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**A LONGITUDINAL STUDY ON THE INTERPERSONAL DYNAMICS OF
LEADER-MEMBER EXCHANGE DEVELOPMENT**

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ABSTRACT

The present study sought to offer a unique perspective on the development of dyadic (supervisor-subordinate) relationship quality by drawing upon social exchange theory and bringing together LMX, diversity, and interpersonal interaction theories. Based on these related theories and evidence in the literature, the processes of LMX development were predicted to be a function of the temporal focus (i.e., initial versus trajectory) and the nature of attributes being investigated (i.e., similarity versus complementarity effects), such that: a) both similarity and dissimilarity can be important and in ways that will correspond with the norms of social exchange, and b) demographic variables will be more important for predicting initial LMX quality, whereas psychological variables will be more influential in the prediction of trajectory in LMX. Three waves of data were collected from 46 pairs of new hires and their direct supervisors employed in a national law enforcement agency in Asia. While the hypothesized relationships were not supported, an emergent theme from the findings suggests that subordinates have better or seek to develop better exchange relationships with supervisors who are powerful, as indicated by both their majority status (i.e., race and gender) and trait dominance. In addition, supplementary analyses were conducted to examine the lack of agreement between supervisors' and subordinates' LMX ratings. Implications for LMX theory and research are discussed.

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CHAPTER 1
INTRODUCTION

One of the most ubiquitous phenomena in organizational life is that some people appear to have greater rapport and closer relationships with their supervisors than others. Indeed, research on supervisor-subordinate relationships have shown convincingly that the prior leadership perspective, Average Leadership Style, which suggests leaders behave consistently towards all subordinates is incorrect (Dansereau, Graen, & Haga, 1975; Graen, 1976; Graen, Cashman, Ginsburgh, & Schiemann, 1977). Instead, leaders form differential relationships with their subordinates (Vertical Dyad Linkage; Liden & Graen, 1980), usually referred to as in-group and out-group members in earlier research (e.g., Dansereau et al., 1975; Heneman, Greenberger, & Anonyou, 1989).

Subsequent research shifted the nomenclature from vertical dyad linkage to leader-member exchange (LMX). Rather than being dichotomous, quality of exchange between supervisor and subordinate ranged from low to high (Dienesch & Liden, 1986; Graen, Novak, & Sommerkamp, 1982). Essentially, high-quality LMX is characterized by a high degree of mutual trust, respect, and obligation, while low-quality LMX is characterized by low levels of the same variables (Graen & Uhl-Bien, 1995). More importantly, there has been a great deal of research evidence documenting the positive relationships between LMX and various organizational variables, such as job satisfaction (e.g., Graen et al., 1982), organizational commitment (e.g., Seers & Graen, 1984), supervisory performance evaluations (e.g., Duarte, Goodson, & Klich, 1994; Janssen & Van Yperen, 2004), and objective sales performance (e.g., Klein & Kim, 1998). Gerstner and Day (1997) provide a more detailed discussion, along with meta-analytic estimates of the correlates of LMX.

In spite of the fact that differential quality of leader-member exchange is prevalent, and that LMX is related to several important organizational outcomes, there has been relatively little

research on the prediction of LMX quality (for exceptions, see Bauer & Green, 1996; Duchon, Green, & Taber, 1986; Green, Anderson, & Shivers, 1996; Liden, Wayne, & Stilwell, 1993; McCrane, 1991). The purpose of the present paper is to draw upon social exchange theory and bring together LMX, diversity, and interpersonal interaction theories to offer a unique perspective on the development of dyadic (supervisor-subordinate) relationship quality.

Development of LMX over Time

Graen and colleagues suggest that a high-quality LMX develops across three distinct stages (Graen & Uhl-Bien, 1995; Graen & Wakabayashi, 1994). The first of these is the *stranger* stage, where the LMX relationship is characterized by contractual transactions. The leader generally specifies the tasks he or she wants subordinates to accomplish, and subordinates will (typically) meet only the minimum requirements that their job demands. As the relationship progresses to the *acquaintance* stage, leaders and followers may begin to share greater amount of information and resources on a personal and professional level. As mutual trust and respect develop, the relationship may progress to the *mature partnership* stage. At this point, the relationship includes both behavioral and emotional exchanges, and it is characterized by loyalty, support, mutual obligation, and respect. Operationally, the three stages correspond with low, moderate, and high level of LMX quality.

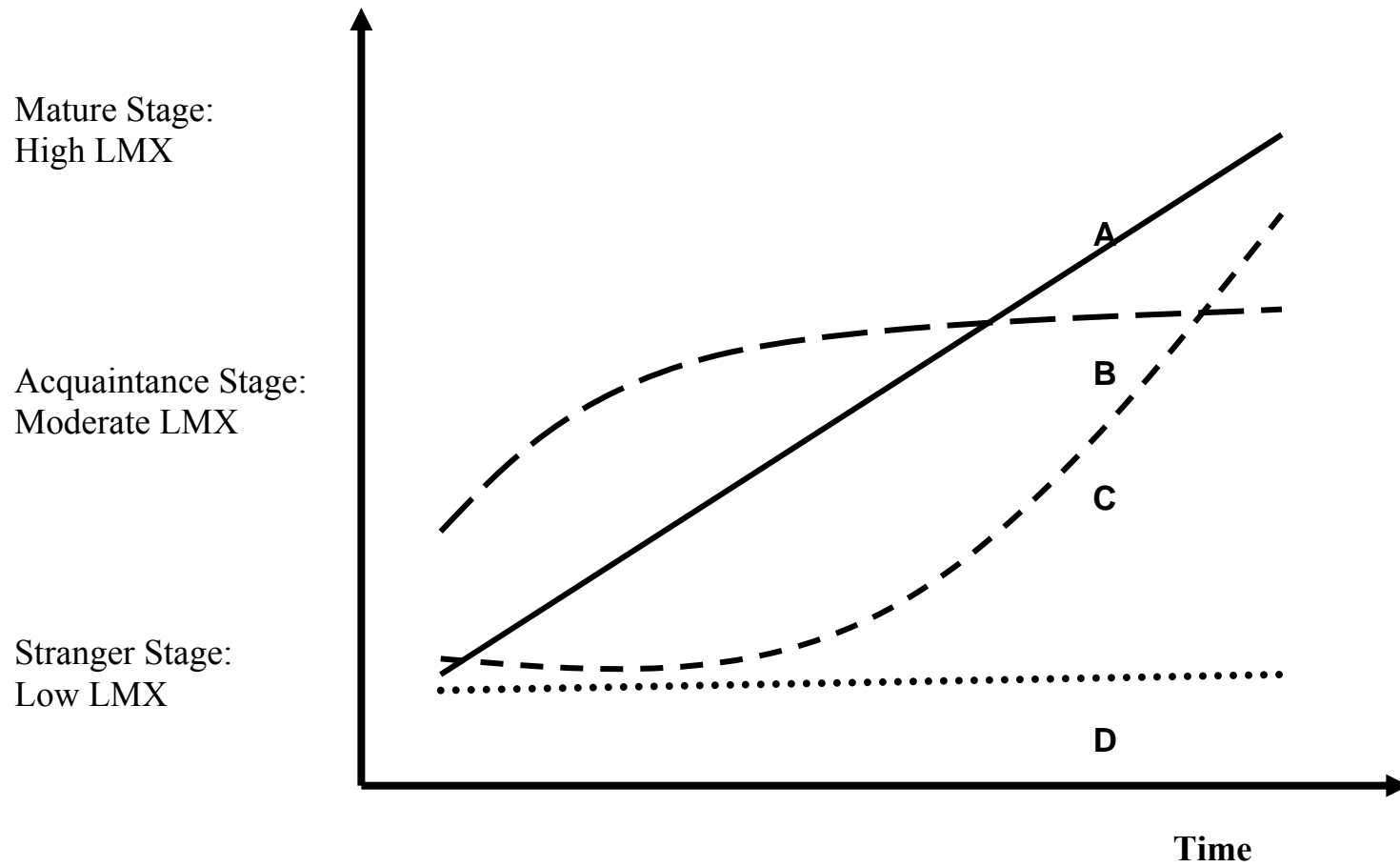
Kelman (2006) provided a review regarding the ways in which individuals negotiate their social environment. Specifically, he explicated the three processes of social influence: compliance, identification, and internalization. Compliance occurs when an individual is influenced by another to get a positive reaction from the other. This reaction could be in the form of a reward or approval, or in the form of punishment or disapproval. Identification occurs when

an individual allows influence from another to establish or develop a successful and satisfying relationship. This relationship could be based on reciprocity, where both parties try to meet the other's expectations for their role, or based on modeling, where one person tries to be like the other person. Finally, internalization occurs when an individual is influenced by another in a way that is consistent with their own beliefs and value system. This may occur in the form of cognitive consistency or affective appropriateness.

Though not the direct focus of the current study, these three processes of social influence seem to parallel the three stages of LMX development. That is, at the stranger stage, influence will be in accordance with the process of compliance as the relationship between the supervisors and subordinates are largely contractual and driven by the members' goal to attain rewards (e.g., recognition, praise) and to avoid punishments (e.g., reprimand, poor performance evaluations). The leaders' source of power is based on their ability to supply and withhold resources that the members need. Next, at the acquaintance stage, the process of influence will move towards identification as the supervisors and subordinates are developing and delineating the role requirements in their relationships. At this stage, the source of power is based largely on mutual liking and the desire to enhance the quality of relationships. Finally, at the mature stage, the basis of influence would be the process of internalization as both leaders and members have developed (or gravitate towards) congruent value and belief systems. At this stage, the source of power is based on mutual trust.

Given the three-staged descriptive model of LMX development, one might envision the progression of LMX quality from stranger to mature stage to unfold gradually over time (as depicted by line A in Figure 1). While that might be the case for some dyads, not every dyad will conform to this pattern of LMX development. In fact, research has shown that there is

Figure 1. A heuristic depiction of LMX development over time.



reasonable degree of variability in LMX quality even at the relatively early stage of relationship formation (e.g., week two in Liden et al., 1993). In other words, some supervisor-subordinate dyads seem to have “a special chemistry” for each other and are able to strike it off well very quickly. In these cases, the relationship quality transitions from the stranger (low LMX) to acquaintance (moderate LMX) stage rapidly (as depicted by Line B in Fig. 1). On the other hand, some dyads may remain at the stranger stage for sometime, and advance to the mature stage only after they had time to get to know each other very well (as depicted by Line C in Fig. 1). Finally, the fact that LMX quality remained variable even by six (Liden et al., 1993) or nine months (Bauer & Green, 1996) attests that many dyads remain at contractual exchange or stranger stage (as depicted by Line D in Fig. 1). As Graen and Uhl-Bien (1995, p. 232) aptly commented: “How each dyad progresses through these stages varies in real time.”

