Cross-Level Effects of Affective Climate on Leader-Member Exchange,
Workplace Friendship and Team-Member Exchange

Herman H. M. Tse
UQ Business School
University of Queensland
St Lucia, QLD 4072, Australia
Email: h.tse@business.uq.edu.au

Marie T. Dasborough
William Spears School of Business
Oklahoma State University
Stillwater, Oklahoma 74078-4011, USA
Email: m.dasborough@okstate.edu

Neal M. Ashkanasy
UQ Business School
University of Queensland
St Lucia, QLD 4072, Australia
Email: n.ashkanasy@bel.uq.edu.au

ABSTRACT

The present study advances the research on interpersonal exchange relationships by integrating social exchange, workplace friendship and climate research to develop a multilevel model. We tested the model with data obtained from a sample of 215 manager-employee dyads working in 36 teams using hierarchical linear modelling (HLM). At the individual level, LMX was positively associated with workplace friendship. Further, workplace friendship was positively related to TMX, and mediated the LMX-TMX relationship. At the team level, HLM results indicate that the relationship between LMX and workplace friendship was moderated by affective climate. Findings suggest that high-quality LMX relationships are associated with enhanced workplace friendship between employees, especially when affective group climate is strong and positive.

(114 words)

Keywords: Leader Member Exchange (LMX), Team Member Exchange (TMX), Work friendship, Friendship, Affective Climate
**Cross-Level Effects of Affective Climate on Leader-Member Exchange, Workplace Friendship and Team-Member Exchange**

Considerable research attention has been devoted to understanding the implications of leader-member exchange (LMX) theory over the last twenty-five years (see Graen & Uhl-Bien, 1995, for a review). LMX theorists focus on differentiated exchange relationships that leaders develop and maintain with subordinates within work teams (Dansereau, Graen, & Haga, 1975). The evidence from this research has demonstrated that LMX substantially influences employees’ organisational commitment, job satisfaction, task performance, citizenship behaviour, and turnover intentions (e.g., see Gerstner & Day, 1997; Janssen & Van Yperen, 2004). Nonetheless, there is an important omission in LMX research; namely, how does LMX influence people outside of those dyadic relationships (Sias & Jablin, 1995)?

Sparrowe and Liden (1997) suggest that interpersonal relationships between leaders, subordinates, and co-workers are interconnected to constitute a larger social system that operates in teams and organisations. Based on system perspective, Graen and Uhl-Bien (1995) call for more research to understand how the LMX dyadic relationships affect employees’ work attitudes and behaviours in larger collectives of workgroups. This is because LMX is not only influenced by, but may also influence other exchange relationships within the larger system. Therefore, LMX may have implications for team member exchange (TMX), defined by Seers (1989) as the relationship quality between an individual and her or his team members.

Leaders often develop high-quality LMX relationships with only a few subordinates because of limited time and resources (e.g., Dienesch & Liden, 1986). Differential treatment of employees in teams appears problematic, however, because employees can be sensitive to social comparison information. Moreover, perceptions of unfairness and altered self-concept may affect employees’ attitudes towards TMX. Our reasoning here is that LMX relationships determine how supervisors of
teams will distribute resources, work-related information and psychological support, and the relative advantages are only offered to team members in high-quality LMX relationships. Team members in low-quality LMX relationships often receive less supervisory attention, less accessibility to organisational resources, less empowerment, potentially leading to their job dissatisfaction, and lower organisational commitment (Gerstner & Day, 1997). Hence, these team members may be jealous of their co-workers in more beneficial high-quality LMX relationships.

Individuals in high-quality TMX relationships are more likely to contribute more by assisting each other and to share information, ideas and feedback within work teams (e.g. Seers et al., 1995). Hence, interpersonal relationships may play a pivotal role in effective team functioning because the relationships facilitate behaviours that maximise team efficiency and effectiveness. Based on this, understanding the processes whereby dyadic LMX relationships influence employees’ perceptions of TMX relationships therefore is an important, yet neglected aspect of the social exchange literature (e.g., Graen & Uhl-Bien, 1995; Seers et al., 1995).

