 3 4 5
6. Eu admiro minha equipe de trabalho. 1 2 3 4 5
7. O líder do plantão entende meus problemas e minhas necessidades. 1 2 3 4 5
8. Eu já estive em todos os países do mundo. 1 2 3 4 5
9. Eu não tenho um sentimento de pertencimento a minha equipe de trabalho. 1 2 3 4 5
10. Tenho segurança para falar sobre qualquer coisa no trabalho. 1 2 3 4 5
11. Eu costumo saber se o líder do plantão fica satisfeito com o que eu faço. 1 2 3 4 5
12. Sinto-me feliz em trabalhar com as pessoas do meu plantão. 1 2 3 4 5
13. Se for necessário, o líder do plantão usa da autoridade que tem (independente de quanto é essa autoridade) para me ajudar a resolver meus problemas no trabalho. 1 2 3 4 5
14. Dada a escala abaixo, eu caracterizo minha relação de trabalho com o líder do plantão como sendo:

| Muito ruim | Ruim | Nem boa nem ruim | Boa | Muito boa |

Dados demográficos

Idade (em anos): __________ anos

Qual seu gênero: __________ Feminino __________ Masculino

Estado Civil: __________ Solteiro(a) __________ Casado(a) __________ Separado(a) __________ Divorciado(a) __________ Viúvo(a)

Nome: __________________________________________________________

Reforçamos que esse questionário será tratado de forma confidencial e analisado de maneira agregada.

Muito obrigado pela sua participação!
APPENDIX B

Paper 2 Questionnaire – Members’ survey

QUESTIONÁRIO PARA MEMBROS DAS EQUIPES

Para responder esse questionário, pense no seu dia a dia, nas suas atividades no trabalho e as relações com os membros de sua equipe e no seu líder de plantão.

Utilizando a escala abaixo (1 a 5), assinale o quanto você concorda com cada uma das afirmativas:
1 = Discordo Totalmente; 2 = Discordo; 3 = Nem discordo nem concordo; 4 = Concordo; 5 = Concordo Totalmente

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1.</td>
<td>Eu tenho tanta confiança no líder do plantão que eu o defenderia e justificaria suas decisões perante outras pessoas se ele não estivesse presente para fazer isso.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>2.</td>
<td>Eu tenho que trabalhar em parceria com meus colegas para fazer meu trabalho bem feito.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>3.</td>
<td>Toda a minha equipe está envolvida no desenvolvimento de planos para melhoria da qualidade do serviço que prestamos.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>4.</td>
<td>O líder do plantão não reconhece meu potencial.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>5.</td>
<td>Os membros da minha equipe agem de forma consistente com os valores que são relevantes para garantir a qualidade e melhoria contínua do serviço prestado.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>6.</td>
<td>O líder do plantão me “salvaria” de algum problema no trabalho (caso tivesse autoridade para isso), mesmo significando assumir o problema para ele.</td>
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<td>7.</td>
<td>O líder do plantão entende meus problemas e minhas necessidades.</td>
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<td>8.</td>
<td>Eu dependo dos meus colegas para completar meu trabalho.</td>
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<td>9.</td>
<td>Minha equipe recebe treinamentos sobre como identificar oportunidades e agir para melhoria da qualidade do serviço que prestamos..</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>10.</td>
<td>Minha equipe busca conhecer as necessidades e expectativas dos pacientes atendidos para com isso melhorar a qualidade dos serviços prestados.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>11.</td>
<td>Eu costumo saber se o líder do plantão fica satisfeito com o que eu faço.</td>
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<td>12.</td>
<td>Eu preciso obter informação e recomendação dos meus colegas a fim de completar meu trabalho.</td>
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<td>13.</td>
<td>Se for necessário, o líder do plantão usa da autoridade que tem (independente de quanto é essa autoridade) para me ajudar a resolver meus problemas no trabalho.</td>
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<td>14.</td>
<td>Dada a escala abaixo, eu caracterizo minha relação de trabalho com o líder do plantão como sendo:</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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</tbody>
</table>

☐ Muito ruim ☐ Ruim ☐ Nem boa nem ruim ☐ Boa ☐ Muito boa
Para responder as duas questões a seguir, caso necessário, use a lista em anexo com os nomes e sobrenomes das pessoas do seu plantão para ajudá-lo.

Mencione no mínimo 5 nomes e no máximo 10. Ao lado, assinale a intensidade da sua relação com a pessoa mencionada, sendo 1 baixa, 2 média e 3 alta.

A - Indique as principais pessoas (da sua equipe ou não) com as quais você discute o que está acontecendo na organização e que você aborda quando tem um problema relacionado ao trabalho.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>Exemplo: Maria Silva (Plantão 3)</td>
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</table>

B - Indique as pessoas que você vê como aliado/parceiro e que você discute assuntos não relacionados ao ambiente de trabalho.

<table>
<thead>
<tr>
<th>1</th>
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<tbody>
<tr>
<td>Exemplo: José Souza (Plantão 5)</td>
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</table>

Dados demográficos

Idade (em anos): anos

Qual seu gênero: ☐ Feminino ☐ Masculino

Estado Civil: ☐ Solteiro(a) ☐ Casado(a) ☐ Separado(a) ☐ Divorciado(a) ☐ Viúvo(a)

Nome: ____________________________________________

Reforçamos que esse questionário será tratado de forma confidencial e analisado de maneira agregada.

Muito obrigado pela sua participação!