Therefore, while the *overall* pattern of relationship quality should begin at a relatively low level and progress in an upward or positive trajectory over time, there will be systematic differences in the initial level and subsequent progression of LMX development. These ideas are stated in the following two premises:

Premise 1: There will be substantial variability in the initial level of LMX quality across supervisor-subordinate dyads.

Premise 2: There will be substantial variability in the trajectories of LMX development across supervisor-subordinate dyads.

While some theoretical work on LMX proposed that exchange quality is developed “fairly quickly and remains stable after they have formed” (Dienesch & Liden, 1986, p. 621), this assumption has received relatively little research attention. One example came from the Japanese Career Progress Study by Wakabayashi, Graen, Graen, and Graen (1988), which

reported that the average of all possible test-retest correlations of LMX measured over six time periods was .60. In another longitudinal field study, Liden et al. (1993) investigated the development of LMX from 2 weeks to 6 months into the supervisor-subordinate relationship, and found the test-retest correlations ranged from .38 to .66. Thus, LMX quality seems to have some stability over time.

However, it is important to note that this stability, as indicated by correlations in the .30s to .60s (Liden et al., 1993; Wakabayashi et al., 1988), does not preclude the possibility that different trajectories in LMX development might still be systematic and tractable. An excellent case in point comes from research regarding changes in performance over time (e.g., Day, Sin, & Chen, 2004; Hofmann, Jacobs, & Baratta, 1993). For example, in Day et al. (2004), the inter-correlations of performance assessed over 10 time periods ranged from .60 to .88. Even in the context of such high apparent stability, the authors found systematic and predictable trajectories in performance change.

One key aspect in the predictability of trajectories in LMX development is its relationship with the initial status of LMX quality. Based on the principle of self-fulfilling prophecy or Pygmalion effect (Rosenthal & Jacobson, 1968), supervisor-subordinate dyads that start on the “right note” should have positive expectations of the interactions, which might, in turn, boost the development of relationship quality in an upward spiral. Conversely, dyads that lack such positive expectations might engage in interactions that are strictly contractual in nature, making it harder to advance beyond the stranger stage. This is also similar to what Snyder and Stukas (1999) called a behavioral confirmation sequence, which consists of four steps: a) perceivers adopt beliefs about targets; b) perceivers behave toward targets as if these beliefs were true; c)

targets fit their behavior to perceivers' overtures; and d) perceivers interpret targets' behavior as confirming their beliefs.

Indeed, Graen and Uhl-Bien (1995) advocated that "managers should provide *all* employees access to the process of LMX by making the initial offer to develop LMX partnerships to each subordinate" (p. 229, emphasis original). Yet, the ability to do that is, arguably, something that will not come naturally without training or intervention (e.g., Graen et al., 1982; Graen, Scandura, & Graen, 1986). Thus, in a natural context:

H1: There will be a positive relationship between the initial level of LMX and subsequent development of LMX quality.

One implication of the above hypothesis is that it is critical to understand the antecedents of initial LMX quality. Equally important, the modest test-retest correlations in LMX reported in past studies suggest that the development of LMX is not solely a function of initial LMX status. Thus, the following sections will focus on the prediction of initial LMX and subsequent LMX development.

Theoretical Backgrounds on Prediction of LMX Development

Similarity Effect

As mentioned earlier, there has been relatively little research focusing on the development of LMX. While some studies have looked at effects of member or leader characteristics on LMX separately (e.g., Day & Crain, 1992; Duchon et al., 1986; Kinicki & Vecchio, 1994), the theoretical or empirical justifications for the development of LMX to be based on simple demographics are not strong. In fact, Gerstner and Day (1997) also computed meta-analytic effect sizes for the relationships between LMX and members' education, sex, and

age but did not find meaningful results. Instead, it would make better theoretical sense to consider the joint characteristics of both leader and member given the dyadic nature of the LMX theory.

From that perspective, one possible mechanism through which supervisor-subordinate dyads develop LMX is the operation of similarity-attraction processes (Byrne, 1971). This theory was based on years of social psychological research that found that similarity between individuals on a number of dimensions such as attitudes, personality, and demographic characteristics, is related to interpersonal attraction. Being similar may provide a basis for common understanding and guide behavior as well as social interpretations of behavior. Thus, when there is similarity, the actual behavior of both leader and member is likely to align with expectations and both parties are likely to interpret behavior in the same way. Such interactions will be more satisfying and fulfilling than when behaviors and expectations are discrepant. Therefore, the extent to which a leader will relate with each member depends on the extent that those subordinates are similar to him or herself. In fact, liking and LMX were found to be very highly correlated, .73 in a lab experiment and .74 in a field study, which suggests the relevance of similarity-attraction paradigm in the development of LMX (Wayne & Ferris, 1990).

To that end, some research has examined the role of demographic similarity in predicting LMX quality but the results have been mixed (e.g., Bauer & Green, 1996; Green et al., 1996; Liden et al., 1993; McClane, 1991). For example, Green et al. (1996) reported that gender similarity, but not similarity in age or years of education, was significantly related to LMX. However, other studies (Bauer & Green, 1996; McClane, 1991) did not find a significant relationship between gender similarity and LMX. Liden et al. (1993) combined several demographic variables (i.e., gender, race, educational level, and age) to create a composite

demographic similarity variable, which did not relate to LMX significantly. In a related study, Tsui and O'Reilly (1989) found demographic similarity to be significantly related to the degree to which supervisors liked their subordinates.

Besides demographic similarity, some researchers have also investigated the link between psychological similarity and LMX. McClane (1991) found that leader and member similarity in terms of need for power was positively related to LMX. However, similarity in terms of locus of control, need for achievement, and least preferred coworker were not significantly related to LMX. Engle and Lord (1997) reported that similarity between supervisor and subordinates in terms of their implicit performance theory (i.e., psychological similarity in their cognitive perceptions) was significantly related to LMX, but the effect of dyadic similarity in implicit leadership theory was not significant. Finally, in a longitudinal study, Bauer and Green (1996) examined dyadic similarity in positive affectivity and found it to be positively related to LMX measured about 3 and 9 months later. Therefore, the studies reviewed above shows that the dyadic similarity effects of both demographic and psychological variables are inconclusive.

Relational Norms of Social Exchange

An important departure to the simple homophily perspective came from Tsui and colleagues' works (Tsui, Porter, & Egan, 2002; Tsui, Xin, & Egan, 1995). They pointed out that similarity-attraction processes have often been conceptualized and validated in the context of peer or lateral relationships. When it comes to vertical relationships such as supervisor-subordinate dyads, homophily may not be applicable when the variables of interest reflect some degrees of status, power, or expertise. Specifically, the supervisors' "capacity to lead may be inferred from attributes such as age (wisdom), organization and job tenure (experience), as well as educational level (training and knowledge)" (Tsui et al., 2002, p. 906). In addition, these

attributes may also be indicators of the supervisors' access to social capital within the organization.

Consistent with this notion, related research from the mentoring literature also showed that individuals who are better educated (Allen, Poteet, Russell, & Dobbins, 1997), have longer tenure (Ragins & Cotton, 1993), or are more powerful (Olian, Carroll, Giannantonio, & Feren, 1988) are more comfortable and likely to serve as mentors (see Wanberg, Welsh, & Hezlett, 2003, for detailed discussion). Also, an often overlooked set of findings in Tsui and O'Reily's (1989) seminal article on relational demography was that supervisors expressed greater positive affect toward subordinates with less education or shorter tenure than toward subordinates with more education or longer tenure than themselves. In sum, the norm of social exchange suggests that the supervisors should have a higher degree or amount of these valued attributes relative to the subordinates. In other words, higher levels of LMX occur not when there is a match or similarity but when supervisor exceed subordinates in those variables.

Taking this perspective and moving beyond simple homophily may explain, albeit partially, the mixed results in past research that examined the effects of demographic similarity on LMX (e.g., Green et al., 1996). By relying on absolute difference (or its variants) in their operationalizations of demographic similarity, those investigations could not detect the dissimilarity (and asymmetric) effects proposed here. Also, given that both similarity and dissimilarity might be important depending on the variables involved, combining the absolute difference values of several demographic variables into one demographic similarity index might be problematic. Besides the lack of conceptual clarity on the meaning of such an amalgamated diversity index (see Harrison & Sin, 2005, for theoretical and mathematical arguments against such approach), doing so may also "wash out" the opposing effects of different demographic

factors (Tsui et al., 1995). That could explain the non-significant finding between the composite demographic similarity and LMX in Liden et al. (1993).

Interpersonal Interaction Theory

While Tsui et al.'s (1995, 2002) works focus on demographic variables, interpersonal interaction theory from social psychological research (Carson, 1969; Kiesler, 1983, 1996) offers an analogous perspective regarding the dissimilarity effect using psychological variables. According to this theory, interpersonal behaviors can be broadly defined along two dimensions: control and affiliation. Control behaviors range from dominance to submission, whereas affiliation behaviors range from friendliness to hostility. According to this theory, people interact in predictable ways following the *principle of complementarity*, which states that “complementarity occurs on the basis of reciprocity in respect to the dominance-submission axis (dominance tends to induce submission and vice-versa) and on the basis of correspondence in respect to the hate-love axis (hate induces hate and love induces love)” (Carson, 1969, p. 112).

The control behaviors are particularly relevant; theory and evidence show that for social interactions to be perceived positively, a person's dominance should be complemented by the other person's submission (e.g., Dryer & Horowitz, 1997). Conversely, interactions that are similar on the control dimension are anticomplementary and will threaten the relationship stability (Carson, 1969; Kiesler, 1983, 1996). In addition, Kiesler (1983) theorized that, over time, the action-reaction sequences of interpersonal behaviors lead to a particular form of stable, repetitive patterns of interpersonal relating.

A noteworthy twist to Dryer and Horowitz's (1997) study is the reported findings that despite having objective complementarity (i.e., dissimilarity), the participants rated their partners to be similar to themselves. In other words, instead of liking someone perceived as similar, the

participants perceived as similar someone whom they liked (because of positive interactions resulting from complementary control behaviors). Thus, past research on LMX that assessed only perceived similarity does not negate the possibility of underlying dissimilarity effects (e.g., Philips & Bedeian, 1994)

While research using this theory has focused mainly on behavioral style during situation-driven interactions, there is cumulating evidence showing that taking a trait approach in studying interpersonal interaction is helpful (e.g., Bluhm, Widiger, & Miele, 1990; Sadler & Woody, 2003). For example, using confederates in lab experiments, Bluhm et al. (1990) found that control behaviors were more a reflection of the participants' dominant-submissive interpersonal style (i.e., trait-based) than the results of the confederates' behavior (i.e., less situation-based). Using structural equation modeling, Sadler and Woody (2003) also found that trait control had a strong impact on the situational behaviors exhibited by the participants.