In the present study, we set out to advance research on interpersonal exchange relationships in two ways. First, we examine the impacts of dyadic LMX relationships within a larger system of workgroups. Specifically, we develop and test a model that specifies the relationship between LMX, workplace friendship, affective climate and TMX within a team context. Second, in the spirit of the growing body of research on multilevel models of leader-member exchange (e.g., Cogliser & Schriesheim, 2000), we aim to integrate individual and team levels by investigating cross-level interaction effects. Specifically, we conceptualise and define affective climate as a team-level construct for cross-level analysis.
HYPOTHESES DEVELOPMENT

LMX and Workplace Friendship

Wright (1984) defined *workplace friendship* is a relationship involving voluntary or unconstrained interaction, where interactants to respond to one another personally as unique individuals rather than as just organisational role occupants. According to Winstead, Derlega, Montgomery, and Pilkington (1995), two criteria for workplace friendship are: 1) the degree of mutual concern and interest that partners show for one another as being unique and irreplaceable; and 2) voluntary interdependence which reflects the intensity that the relationship partners commit free time to interacting with one another in the absence of constraints or pressures that are external to the relationship itself. These characteristics conceptually distinguish workplace friendship from other dyadic relationships (i.e., supervisor-subordinate and team member relationships).

Given the nature of social networks, we argue that LMX relationships may influence how employees approach friendships at work. High-quality LMX relationships are characterised by mutual trust, respect commitment, and influence (Graen, & Uhl-Bien, 1995). We argue that employees who enjoy high-quality LMX relationships are more likely to stress friendship development at work; this is because they have experienced affective bonding in the exchange process and are aware of the associated benefits. Furthermore, a high-quality LMX relationship can create and communicate a shared identity or value through the ongoing interactions. This serves as a platform upon which employees can experience strong emotional attachment with each other (Ellemers, de Gilder, & Haslam, 2004), enhancing friendship formation at work.

Similarly, Mueller and Lee (2002) demonstrated that followers in high-quality LMX relationships enjoy greater openness and frequency in communication, cooperative and receptive information sharing, and person-oriented message exchanges that determine their communication satisfaction. Based on this, we expect that the quality of LMX relationships should be perceived by employees as valuable sources of emotional and instrumental motivation that increase the likelihood
of workplace friendship development. This further implies that LMX relationships play an important role in determining employees’ perceptions of workplace friendship in organisations. Thus, we hypothesise:

Hypothesis 1: LMX will be positively related to workplace friendship.

**Workplace Friendship and TMX**

TMX focuses on an individual’s willingness to assist other members, to share ideas and feedback and, in turn, to provide information to other members and to receive recognition from other members (Seers et al., 1995). We argue that these social exchanges would be aided by the presence of friendships between team members. With respect to the effect of workplace friendship on TMX, friendships create social ties and affective bonding, enabling team members to experience relational meanings about their interpersonal relationships, including TMX. This assists with functions such as decision making, influence-sharing, and provides an instrumental and emotional support system for team members. Hence, friendship is an important source of support and intrinsic reward for team members (Sias & Cahill, 1998).

Workplace friendship nourishes high-quality TMX relationships because team members can trust and value with each other, share interests, and view the emotional and instrumental support as valuable means of growth and dependence (Berman, West, & Richter, 2002). This serves as a motivational force to engage in high-quality TMX relationship development (i.e., they see their team members as friends rather than formal colleagues). Evidence supporting this claim can be found in an empirical study by Morrison (2004) who found that workplace friendship accounted for substantial variance in team cohesion. Based on this, we suggest that workplace friendship may be a necessary condition for, and is conductive to, the formation of high-quality TMX. Thus:

Hypothesis 2: Workplace friendship will be positively related to TMX.
The LMX-TMX Relationship and the Mediating Role of Workplace Friendship

Kramer (1995) and Sias and Jablin (1995) have shown that high-quality LMX relationships enhance the status of team members within their team, and thus also influence the way team members develop and maintain relationships with their team members. In this respect, Sherony and Green (2002) found in particular that co-workers’ relationship was a function of their individual LMX relationships with their supervisor. It follows therefore that LMX should be related to TMX.