As in the similarity-attraction theory, interpersonal interaction theory has often been studied in the context of peer or lateral relations. Orford (1986) reviewed the theory and suggested that the effects of role and status could be important factors augmenting any complementarity effects suggested by the theory. More specifically, one would expect that it is more acceptable for the supervisor to be the one exhibiting dominance and subordinate submission, not the other way round (cf. relational norms perspective by Tsui et al., 1995, 2002). At the same time, research on interpersonal interaction theory often investigated the behaviors of student dyads engaged in limited laboratory-based interactions (e.g., Dryer & Horowitz, 1997; Sadler & Woody, 2003). A change came from a recent work by Glomb and Welsh (2005), which employed this theory in supervisor-subordinate dyads. Consistent with the theory, and with the relational norms perspective, they found that subordinate satisfaction with the

supervisor was generally higher when supervisors were higher in trait control than the subordinates.

Temporal Nature of Surface- and Deep-level Attributes

While past studies have investigated the prediction of LMX via cross-sectional (Green et al., 1996) and longitudinal (e.g., Bauer & Green, 1996; Liden et al., 1993; McClane, 1991) designs, none has theorized or examined the temporal nature of the phenomenon explicitly. The importance of time has been demonstrated repeatedly in some recent team diversity research (Harrison, Price, & Bell, 1998; Harrison, Price, Gavin, & Florey, 2002; Pelled, Eisenhardt, & Xin, 1999). In general, evidence suggests that differences in demographic variables (i.e., surface-level attributes) became less crucial, whereas differences in psychological variables (i.e., deep-level attributes) became more important, as team members have greater opportunities to interact. In other words, time interacts with types of variables in predicting group processes and performance outcomes. More specifically, Pelled et al. (1999) studied 45 teams and found that the effects of age diversity on emotional conflict diminished for teams with longer longevity. In another study, Harrison et al. (1998) hypothesized and found that the effects of surface-level diversity on group cohesion decreased in importance, whereas the effects of deep-level diversity were strengthened, as a function of the teams' tenure. Finally, a study of 144 student project teams by Harrison et al. (2002) found that over the course of a semester working together, perceived surface-level diversity became less predictive whereas perceived deep-level diversity became more predictive of team social cohesion and performance. All in all, these findings showed that as team members interact, impacts of differences based on race, gender, and age were lessened while the influence of underlying differences in terms of personality, values, and attitudes was intensified.

Building on these previous team-based research about surface- and deep-level attributes, Hiller and Day (2004) recently proposed that the basic processes that underlie the effects of team diversity over time may also apply to the development of LMX. When a supervisor-subordinate dyad is newly formed, both leader and member will not have accurate knowledge of each other's underlying values, attitudes, and personality, and are prone to rely on demographic characteristics as proxies for the underlying differences. Over sufficient time, however, leader and member will have ample opportunities to interact and observe each other; thus, any compatibility issues regarding psychological attributes will emerge as more crucial in their working relationship. That is, one would expect demographic variables (cf. surface-level attributes) to become less important in the LMX relationship as time passes. Over time, leaders and members will go beyond any demographic variables, as they become more familiar with each other's personality, values, and temperament (cf. deep-level attributes). More important, as the supervisor and subordinate interact, an initially low-quality exchange relationship has the potential to develop into a high-quality relationship when there is psychological compatibility. Conversely, initially high-quality exchange relationship may deteriorate as the incompatibility in personality and temperament might lead to disagreements or clashes of opinions.

Taking this temporal perspective might explain, in part, why past longitudinal research failed to find significant relationships between demographic similarity and LMX (Bauer & Green, 1996; Liden et al., 1993; McCrane, 1991), that is, the impact of the investigated surface-level attributes might have already dissipated. Hence, this paper seeks to heed the call of recent organizational theorists (e.g., Mitchell & James, 2001) to pay more attention to temporal issues in organizational research. With this in mind, the next section will lay out the specific hypotheses regarding the prediction of LMX development.

Hypotheses on Prediction of LMX Development

Hypotheses about LMX development can be categorized using a 2 x 2 matrix as presented in Figure 2. Essentially, the processes of LMX development depend on the temporal focus (i.e., initial versus trajectory) and the nature of attributes being investigated (i.e., similarity versus complementarity effects). The theories and evidence reviewed earlier lead to the hypotheses stated below, which are guided by two overarching principles: a) both similarity and dissimilarity can be important and in ways that will correspond with the norms of social exchange, and b) demographic variables will be more important for predicting initial LMX quality, whereas psychological variables will be more influential in the prediction of trajectory in LMX.

Similarity Effects on Initial LMX Quality

Consistent with the similarity-attraction paradigm (Bryne, 1971), research findings from mentoring (e.g., Thomas, 1990) and network homophily (e.g., Ibarra, 1992) illustrated the importance of gender and ethnic or racial similarity for interpersonal attraction. In Thomas (1990), subordinates in cross-race mentoring relationships reported lower psychosocial support from their mentors than subordinates from same-race relationships. Ibarra (1992) found that both men and women were more likely to form homophilous (i.e., same gender) ties in their social network in the organizations. Research from social psychology has also shown that perceivers readily make judgments about the personalities of others by applying general stereotypes associated with membership in certain categories, such as race (Chen & Bargh, 1997) and gender (Deaux & Major, 1987). Such activations of stereotypes happen often very quickly and may even be unconscious. For example, Chen and Bargh (1997) showed support for the behavioral confirmation sequence even when the beliefs about targets were activated

Figure 2. Summary of hypotheses for the prediction of LMX development.

	Similarity	Dissimilarity
Initial LMX	H2: a) Race b) Gender	H3: a) Age b) Educational Level
Trajectory of LMX	H4: a) Extraversion b) Neuroticism c) Openness to Experience	H5: a) Dominance b) Agreeableness c) Conscientiousness

unconsciously. They found that both perceivers and targets acted more aggressively when perceivers were subliminally primed to expect negative traits about the targets. Thus, both the supervisors and the subordinates will rely on race and gender attributes as the basis to navigate and initiate leader-member exchange. Therefore, it is predicted that:

H2: Similarity in (a) race and (b) gender will be positively related to the initial level of LMX quality.

Dissimilarity Effects on Initial LMX Quality

According to the norms of social exchange, dissimilarity may be more important than similarity when the demographic variables being studied reflect a strong notion of power, status, or expertise (Tsui et al., 1995, 2002). In that regard, subordinates may look up to supervisors who are older and more educated than themselves, and would exert more effort toward the development of quality LMX with the esteemed supervisors (cf., Maslyn & Uhl-Bien, 2001). This is in agreement with the finding by Tsui and O'Reilly (1989) that supervisors expressed greater positive affect toward subordinates with less education than toward subordinates with more education than themselves. Hence, it is predicted that:

H3: Dissimilarity in (a) age and (b) educational level (with the supervisors being higher) will be related to higher initial level of LMX quality.

Similarity Effects on the Trajectory of LMX Quality

Compared to demographic variables, there has been less consistency across studies in terms of psychological variables being studied. The emergence of the five-factor model as a taxonomy of personality provides a comprehensive framework to study personality and its relationships with other constructs (e.g., Barrick & Mount, 1991). Digman (1990) reviewed the evolution of the five-factor model and concluded that the taxonomy is both robust across cultures

and stable over time. Although there are some variations in labeling the five factors, one common nomenclature is Extraversion, Neuroticism, Agreeableness, Conscientiousness, and Openness to Experience.

Individuals high on extraversion tend to be talkative, energetic, and active. Extraversion is sometimes considered to be conceptually very similar to positive affectivity (Perrewe & Spector, 2002). On the other hand, individuals high on neuroticism tend to be anxious, insecure, and less emotionally stable, and neuroticism has been used interchangeably with negative affectivity. Individuals high on openness to experience tend to be imaginative and creative, even nonconforming and unconventional.

In general, one would expect more positive and fulfilling interactions between dyads that are similar in terms of extraversion, neuroticism, and openness to experience. Indeed, Bauer and Green (1996) reported that similarity in positive affectivity (cf. extraversion) was positively related to LMX measured about 3 and 9 months later. In a study that investigated the big five personality dimensions and social network ties, Klein, Lim, Saltz, and Mayer (2004) found that extraversion, neuroticism, and openness to experience were significantly related to the number of times a person was rated by peers as having a difficult relationship. They reasoned that a person who is too talkative (i.e., extraversion), negative (i.e., neuroticism), and nonconforming (i.e., openness to experience) to be a source of irritation and annoyance. Taking a more dyadic perspective, relating to someone who is more (or less) talkative, anxious, or unconventional would be an unsatisfying experience. Conversely, relating to someone who is similar on the level of extraversion, neuroticism, and openness to experience may be an engaging and positive experience. Unlike demographic characteristics which are immediately apparent, both

supervisors and subordinates need time to interact before getting a better knowledge of each other's levels of personality attributes. Therefore, it is predicted that:

H4: Similarity in (a) extraversion, (b) neuroticism, and (c) openness to experience will be positively related to the trajectories of LMX development.

Dissimilarity Effects on the Trajectories of LMX Quality

Individuals high on agreeableness tend to be less assertive or more compliant, while those high on conscientiousness tend to be dependable, disciplined, and achievement-oriented.

Findings from past mentoring research showed that mentors look for protégés who are competent, motivated, and have certain personality traits such as being people-oriented, honest, and dependable (Allen, Poteet, & Borroughs, 1997). In the context of LMX development, supervisors will be more likely to establish higher-quality relationships with subordinates who are more agreeable (cf. people-oriented) and conscientious (cf. dependable). However, being overly agreeable may signal incompetence on the part of the subordinates, while excessive conscientiousness may be perceived as a threat by the less conscientious supervisors. Hence, the (high) degree of agreeableness and conscientiousness in the subordinates that is deemed desirable would be relative to the levels of these attributes possessed by the supervisors. In other words, supervisors would value subordinates who are slightly more agreeable or conscientious than themselves.

Finally, past reviews of personality structure (e.g., Shiner, 1998) have suggested that “the Big Five dimensions may obscure underlying, more narrow lower order trait distinctions” (p. 319). Specifically, Shiner's (1998) review showed that dominance, as a narrower trait, has been included as a facet in the dimensions of Extraversion or Agreeableness by different researchers. Therefore, dominance was examined in the present study alongside the Big Five to allow for a

direct test of the relationship suggested by interpersonal interaction theory (Carson, 1969; Kiesler, 1983, 1996) and norm of social exchange (Tsui et al., 1995, 2002) discussed earlier. Based on these perspectives, positive interactions are more likely when the supervisor exhibits a greater amount of dominance relative to the subordinates. Thus, it is predicted that:

H5: Dissimilarity in (a) dominance, (b) agreeableness, and (c) conscientiousness (with the supervisors being higher on dominance and subordinates being relatively higher on agreeableness and conscientiousness) will be positively related to the trajectories of LMX development.

CHAPTER 2
METHODS

Procedure

Data were collected from supervisors and subordinates of a national law enforcement agency in Asia. Paper-and-pencil questionnaires were administered via mailed surveys. To capture the initial level and subsequent trajectories of LMX development, LMX ratings were obtained three times, with an equal interval of four weeks (i.e., at the end of weeks 1, 5, and 9).

Participants

To meaningfully test and examine the hypotheses proposed, it was imperative to capture the supervisor-subordinate relationship formation from the very beginning. Thus, the subordinates surveyed in this study were newly hired and trained police officers being posted to their respective permanent units. The supervisors surveyed were the designated leaders from those units who were officially responsible for the performance evaluations of these new officers. In all, 57 sets of supervisors-subordinates were approached; I assured both parties confidentiality and asked them to return the questionnaires to me separately. I received useable data from 47 supervisors (including 3 who supervised 2 new officers in the course of this study, for a response rate of 82%) and 50 subordinates (a response rate of 88%). From these, I was able to form a matched set of 46 supervisor-subordinate dyads.

Measures

Demographic Variables

Gender, race, age, and educational level of the participants were obtained from the leaders' and subordinates' self-report surveys. Similar to Bantel and Jackson (1989), educational level attained was captured via six categories ranging from "elementary school" to "graduate

degree (e.g., Masters, Doctorate)". Of the 44 supervisors who responded, 86% were male and 57% were Chinese (32% were Malays and 11% were Indians). About half (51%) had a secondary school education and the other half had post-secondary training, including 21% with college degree. The supervisors' age range from 27 to 66 years-old ($M = 40.91$, $SD = 8.32$). Of the 50 subordinates who participated, 70% were male and 66% were Chinese (18% were Malays and 16% were Indians). A majority (84%) of this group had a technical certificate, a post-secondary but non-college degree. The subordinates' age range from 19 to 26 years-old ($M = 22.1$, $SD = 1.68$).

Big Five Personality

The "Big Five" personality dimensions were measured using the NEO-FFI, a 60-item instrument developed by Costa and McCrae (1992). The five dimensions and sample items are: *extraversion* (e.g., "I like to have a lot of people around me"; $\alpha = .74$), *agreeableness* (e.g., "I would rather cooperate with others than compete with them"; $\alpha = .64$), *conscientiousness* (e.g., "I have a clear set of goals and work toward them in an orderly fashion" ; $\alpha = .70$), *neuroticism* (e.g., "I often feel tense and jittery" ; $\alpha = .81$), and *openness to experience* (e.g., "I have a lot of intellectual curiosity" ; $\alpha = .74$). Responses were made on a 5-point scale ranging from 1, "strongly disagree", to 5, "strongly agree". The above reliability estimates were based on the supervisors' responses via the first survey administration. For the new officers in the present study, NEO-FFI was administered during the personnel selection phase as part of the larger test battery. The personality scores of these officers were obtained from the organization's archival record.

Dominance

The dominance trait was assessed using the Social Behavior Inventory (SBI), the psychometric properties of which are well established (e.g., Moskowitz, 1994; Sadler & Woody, 2003). For each of the 24 items, respondents rated on a 7-point frequency scale ranging from “never” (0) to “always” (6). The response anchors were taken from the psychometric research of Bass, Cascio, and O’Connor (1974) that shows such anchors as having minimal overlap and equal-appearing intervals. Examples of items include “I set goals for others or for us”, and “I did not say what I wanted directly” ($\alpha = .83$ and $.85$, for supervisors’ and subordinates’ ratings, respectively).

Leader-Member Exchange

The quality of exchange between subordinates and their supervisors was measured using the LMX-7, a 7-item scale (Graen et al., 1982; Graen & Uhl-Bien, 1995). An example item from this scale is “How effective is your working relationship with your leader [follower]?” Besides being the most commonly used LMX measure, Gerstner and Day (1997) found in their meta-analysis that the LMX-7 has the soundest psychometric properties. Compared to other measures of LMX, the LMX-7 has higher average alphas and yielded higher correlations with other outcome variables. Gerstner and Day (1997) also reported a moderate correlation between the leaders’ and members’ LMX ratings (corrected $r = .37$), and recommended that researchers assess the exchange quality from both perspectives. Accordingly, LMX ratings were obtained from both supervisors ($\alpha = .84, .79, \text{ and } .76$) and subordinates ($\alpha = .89, .91, \text{ and } .92$) across the three survey administrations.

Control Variables

Two control variables that were included in the study are supervisor's organizational tenure and span of control. Previous studies (Judge & Ferris, 1993; Philips & Bedeian, 1994) have found these attributes to be related to supervisor's affect toward subordinates. The supervisors' organizational tenure range from 23 to 420 months ($M = 242.03$, $SD = 105.24$). The number of direct reports ranged from 3 to 57 ($M = 25.24$, $SD = 13.90$).

The items used to measure the variables in the current study are presented in Appendix A and Appendix B for the supervisors' and subordinates' questionnaires, respectively. The Big Five personality traits were assessed via commercially developed scales, so their items are not included in the appendices.

Analyses

To test the hypotheses stated above, the analyses involved a combination of hierarchical linear modeling (Raudenbush & Bryk, 2002) and polynomial regressions (Edwards, 1994; Edwards & Parry, 1993). More specifically, the two premises and H1 were assessed via longitudinal growth modeling of LMX quality following the procedures used in Day et al. (2004). At the same time, these procedures yielded accurate estimates of initial status and subsequent trajectories of LMX development for each dyad. Then, polynomial regressions and response surface modeling (Edwards, 2002) were used to test the impact of dyadic similarity and dissimilarity on initial (H2 and H3) and subsequent (H4 and H5) LMX development.

CHAPTER 3
ORGANIZATIONAL CONTEXT

In this chapter, I will provide further information in terms of the context of the current study. Specifically, I will describe the culture of the country in which the present study was conducted, the work culture of the organization being studied, the types of tasks that participants engage in a typical work day, and, finally, the nature of interactions between supervisors and subordinates in this organization.

Culture of the Country

In terms of national culture, the seminal work by Hofstede (1980, 2001) provides an important framework for delineating the dimensions along which countries may be positioned. In the earlier book, Hofstede (1980) proposed four dimensions, namely power distance, uncertainty avoidance, individualism-collectivism, and masculinity-femininity. In his recent book, Hofstede (2001) included long-term versus short-term orientation as another dimension. An interesting point to note is that his analyses showed that the dimensions appear to be rather independent and all possible combinations are possible.

Power distance is defined as the “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally” (Hofstede, 2001; p. 98). The country in which the present study was conducted was found to be very high along this dimension. That is, the citizens in this country tend to hold relatively authoritarian attitudes and values, such that the less powerful typically show deference to their more powerful authoritative figures (e.g., parents, supervisors, teachers, etc.).

Uncertainty avoidance is defined as “the extent to which the members of a culture feel threatened by uncertain or unknown situations” (Hofstede, 2001; p. 161). The country in which the present study was conducted was found to be extremely low along this dimension. In

general, the societal norms are such that people in low uncertainty avoidance culture tend to be less resistant to change and innovation, willing to take unknown risks, and are tolerant of diversity.

When defining the dimension of individualism-collectivism, Hofstede states that “individualism stands for a society in which the ties between individuals are loose: Everyone is expected to look after him/herself and her/his immediate family only. Collectivism stands for a society in which people from birth onwards are integrated into strong cohesive in-groups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty” (p. 225). The country in which the present study was conducted was found to be rather collectivistic. In general, the societal norms are such that people in collectivistic culture tend to value belongingness and group decisions.

In terms of the masculinity-femininity dimension, Hofstede states that “masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender, and concerned with the quality of life” (p. 297). In general, the emotional and social role differentiation between the genders is high for the more masculinity cultures but low for the more femininity cultures. The country in which the present study was conducted was found to fall along the middle of this masculinity-femininity dimension.

Finally, the dimension of long-term versus short-term orientation is defined such that “long term orientation stands for the fostering of virtues oriented towards future rewards, in particular, perseverance and thrift. Its opposite pole, short term orientation, stands for the

fostering of virtues related to the past and present, in particular, respect for tradition, preservation of ‘face’ and fulfilling social obligations” (p. 359). In general, cultures that hold short term orientation tend to focus on immediate gratification whereas cultures with long term orientation tend to defer gratification. Similar to the masculinity-femininity dimension, the country in which the present study was conducted was found to fall along the middle of the long- versus short-term orientation dimension.

Overall, the power distance and masculinity-femininity dimensions are most relevant for the present study given the hypotheses and specific organization being studied. Thus, the culture of the organization will be described using these two dimensions next.

Organizational Culture

Since some of the hypotheses were based on the notion of relational norms (Tsui et al. 1995, 2002), the idea of power distance is most relevant for the current study. Within any organization, inequality in power is “usually formalized in boss-subordinate relationships” (Hofstede, 2001; p. 79). As such, the high power distance in the country studied provides a suitable context to test the hypotheses involving the complementarity effects between the supervisors’ and subordinates’ attributes. In addition, the participants in this study came from a law enforcement agency, which has a highly stratified and hierarchical organizational structure, as embodied by the rank system. Similar to any military or paramilitary organizations, order, compliance, and respect are strongly emphasized.

While the country in which the present study was conducted was rated as moderate along the masculinity-femininity dimension, law enforcement can be broadly regarded as a masculine job domain. This is evident from the fact that most members of the organization are males.

However, it is important to note also that there are several very high ranking female officers in this organization as well.