Friendships developed within the workplace also represent a key element of the organisational informal social system, and may offer significant rewarding benefits to individuals (Morrison, 2004). This is because friendships emphasise discretionary attitudes and behaviours that not are pre-specified for an expected role within interpersonal relationships (Wright, 1984). Sias (2005) also suggests that co-workers who are friends at work communicate more intimately. Friendly co-workers also tend to be less cautious and engage in less “editing” of their communication with others (Sias & Jablin, 1995). We therefore conceptualise workplace friendship as an intermediate interpersonal mechanism that may link supervisor-subordinate and team member exchange relationships.

Hypothesis 3a: LMX will be positively related to TMX.

Hypothesis 3b: Workplace friendship will mediate the LMX-TMX relationship.

Affective Group Climate as a Moderator

Affective climate is an objective group phenomenon that can be palpably sensed (De Rivera, 1992). It is an overall interaction pattern or a shared positive perception among members, and the atmosphere that characterise interactions within a team (Choi, Price, & Vinokur, 2003). These represent “ambient stimuli” reflecting the nature of the team and are important because they can shape an action tendency of individuals within the team. Although climate perceptions originate within individuals, affective group climate perceptions are shared by members of the same team because of social processes within the team. For example, members of the same team report to the same manager, experience increased interactions due to close proximity, and are exposed to the same goals and work
environment. Hence, there is stronger homogeneity of climate perceptions among team members within teams and greater variation across teams (Seibert, Silver, & Randolph, 2004). Employees seek guidelines from their environment to interpret events, develop appropriate attitudes, and understand expectations concerning their behaviours and its consequences (Salancik & Pfeffer, 1978). If an affective group climate is perceived as being warm, supporting, accepting, sincere and enthusiastic, this serves as a social control mechanism to facilitate employees’ behaviours in a team (O’Relly & Chatman, 1996). Therefore, if team members share a strong perception of affective group climate, they may feel more motivated to develop workplace friendships because of their positive experience in high-quality LMX relationships. On the other hand, if the team fails to create a strong shared perception of affective group climate, members would feel less committed to the formation of workplace friendship in part, motivated by high-quality LMX relationships. On this basis, we argue that affective climate is a relevant moderator of LMX-workplace friendship relationship, and the relationship is a function of the affective group climate across work teams. Thus:

Hypothesis 4: The relationship between LMX and workplace friendship will be moderated by affective group climate such that the relationship between LMX and workplace friendship will be stronger when the affective group climate is strong.

METHOD
Sample and Procedure

Participants were employees and their immediate managers in local branches of a large Australian banking organisation. Most of the branches consisted of ten to twelve employees (N = 10). Each employee in these branches directly reports the progress of their job to their manager on a daily basis. To ensure adequate development of exchange relationships, we excluded from our sample branch managers who had been in their positions for less than 6 months, and employees who had been in their branch for less than 3 months.
Two forms of questionnaires were distributed. A self-report questionnaire measured employees’ perceptions of affective group climate, workplace friendship and TMX; while a manager-report questionnaire contained measured managers’ perceptions of LMX for each employee within the branch. Out of the 65 manager questionnaires and 682 employee questionnaires distributed, 45 manager questionnaires (69% response rate) and 375 employee questionnaires (55% response rate) were returned. After excluding incomplete questionnaires and those failing to match with a manager within each branch, the sample comprised of 215 manager-employee dyads from 36 local branches.

Eighty-four percent of the managers were women; 71% were aged 45 years or below; 86% had secondary education qualifications or above. On average, the managers had been employed in the organisation for 14 years, and had worked in their present position for 3.8 years. Among the employees in the sample, 89% were women, 81% were aged 45 years or below; and 70% had a secondary education qualification or above. They had been employed in the organisation for 2.8 years on average.

**Measures**

*Leader-member exchange.* We used the LMX-7 scale (Graen & Uhl-Bien, 1995) to measure the relationship quality between branch managers and their employees. The seven items characterise various aspects of the working relationship between a supervisor and a subordinate. LMX data was collected from the managers, and was measured using a five-point scale, which ranged from 1 (Not at all) to 5 (Extremely). The alpha for this scale was .87.

*Workplace friendship.* We used six items developed by Nielsen, Jex, and Adams (2000) to measure prevalence of workplace friendship. Responses to the items were on a seven-point scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). Sample items include: “I have formed strong friendships at work,” “I socialise with co-workers outside of the workplace,” “I do not feel that anyone I work with is a true friend.” The alpha for this scale was .80.
Team member exchange. The ten-item TMX scale developed by Seers et al., (1995) was used to measure the perception of the reciprocal exchange relationship between an individual employee and her or his team members (co-workers). Responses were on a seven-point scale that ranged from 1 (Strongly disagree) to 7 (Strongly agree). Sample items include: “In busy situations, other team members often volunteer to help me out,” and “I am willing to help finish work that has been given to other members in my team.” The alpha for this scale was .83.

Affective group climate. This was measured using a 5-item positive group perception scale developed by Choi, Price, and Vinoku (2003), modified for the specific branch context. Employees responded on a five-point scale ranging from 1 (Not at all) to 5 (Extremely). Sample items include: “In general how enthusiastic do you think your branch is?” and “In general, how supportive do you think you branch is”. The alpha for this scale was .92.

ANALYSIS OF MULTILEVEL DATA

The purpose of this study was to explore how affective group climate influences the relationship between individual level variables, so it is necessary to justify why affective group climate can be aggregated as a group-level construct. To determine the degree to which individuals’ perceptions of affective group climate were shared within each of the 36 work teams, we performed an ANOVA to examine between-group variations in affective group climate perceptions and computed the intraclass (ICC) correlation values, reflecting the within-group agreement of the construct (Bliese, 2000; Hofmann, 1997). In addition to ICC, we also conducted rwg test to assess the level of inter-rater agreement of group climate within teams. The higher the value of rwg , the stronger within group agreement of the construct is reflected (James, Demaree, & Wolf, 1984). As a rule of thumb, an rwg above .70 is desirable.

Hierarchical linear modelling (HLM) in conjunction with mediation testing procedures outlined by Kenny, Kashy, and Bolger (1998) were used to test our hypotheses. HLM allows analysis of multiple levels simultaneously, and enables examination of interactions between variables at
different levels of analysis while accounting for their different sources of variance (Hofmann, Griffin, & Gavin, 2000).

**RESULTS**

*Measurement Model*

CFA using AMOS was used to determine the validity of our hypothesised measurement model. Results of chi-square and fit indices were $\chi^2 = 891.60$, $df = 344$; RMSEA = .08; CFI = .97 and TLI = .97. We compared the fit of our hypothesised four-factor measurement model in which (i.e., LMX, group climate, workplace friendship and TMX) were expected to load on their respective factors with other plausible alternative models (e.g., LMX and TMX were set to load on a one-factor model or workplace friendship and TMX were set to load on one-factor model). Results were that the hypothesised four-factor model fit the data significantly better than the alternative models.