Typical Tasks of Participants

A majority of the participants in the present study are patrol officers, usually working in neighborhood police centers/stations performing community policing duties. On a typical day, the officers need to patrol the neighborhood within their jurisdiction in a police vehicle. In addition, they respond to emergency calls to assist distressed victims. Patrol officers also make arrests when required. They are also trained to conduct simple investigation and preliminary forensic work at the crime scene. Finally, they are involved in community and public education, imparting crime prevention knowledge in schools or at local community centers. All the patrol officers are supervised by their superiors and proper guidance will be provided when required. The supervisors also perform other administrative and management of ground resources.

Nature of Interactions between Supervisors and Subordinates

As mentioned earlier, the organization as a whole is hierarchically structured and emphasized order and respect in their interactions at work. Also, tasks assignments are determined by the supervisors. That being said, the organization has been adopting and promoting a learning culture based on the concepts of a learning organization for some time. That is, though discipline and order are important, the interactions between supervisors and subordinates tend to be very cordial and amiable, and everyone's ideas are solicited and valued. In addition, employees are encouraged to learn continuously on their job through an exchange of information and knowledge so as to produce a flexible organization where new ideas can be

adapted quickly. It is also the organization's philosophy that every police officer on the ground is a leader where he needs to take charge and make a good assessment of the situation before attempting to provide the necessary assistance to members of the public. Finally, team work is highly emphasized, which is particularly important given the challenges of policing in the 21st century.

CHAPTER 4
RESULTS

Descriptive statistics and intercorrelations among the variables are presented in Table 1. All trait-based variables (i.e., Big Five personality and dominance) were assumed to be time-invariant (i.e., single value for each participant) and were assessed only once during the course of the study. As seen in Table 1, the test-retest correlations of LMX across time ranged from .62 to .64 for the supervisors' ratings and from .50 to .74 for the subordinates' ratings, which were very similar to past findings (Liden et al., 1993; Wakabayashi et al., 1988). Rather surprisingly, however, the cross-source correlations of LMX between the supervisors' and subordinates' ratings were often negative, ranging from -.34 to .20.

In view of the lack of convergence between supervisor- and subordinate-rated LMX, as indicated by the near zero correlation coefficients, follow-up exploratory data analyses were conducted. Specifically, scatterplots of the leader-member ratings of LMX were examined to identify if the low relationships were influenced by any outliers. As shown in Figures 3 and 4, there were no extreme outliers for the two sources of LMX ratings for the first two survey administrations (i.e., weeks 1 and 5). However, Figure 5 shows that there were two outliers in the LMX ratings obtained at week 9. Specifically, in one dyad the supervisor rated the relationship much lower (2.71) than the rating provided by the subordinate (4.86). In another dyad, the supervisor rated the relationship as moderate (3.57) but the subordinate gave an extremely low rating (1.71). When the two outliers were excluded, the correlation between both sources of LMX ratings changed from $r = -.16$ to $r = -.04$. Effectively, the two outliers did not influence the relationship between the two sources of LMX ratings, which remained unrelated even after the outliers were excluded. Therefore, all analyses were performed separately for the supervisor and subordinate LMX ratings.

Table 1
Means, Standard Deviations, Reliabilities, and Correlations among Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
Control Variables												
1. Supervisors' Tenure	242.03	105.24	-									
2. Supervisors' Span of Control	25.24	13.90	.53*	-								
Supervisors' Ratings												
3. Age	40.91	8.32	.93*	.39*	-							
4. Gender ^a	0.87	0.34	.19	-.13	.18	-						
5. Educational Level	3.09	1.32	-.74*	-.52*	-.71*	-.22	-					
6. Race Code 1 ^b	0.57	0.50	-.29*	.05	-.20	-.33*	.06	-				
7. Race Code 2 ^b	0.32	0.47	.27	.07	.19	.26	-.15	-.80*	-			
8. Neuroticism	2.12	0.49	.09	.09	.07	-.28	-.19	.17	-.20	(.81)		
9. Extraversion	3.63	0.42	.03	.06	-.07	.37*	.14	-.14	.19	-.51*	(.74)	
10. Openness to Experience	3.31	0.43	-.35*	-.24	-.35*	-.26	.28	.07	-.10	-.27	.39*	(.74)
11. Agreeableness	3.68	0.38	-.44*	-.37*	-.52*	.08	.54*	.03	.01	-.36*	.35*	.22
12. Conscientiousness	3.89	0.36	.12	.05	.01	.15	.15	-.25	.12	-.52*	.38*	.12
13. Dominance	4.05	0.51	-.08	-.06	-.04	-.08	.16	.19	-.06	-.28	.48*	.53*
14. LMX at T1	3.67	0.51	.12	-.04	.08	.08	.10	-.38*	.23	-.24	.46*	.28
15. LMX at T2	3.75	0.42	.28	.02	.18	.25	-.03	-.39*	.13	-.03	.48*	.17
16. LMX at T3	3.81	0.38	.11	-.24	.13	.38*	.23	-.29	.08	-.12	.43*	.03

Note: Coefficient alpha estimates of reliabilities are in parentheses. ^a Gender dummy coded as male = 1 and female = 0. ^b Race dummy coded as Chinese = 1 and Malays/Indians = 0 for Race Code 1; Malays = 1 and Chinese/Indians = 0 for Race Code 2.

* $p < .05$

Table 1 (continued)
Means, Standard Deviations, Reliabilities, and Correlations among Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
Subordinates' Ratings												
17. Age	22.10	1.68	.01	-.04	-.06	-.15	-.02	.10	-.14	.02	.01	.09
18. Gender ^a	0.70	0.46	.25*	.32*	.16	-.12	-.28	.02	.03	.16	-.03	-.08
19. Educational Level	3.66	0.87	.12	.23	.12	.01	-.16	-.10	.02	.12	-.07	-.13
20. Race Code 1 ^b	0.66	0.48	-.21	-.35*	-.10	.11	.12	-.00	-.08	-.16	.02	.04
21. Race Code 2 ^b	0.18	0.39	.23	.33*	.15	.19	-.16	-.14	.27	-.02	.09	-.13
22. Neuroticism	2.12	0.44	-.09	-.05	-.16	.14	.01	-.16	.12	-.06	.19	.22
23. Extraversion	3.89	0.37	-.23	-.15	-.16	.01	.20	.22	-.20	-.06	-.10	-.18
24. Openness to Experience	3.36	0.42	.04	-.02	.08	-.14	.13	.23	-.01	.03	.03	.00
25. Agreeableness	3.87	0.34	-.24	-.21	-.18	-.18	.26	.09	.01	-.15	.05	.14
26. Conscientiousness	4.18	0.44	.13	.03	.17	-.09	-.02	.09	-.02	.01	-.01	-.03
27. Dominance	3.11	0.54	.24	.25	.20	.32*	-.27	.07	.02	-.01	.20	-.10
28. LMX at T1	3.31	0.71	.26	.23	.24	.08	-.12	.29	-.13	-.03	.04	-.18
29. LMX at T2	3.17	0.72	.40*	.28	.40*	.05	-.13	.16	-.20	.16	.08	-.23
30. LMX at T3	3.41	0.77	.28	.29	.28	-.15	-.06	.33	-.28	.14	-.10	-.18

Note: Coefficient alpha estimates of reliabilities are in parentheses. ^a Gender dummy coded as male = 1 and female = 0. ^b Race dummy coded as Chinese = 1 and Malays/Indians = 0 for Race Code 1; Malays = 1 and Chinese/Indians = 0 for Race Code 2.

* $p < .05$

Table 1 (continued)
Means, Standard Deviations, Reliabilities, and Correlations among Study Variables

Variable	M	SD	11	12	13	14	15	16	17	18	19	20
Control Variables												
1. Supervisors' Tenure	242.03	105.24										
2. Supervisors' Span of Control	25.24	13.90										
Supervisors' Ratings												
3. Age	40.91	8.32										
4. Gender ^a	0.87	0.34										
5. Educational Level	3.09	1.32										
6. Race Code 1 ^b	0.57	0.50										
7. Race Code 2 ^b	0.32	0.47										
8. Neuroticism	2.12	0.49										
9. Extraversion	3.63	0.42										
10. Openness to Experience	3.31	0.43										
11. Agreeableness	3.68	0.38	(.64)									
12. Conscientiousness	3.89	0.36	.09	(.70)								
13. Dominance	4.05	0.51	.26	.19	(.83)							
14. LMX at T1	3.67	0.51	.07	.21	.22	(.84)						
15. LMX at T2	3.75	0.42	.12	.36*	.31	.63*	(.79)					
16. LMX at T3	3.81	0.38	.30	.01	.25	.62*	.64*	(.76)				

Note: Coefficient alpha estimates of reliabilities are in parentheses. ^a Gender dummy coded as male = 1 and female = 0. ^b Race dummy coded as Chinese = 1 and Malays/Indians = 0 for Race Code 1; Malays = 1 and Chinese/Indians = 0 for Race Code 2.

* $p < .05$

Table 1 (continued)
Means, Standard Deviations, Reliabilities, and Correlations among Study Variables

Variable	M	SD	11	12	13	14	15	16	17	18	19	20
Subordinates' Ratings												
17 Age	22.10	1.68	-.08	.03	.00	.02	.01	-.03	-	-	-	-
18 Gender ^a	0.70	0.46	-.08	.07	-.07	-.11	.22	.15	-.22	-	-	-
19. Educational Level	3.66	0.87	-.16	-.09	.16	-.04	.02	-.21	-.19	-.16	-	-
20. Race Code 1 ^b	0.66	0.48	.02	.15	-.02	.08	-.18	.13	.17	-.19	-.14	-
21. Race Code 2 ^b	0.18	0.39	-.00	-.12	-.01	.14	.16	.17	-.34*	.19	.19	-.65*
22. Neuroticism	2.12	0.44	-.01	-.08	.07	.25	.34*	.08	.17	-.18	.10	-.19
23. Extraversion	3.89	0.37	.33*	-.16	-.04	-.09	-.22	.11	-.26	.13	-.11	-.12
24. Openness to Experience	3.36	0.42	.21	-.03	.28	-.02	-.06	.29	-.07	.12	-.22	.04
25. Agreeableness	3.87	0.34	.31*	-.01	.33*	-.06	-.23	.04	.05	-.06	-.13	.19
26. Conscientiousness	4.18	0.44	.05	.03	.32*	-.12	-.17	.24	.13	.13	-.10	.13
27. Dominance	3.11	0.54	.10	.02	.03	-.03	.23	.22	-.10	.29*	-.11	.02
28. LMX at T1	3.31	0.71	.02	-.10	-.05	-.17	-.17	-.14	.02	-.07	-.17	-.02
29. LMX at T2	3.17	0.72	.08	-.17	.08	-.00	-.13	.20	-.02	.01	-.06	-.02
30. LMX at T3	3.41	0.77	-.19	-.08	.17	-.25	-.34	-.16	.30	-.10	-.03	-.10

Note: Coefficient alpha estimates of reliabilities are in parentheses. ^a Gender dummy coded as male = 1 and female = 0. ^b Race dummy coded as Chinese = 1 and Malays/Indians = 0 for Race Code 1; Malays = 1 and Chinese/Indians = 0 for Race Code 2.

* $p < .05$

Table 1 (continued)
Means, Standard Deviations, Reliabilities, and Correlations among Study Variables

Variable	M	SD	21	22	23	24	25	26	27	28	29	30
Subordinates' Ratings												
17. Age	22.10	1.68										
18. Gender ^a	0.70	0.46										
19. Educational Level	3.66	0.87										
20. Race Code 1 ^b	0.66	0.48										
21. Race Code 2 ^b	0.18	0.39	-									
22. Neuroticism	2.12	0.44	.27	-								
23. Extraversion	3.89	0.37	-.07	-.43*	-							
24. Openness to Experience	3.36	0.42	.07	-.39*	.33*	-						
25. Agreeableness	3.87	0.34	-.28	-.44*	.49*	.41*	-					
26. Conscientiousness	4.18	0.44	-.18	-.53*	.27*	.55*	.51*	-				
27. Dominance	3.11	0.54	.01	-.21	.20	.28*	-.10	.14	(.85)			
28. LMX at T1	3.31	0.71	-.03	-.15	.08	.14	.10	.13	.18	(.89)		
29. LMX at T2	3.17	0.72	-.12	-.28	.13	.12	.04	.19	.16	.50*	(.91)	
30. LMX at T3	3.41	0.77	-.04	-.17	.08	.17	.17	.33*	-.14	.54*	.74*	(.92)

Note: Coefficient alpha estimates of reliabilities are in parentheses. ^a Gender dummy coded as male = 1 and female = 0. ^b Race dummy coded as Chinese = 1 and Malays/Indians = 0 for Race Code 1; Malays = 1 and Chinese/Indians = 0 for Race Code 2.

* $p < .05$

Figure 3. Scatterplot of leaders' and members' LMX ratings at week 1.

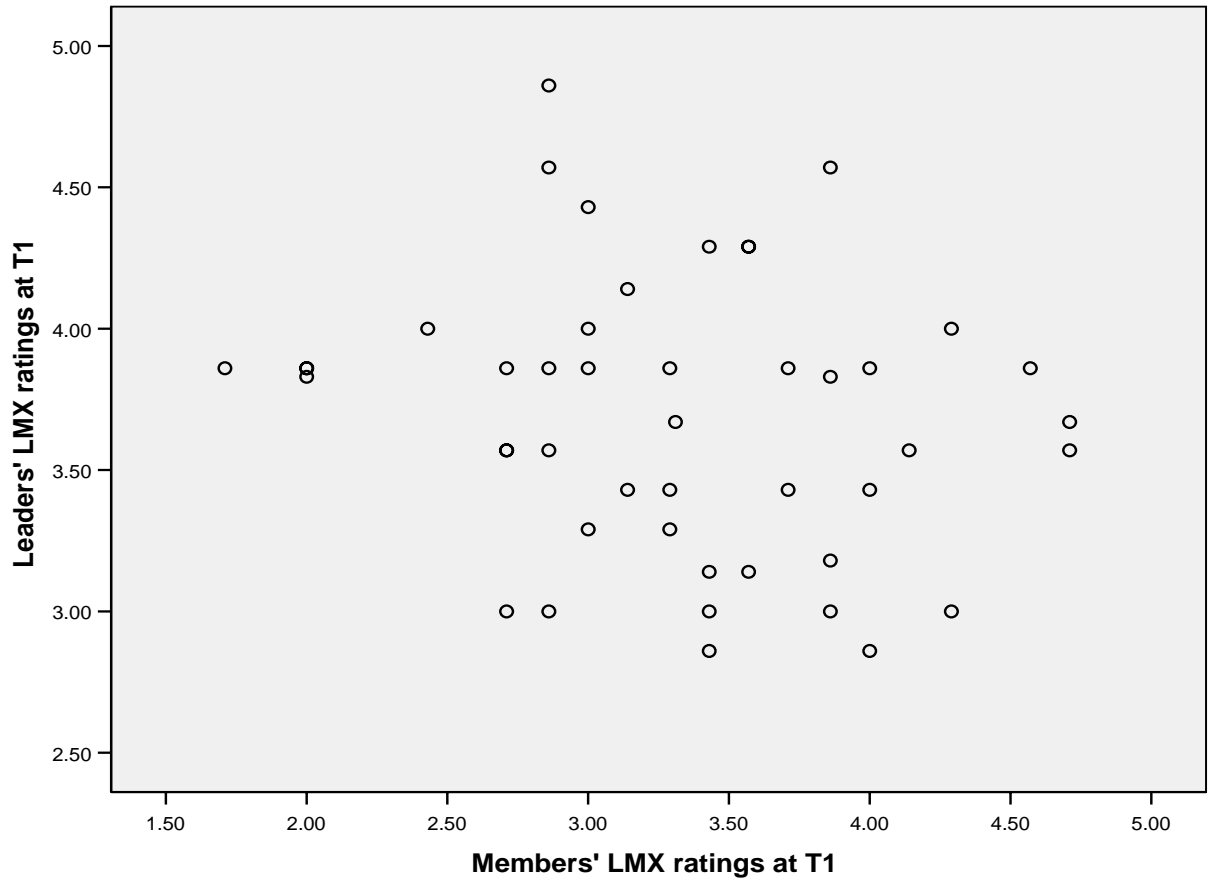


Figure 4. Scatterplot of leaders' and members' LMX ratings at week 5.

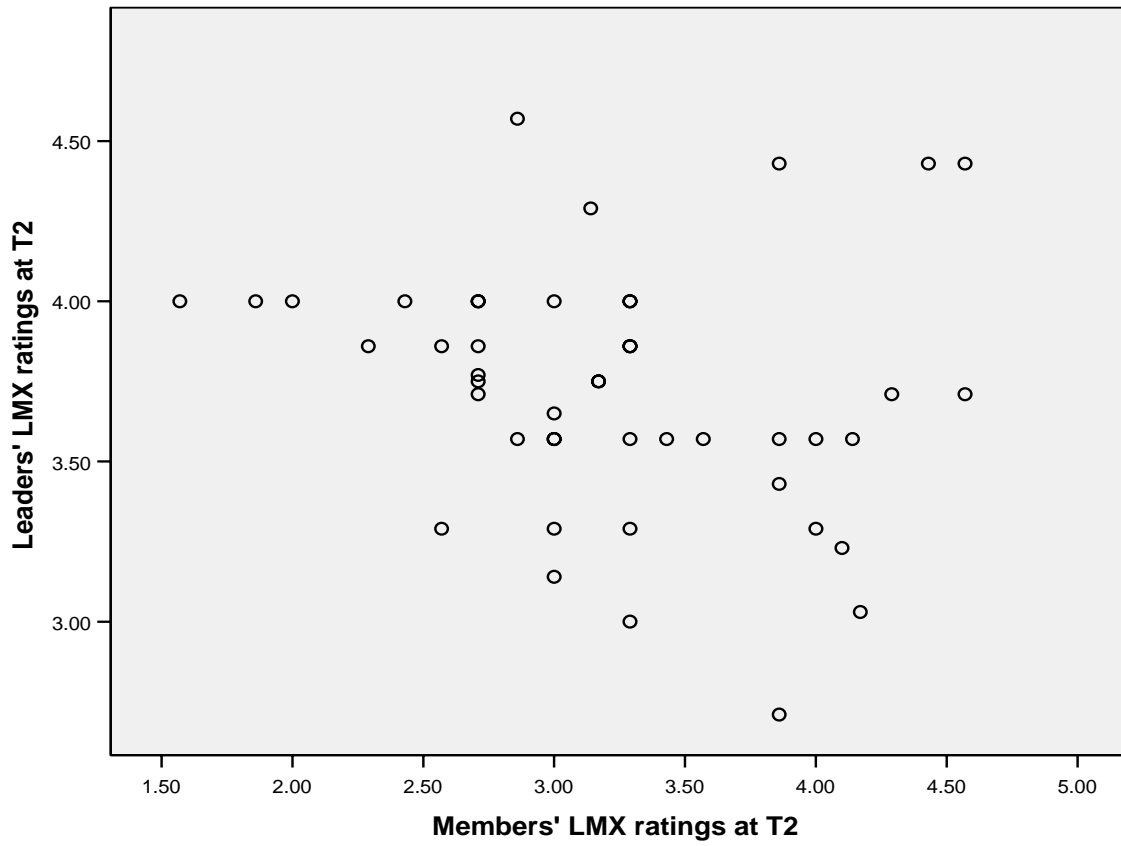
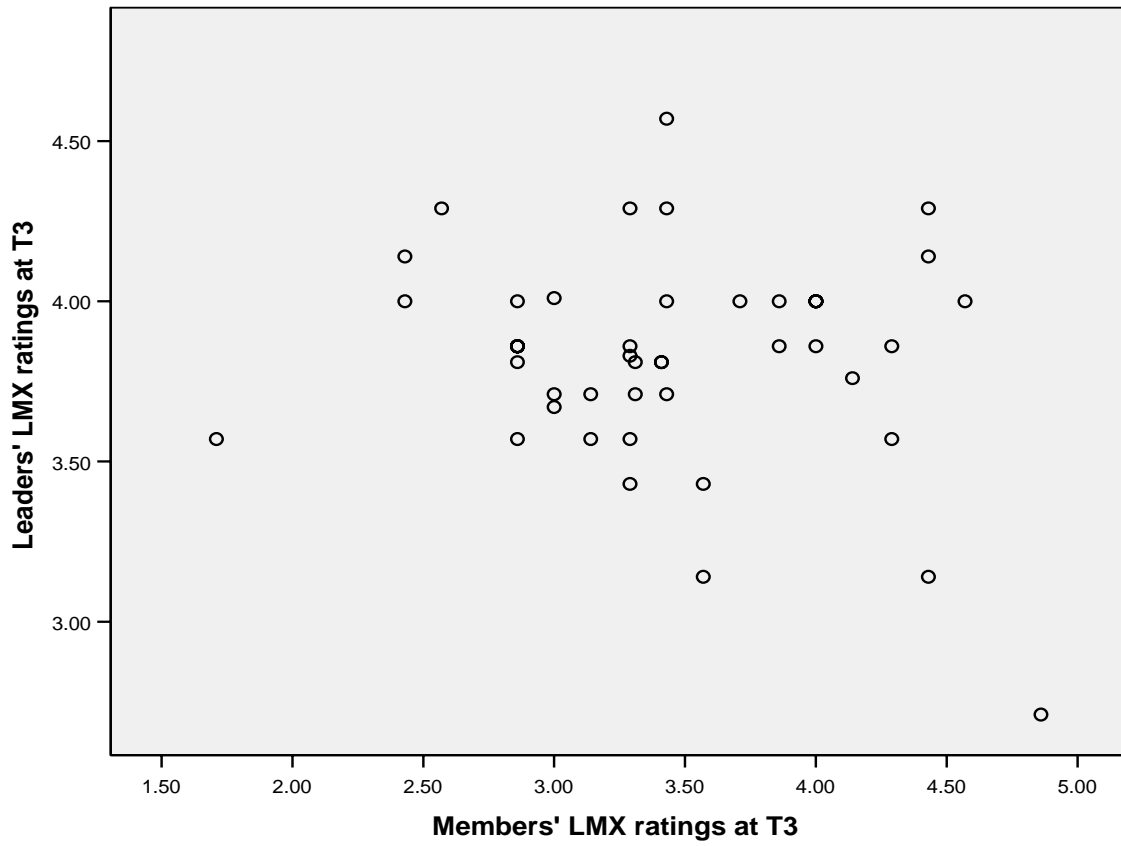


Figure 5. Scatterplot of leaders' and members' LMX ratings at week 9.