*Justification for Group Climate Aggregation*

To justify the appropriateness of aggregating affective group climate as a group-level construct, it is necessary to evaluate both between-group variability and within group agreement (Hofmann, 1997). Results of ANOVA showed that the between group variance in group climate was significantly different zero ($F(35, 179) = 3.33, p < .01$). The ICC (1) derived from ANOVA was .28, and ICC (2) was .75, which provides sufficient evidence for between group variability. In addition, the average $rwg$ of group climate across 36 teams was .90, which also supports its within group agreement. Thus, group climate as measured by individual perceptions was able to be aggregated as a group-level construct for subsequent analyses.

*Descriptive Statistics*

All major independent and dependent variables were significantly and positively correlated. As can be seen in Table 1, and consistent with our hypotheses, LMX was positively related to workplace friendship ($r = .24, p < .01$) and TMX ($r = .32, p < .01$). Workplace friendship was positively
associated with TMX \( (r = .55, p<.01) \). These results provide initial evidence for Hypotheses 1 to 3a, and also support three conditions for testing mediation (H3b) using the Baron and Kenny (1986) approach, because there was a significant relationship between LMX, workplace friendship and TMX. These correlation results, however, did not take into account the multilevel nature of data; we therefore turn to HLM analyses.

**Test of Hypotheses**

Before testing the hypotheses, we first needed to run a null model in order to examine whether there was significantly systematic between-group variance in TMX. The results provide support for significant within-group variation in TMX \( (\tau = .09, \chi^2 (35) = 70.45, p<.01) \), and ICC (1) was .14. This tells us that 14 percent of the variance in TMX resides between branches, so it was justifiable for cross-level analyses (Snijders & Bosker, 1999).

Results of the HLM analysis showed that LMX had a significant positive relationship with workplace friendship \( (\gamma = .48, t = 3.47 \; p < .01 \; R^2 = .07) \) and TMX \( (\gamma = .39, t = 4.16 \; p < .01 \; R^2 = .08) \) respectively, after accounting for the control variables. Thus, Hypotheses 1 and 3a were supported. Also, as we predicted in Hypothesis 2, results revealed that workplace friendship was positively associated with TMX \( (\gamma = .47, t = 7.04 \; p < .01, R^2 = .09) \).

Given the correlations and the above HLM results providing evidence for Hypotheses 1 to 3a, the first three conditions of mediation testing were supported (Baron & Kenny, 1986). The final step for testing mediation was regressing TMX on the controls (Step 1), LMX (Step 2), and workplace friendship (Step 3). Workplace friendship had a positive relationship with TMX \( (\gamma = .44, t = 6.15 \; p < .01) \), and the main effect of LMX on TMX was non-significant \( (\gamma = .17, t = 1.82 \; p > .05) \), when workplace friendship was entered as a mediator. The overall \( R^2 \) of this mediation test is .43. Therefore, Hypothesis 3b was supported because workplace friendship fully mediated the relationship between LMX and TMX.
In testing Hypothesis 4, we examined whether group climate will moderate the relationship between LMX and workplace friendship. We ran another null model to determine whether the moderation effect of affective group climate on LMX-workplace friendship relationship was due to the cross-interaction of group climate or because of between-group interaction of group climate and LMX (see Hofmann, 1997). Results provide support for significant within-group variation in LMX ($\tau_w = .13$, $\chi^2 (35) = 164.97$, $p<.01$), and ICC (1) was .38 which indicated that 38 percent of the variance in LMX resided between branches, providing initial evidence for cross-level interaction effects.

In addition, we added the group-mean LMX and the interaction term of group-mean LMX and affective group climate as predictors of the intercept, and entered affective group climate as predictor of the variance in the slopes relating LMX to workplace friendship. Results showed that the cross-level interactions between affective group climate and LMX on workplace friendship remained significant ($\gamma_{11} = .43$, $t = 3.49$ $p < .05$), suggesting that observed findings were not spurious (Hofmann & Gavin, 1998).