Determining the Level-1 (Intra-dyadic) Model

Similar to Day et al. (2004), I estimated all models using hierarchical multivariate linear model (HMLM) procedures (Raudenbush & Bryk, 2002). Level-1 analyses were conducted at the intra-dyadic (within-dyad, across-time) level, which models the LMX ratings obtained from the same individual (supervisor or subordinate) over time. The predictor in the level-1 analyses was time, which was coded (linearly) as 0, 1, and 2 representing the first (i.e., week 1), second (i.e., week 5) and third (i.e., week 9) assessments of LMX.

Estimating the ICC

As recommended by Bliese and Ployhart (2002), an intraclass correlation (ICC) was first estimated using a random intercepts model to assess the strength of non-independence in the data. In the present case, an ICC estimates the proportion of variance in an outcome variable that is between dyads. The ICC estimates were .795 and .767, indicating that approximately 80% and 77% of the variances in the LMX ratings as rated by the supervisors and subordinates, respectively, were attributable to inter-dyadic differences. These relatively large ICCs indicate that there are likely to be between-dyads (inter-dyadic) effects that can be modeled at a higher level with level-2 analyses, and that it is appropriate to use a random-intercepts model.

Determining the Fixed Functions for Time

Given the relatively large ICC estimate, the next step was to estimate the fixed functions for time in a random intercepts model. At this stage, Bliese and Ployhart (2002) also recommend determining whether a linear or other higher order function (quadratic in this case) best models the time variable. As indicated in Table 2, the linear time function was significant and positive for supervisor-rated LMX ($t = 2.42, p < .05$); the linear time function was positive but not significant for the subordinate-rated LMX ($t = 0.24, p > .05$). Next, the quadratic time function

Table 2

Results of Hierarchical Linear Modeling Level-1 Analysis

Effect	Coefficient	SE	<i>df</i>	<i>t</i>
<u>Supervisors' Ratings</u>				
Mean Initial LMX	3.685	.069	45	53.49*
Mean LMX Trajectory (Linear)	0.078	.032	45	2.42*
Mean LMX Trajectory Squared (Quadratic)	0.015	.055	44	0.28
<u>Subordinates' Ratings</u>				
Mean Initial LMX	3.280	.108	45	30.45*
Mean LMX Trajectory (Linear)	0.019	.057	45	0.38
Mean LMX Trajectory Squared (Quadratic)	0.168	.097	44	1.72

Note. Entries are unstandardized regression coefficients.

* $p < .05$

was included, which was not significant for both supervisor ($t = 0.28, p > .05$) and subordinate ($t = 1.72, p > .05$) ratings. These results suggested a generally positive and linear trajectory of LMX across time, as rated by the supervisors. While the subordinates' mean levels of LMX ratings appear to dip a little from 3.31 at time 1 to 3.17 at time 2 and rebounded to 3.41 at time 3 (i.e., suggesting a possible U-shaped trajectory), the trend was not significant.

Determining Variability in Growth Parameters

The next step involved examining whether there was significant inter-dyadic variability in the level-1 parameters to justify including level-2 predictors. As mentioned earlier, the relatively high ICCs indicated that the random intercepts models are appropriate. Likelihood contrasts between random intercepts and random intercepts plus random time slope models also indicated significant variability in LMX trajectory for supervisor ratings [$\Delta\chi^2(2) = 7.23, p < .05$]; the variability in LMX trajectory for subordinate ratings was not significant [$\Delta\chi^2(2) = 4.15, p > .05$]. Thus, these findings suggested that, consistent with the two premises mentioned earlier, there were inter-dyadic differences in the initial level and in the trajectories of supervisor-rated LMX. On the other hand, there were only inter-dyadic differences in the initial level of subordinate-rated LMX. Hence, all hypotheses can be tested with respect to the supervisors' LMX ratings but only hypotheses involving prediction of initial LMX (i.e., H2 and H3) can be meaningfully examined with respect to the subordinates' ratings.

Estimating Relationship between Intercepts and Slopes

The model that included random intercepts and random slopes also yielded estimates and tests regarding the relationship between them. For the supervisor ratings, initial LMX was not significantly related to the subsequent LMX trajectories ($r = -.04, p > .05$). Thus, hypothesis 1 was not supported.

Summary of the Level-1 Model Results

For the supervisors' ratings of LMX, the results indicated that there was an overall significant increase in quality of LMX over time. In addition, there were also substantial differences in the initial level and subsequent development of LMX. Finally, test of hypothesis 1 showed that initial LMX was not related to subsequent LMX trajectories. For the subordinates' ratings of LMX, the results showed that there were substantial differences in the initial level of LMX. However, the general trajectory of LMX was flat and this lack of change in LMX levels appears to be consistent across dyads.

Determining the Level-2 (Inter-dyadic) Model

Tests of hypotheses 2 to 5 involved estimating initial LMX (i.e., intercepts) and LMX trajectories (i.e., slopes of linear time function) as outcomes via two-level HMLM. First, supervisors' tenure and span of control were included as control variables in all analyses. Next, the demographic and personality variables of the dyads were included as predictors of intercept differences (for both supervisor and subordinate ratings) and slopes differences (only for supervisor ratings). Finally, as the hypotheses entail the notion of similarity and complementarity effects, polynomial terms of the predictor variables were added. This progression of model testing allows one to examine the significance of the variables' main effects and higher order polynomial effects. When the original dummy variables for race (i.e., representing both supervisors' and subordinates' race with two vectors each) were used, the models did not converge to a solution. Hence, race was recoded as the majority Chinese (coded as 1) versus the minority Malays and Indians (coded as 0) for all the following analyses. As race

and gender were coded as dichotomous variables, the squared terms of these variables are meaningless and were not included in the analyses.

Initial LMX as Outcome

Table 3 shows the progression of model testing for the demographic variables as predictors. For the supervisors' ratings of initial LMX, addition of the supervisor's gender by subordinate's gender term resulted in a significantly better fit [$\Delta\chi^2(1) = 5.27, p < .05$] over the main effect model. Using the coefficients of the regression results from Table 4, the effects of gender on initial LMX are shown in Figure 6. Contrary to hypothesis 2b, which states that similarity in gender will be positively related to the initial level of LMX quality, initial LMX was the lowest for dyads where both supervisor and subordinate were female. No other effect was significant.

For the subordinates' ratings of initial LMX, the addition of terms for the supervisor's race and subordinate's race resulted in a significantly better fit [$\Delta\chi^2(2) = 9.30, p < .05$] over the baseline model which only has the control variables. As indicated by the regression coefficients in Table 4, only the effect of the supervisor's race was significant. That is, initial LMX was rated significantly higher when supervisors were Chinese, regardless of the race of the subordinates. No other effect was significant. Thus, the findings showed that both hypotheses 2 and 3 were not supported.

As part of exploratory analyses, the effects of personality variables on initial LMX were also examined, and Table 5 shows the progression of model testing. For the supervisors' ratings of initial LMX, significantly better fit was found for the main effect models that included the supervisor's and subordinate's extraversion [$\Delta\chi^2(2) = 17.33, p < .05$] and dominance [$\Delta\chi^2(2) = 9.17, p < .05$]. In both cases, supervisors who are higher on these traits tend to give higher initial

Table 3
Demographic Variables as Predictors: Nested Models Comparison

Variables	Race	Gender	Age	Educational Level
<u>Supervisors' Ratings</u>				
Initial LMX				
Baseline model	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$
Main effect model ^a	$\Delta\chi^2(2) = 2.07$	$\Delta\chi^2(2) = 2.34$	$\Delta\chi^2(2) = 1.85$	$\Delta\chi^2(2) = 3.50$
Polynomial effect model ^b	$\Delta\chi^2(1) = 0.32$	$\Delta\chi^2(1) = \mathbf{5.27^*}$	$\Delta\chi^2(3) = 3.12$	$\Delta\chi^2(3) = 1.43$
LMX trajectories				
Baseline model	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$
Main effect model ^a	$\Delta\chi^2(2) = 0.72$	$\Delta\chi^2(2) = 2.74$	$\Delta\chi^2(2) = 0.01$	$\Delta\chi^2(2) = 0.68$
Polynomial effect model ^b	$\Delta\chi^2(1) = 0.05$	$\Delta\chi^2(1) = \mathbf{6.14^*}$	$\Delta\chi^2(3) = 3.64$	$\Delta\chi^2(3) = 1.88$
<u>Subordinates' Ratings</u>				
Initial LMX				
Baseline model	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$
Main effect model ^a	$\Delta\chi^2(2) = \mathbf{9.30^*}$	$\Delta\chi^2(2) = 2.68$	$\Delta\chi^2(2) = 0.92$	$\Delta\chi^2(2) = 5.10$
Polynomial effect model ^b	$\Delta\chi^2(1) = 1.31$	$\Delta\chi^2(1) = 0.31$	$\Delta\chi^2(3) = 7.06$	$\Delta\chi^2(3) = 0.95$

Note. ^a Significance determined by χ^2 difference test against baseline model. ^b Significance determined by χ^2 difference test against main effect model.

* $p < .05$.