**FIGURE 1: Group Climate as a Moderator of the LMX-Friendship Association**
To understand the nature of the significant cross-level interaction, the high and low values of the independent variables were substituted in the regression equation (Cohen et al., 2003) and the interaction effect was plotted on the graph in Figure 1. Consistent with Hypothesis 4, the relationship between LMX and workplace friendship was strong and positive in teams when the team had a strong affective climate. Further, the relationship was relatively weaker when the team had a weak affective climate. This interpretation suggests that the within-group relationship between LMX and workplace friendship changes as a function of between group differences in affective group climate. Therefore, Hypothesis 4 was also supported.

**DISCUSSION AND CONCLUSION**

The results of this study provide evidence confirming the hypothesised relationships between LMX, workplace friendship and TMX, and support our hypothesis that workplace friendship mediates the relationship at the individual level. We further note that the individual-level relationship between LMX and workplace friendship was moderated by affective group climate across teams.

Our findings contribute to the literature on interpersonal exchange relationships in teams in three ways. First, although there have been calls to study LMX and TMX in social exchange literature, this has not been made theoretically explicit nor empirically tested in a systematic manner (Sias & Jablin 1995). Our study addresses this issue by integrating macro and micro perspectives of interpersonal exchange relationships in teams. We have shown that workplace friendship mediates the LMX-TMX relationship. Our results also indicate that affective group climate moderates the relationship between LMX and workplace friendship.

Second, our findings shed new light on the mediating role of workplace friendship in LMX-TMX relationship. Workplace friendship researchers, such as Berman and his colleagues (2002) suggest that friendship can constitute and facilitate a social system in organisations by linking formal, informal vertical and lateral interpersonal relationships. To date, research on workplace friendship has
focused on identifying individual and contextual factors that influence the development of such relationships (Sias & Cahill, 1998). In this study, we addressed both issues by exploring the role of workplace friendship influencing LMX and TMX relationships in order to understand the antecedents and consequences, and the mediating effects of workplace friendship within interpersonal exchange processes.

Finally, we developed affective climate in organisations as a group-level construct conceptualised as a shared positive perception among members and the atmosphere that characterise interactions within a team (Choi et al., 2003). Furthermore, we conceptualised it as a team-level moderator to buffer the relationship between LMX and workplace friendship. Specifically, in a team where there was a strong positive affective climate, individuals experiencing high-quality LMX relationships were more likely to develop friendship at work. When the affective climate was weak in the team, even employees experienced high-quality LMX relationships, they were less likely to form friendship at work. The added value of this study is therefore to explicate affective group climate as a mechanism moderating the relationship between LMX and workplace friendship.

The results of this study also have two important practical implications. First, the present study builds in particular upon the notion that LMX can impact the development of TMX through workplace friendship aroused in the high-quality supervisor and subordinate interactions. In particular affective climate acts as a catalyst to moderate the relationship between LMX and workplace friendship within teams. An implication of this, as Ashkanasy and Daus (2002) have noted, fostering healthily affective group climate helps employees understand that they are not in isolation from other co-workers in teams because the group climate would affect how they interpret, experience and expect the characteristics of high-quality LMX relationships. This in turn, determines their attitudes and behaviors towards workplace friendship development. Hence, organizations can promote a healthy affective group climate as a mechanism to guide and educate their employees as to how the organization cares about their emotional well-being, and to foster their positive emotions among
employees at work. In addition, our findings reveal that high-quality LMX relationship is a driving force to the formation of workplace friendships which in turn, determine the quality of TMX in teams. Specifically, supervisors need pay attention to their subordinates’ perceptions of the relationship characteristics and reciprocate in ways that meet their expectations.

In conclusion, the present study contributes to the research on interpersonal exchange relationships by developing and testing a multilevel model in which includes workplace friendship mediating the LMX-TMX relationship at the individual level, and affective group climate moderating the LMX-workplace friendship relationship. Overall, the results of this study provide support for all hypothesised relationships. We hope that our findings stimulate researchers to pay closer attention to the relationship between LMX and TMX in future, with an attempt to explore other possible mediating and moderating variables within the larger social network for teams and organisation.

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