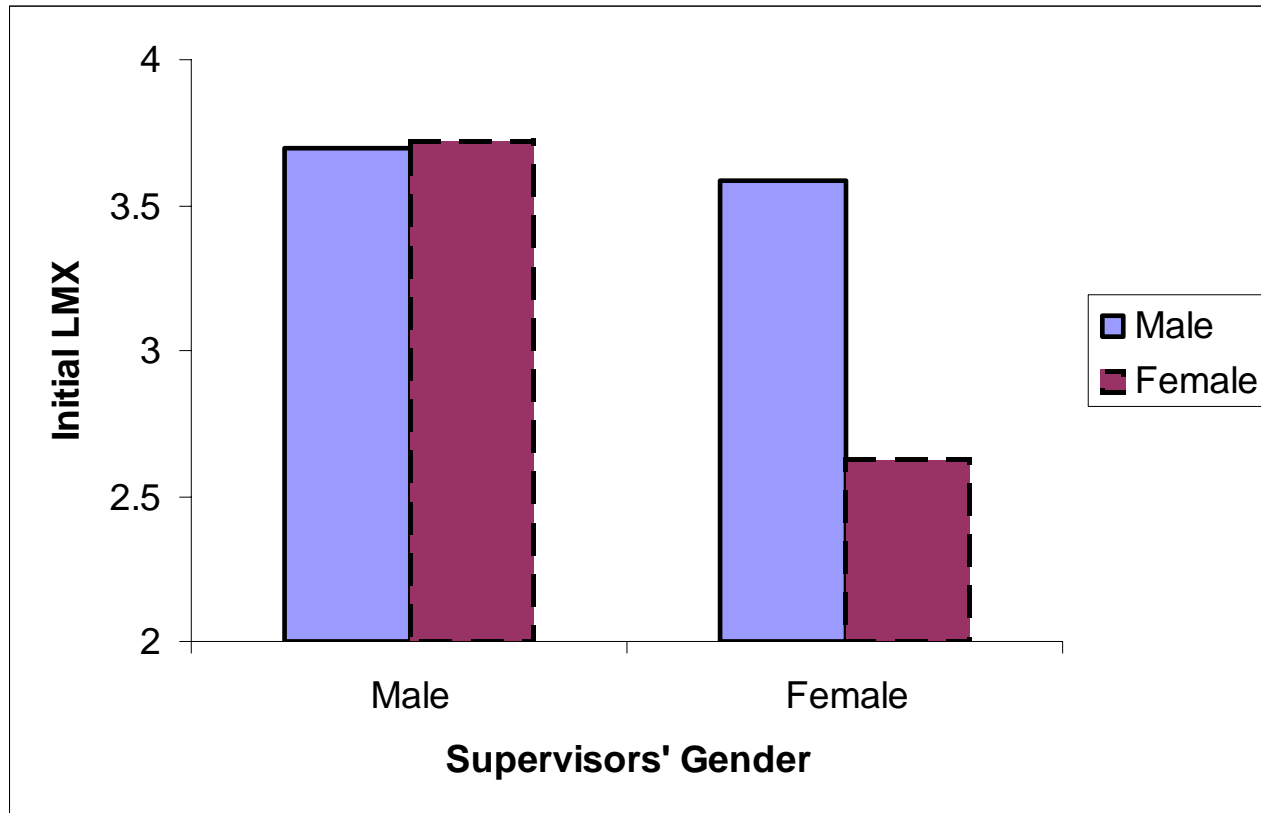
Table 4
Polynomial Regression Results of Demographic Variables on Initial Levels of LMX Ratings

Variables	Race	Gender	Age	Educational Level
<u>Supervisors' Ratings of Initial LMX</u>				
Intercept	3.679 (0.159)*	2.562 (0.408)*	3.679 (0.159)*	3.679 (0.159)*
Supervisor's tenure	0.001 (0.001)	0.001 (0.006)	0.001 (0.001)	0.001 (0.001)
Supervisor's span of control	-0.011 (0.005)*	-0.007 (0.005)	-0.011 (0.005)*	-0.011 (0.005)*
Supervisor characteristic	--	1.090 (0.373)*	--	--
Subordinate characteristic	--	0.953 (0.382)*	--	--
Supervisor characteristic ²	--	--	--	--
Supervisor × Subordinate characteristic	--	-0.978 (0.419)*	--	--
Subordinate characteristic ²	--	--	--	--
<u>Subordinates' Ratings of Initial LMX</u>				
Intercept	2.178 (0.306)*	2.690 (0.235)*	2.690 (0.235)*	2.690 (0.235)*
Supervisor's tenure	0.003 (0.001)*	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)
Supervisor's span of control	0.002 (0.008)	0.007 (0.007)	0.007 (0.007)	0.007 (0.007)
Supervisor characteristic	0.571 (0.178)*	--	--	--
Subordinate characteristic	0.044 (0.175)	--	--	--
Supervisor characteristic ²	--	--	--	--
Supervisor × Subordinate characteristic	--	--	--	--
Subordinate characteristic ²	--	--	--	--

Note. Entries are unstandardized regression coefficients, standard errors are in parentheses.

* $p < .05$.

Figure 6. Initial LMX as a function of supervisors' and subordinates' gender.



LMX ratings, as indicated by the regression coefficients in Table 6. No other effect was significant.

LMX Trajectories as Outcomes

As there was no significant variability in the subordinates' LMX trajectories, hypotheses 4 and 5 can only be tested using the supervisors' ratings. As indicated in Table 5, significantly better fit was found for the main effect models that included the supervisor's and subordinate's extraversion [$\Delta\chi^2(2) = 6.39, p < .05$] and dominance [$\Delta\chi^2(2) = 8.19, p < .05$]. The regression coefficients in Table 7 show that the trajectory in LMX development was more positive for supervisors with higher extraversion and dominance, and for subordinates with higher dominance. No other effect was significant. The lack of higher order effect means that neither similarity nor complementarity between the supervisors and subordinates were influencing the LMX development. Thus, both hypotheses 4 and 5 were not supported.

Table 3 also shows the results of exploratory analyses regarding the effects of demographic variables on LMX development. The inclusion of the supervisor's gender by subordinate's gender term resulted in a significantly better fit [$\Delta\chi^2(1) = 6.14, p < .05$] over the main effect model. Using the coefficients of the regression results from Table 8, the effects of gender on LMX trajectory is shown in Figure 7. A pattern similar to the effects of gender on initial LMX (i.e., Figure 6) was found, where LMX development was negative when both supervisor and subordinate were female. Figure 8 serves as another way to illustrate the interaction effect between the supervisors' and subordinates' gender. The mean LMX ratings across the three time periods for the four configurations of gender combinations were plotted. As shown, when both supervisors and subordinates were female, the mean initial LMX rating (i.e., time 1 LMX) was the lowest while the other three means do not differ from each other.

Table 5
Personality Variables as Predictors: Nested Models Comparison

Variables	Extraversion	Neuroticism	Openness	Dominance	Agreeableness	Conscientiousness
<u>Supervisors' Ratings</u>						
Initial LMX						
Baseline model	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$	$\chi^2(8) = 83.61^*$
Main effect model ^a	$\Delta\chi^2(2) = 17.33^*$	$\Delta\chi^2(2) = 3.03$	$\Delta\chi^2(2) = 3.15$	$\Delta\chi^2(2) = 9.17^*$	$\Delta\chi^2(2) = 5.41$	$\Delta\chi^2(2) = 0.79$
Polynomial effect model ^b	$\Delta\chi^2(3) = 0.82$	$\Delta\chi^2(3) = 4.87$	$\Delta\chi^2(3) = 2.47$	$\Delta\chi^2(3) = 0.27$	$\Delta\chi^2(3) = 5.74$	$\Delta\chi^2(3) = 6.20$
LMX trajectories						
Baseline model	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$	$\chi^2(8) = 86.96^*$
Main effect model ^a	$\Delta\chi^2(2) = 6.39^*$	$\Delta\chi^2(2) = 0.51$	$\Delta\chi^2(2) = 4.83$	$\Delta\chi^2(2) = 8.19^*$	$\Delta\chi^2(2) = 2.88$	$\Delta\chi^2(2) = 1.58$
Polynomial effect model ^b	$\Delta\chi^2(3) = 6.17$	$\Delta\chi^2(3) = 5.07$	$\Delta\chi^2(3) = 1.52$	$\Delta\chi^2(3) = 1.20$	$\Delta\chi^2(3) = 6.22$	$\Delta\chi^2(3) = 1.60$
<u>Subordinates' Ratings</u>						
Initial LMX						
Baseline model	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$	$\chi^2(6) = 224.25^*$
Main effect model ^a	$\Delta\chi^2(2) = 3.45$	$\Delta\chi^2(2) = 2.94$	$\Delta\chi^2(2) = 2.60$	$\Delta\chi^2(2) = 0.59$	$\Delta\chi^2(2) = 4.61$	$\Delta\chi^2(2) = 4.14$
Polynomial effect model ^b	$\Delta\chi^2(3) = 3.77$	$\Delta\chi^2(3) = 3.59$	$\Delta\chi^2(3) = 4.22$	$\Delta\chi^2(3) = 2.80$	$\Delta\chi^2(3) = 4.71$	$\Delta\chi^2(3) = 2.52$

Note. ^a Significance determined by χ^2 difference test against baseline model. ^b Significance determined by χ^2 difference test against main effect model.

* $p < .05$.

Table 6
Polynomial Regression Results of Personality Variables on Initial Levels of LMX Ratings

Variables	Extraversion	Neuroticism	Openness	Dominance	Agreeableness	Conscientiousness
<u>Supervisors' Ratings of Initial LMX</u>						
Intercept	1.051 (0.753)	3.679 (0.159)*	3.679 (0.159)*	1.969 (0.563)*	3.679 (0.159)*	3.679 (0.159)*
Supervisor's tenure	0.001 (0.000)*	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Supervisor's span of control	-0.012 (0.004)*	-0.011 (0.005)*	-0.011 (0.005)*	-0.012 (0.004)*	-0.011 (0.005)*	-0.011 (0.005)*
Supervisor characteristic	0.520 (0.115)*	--	--	0.275 (0.108)*	--	--
Subordinate characteristic	0.191 (0.139)	--	--	0.209 (0.109)	--	--
Supervisor characteristic ²	--	--	--	--	--	--
Supervisor × Subordinate characteristic	--	--	--	--	--	--
Subordinate characteristic ²	--	--	--	--	--	--
<u>Subordinates' Ratings of Initial LMX</u>						
Intercept	2.690 (0.235)*	2.690 (0.235)*	2.690 (0.235)*	2.690 (0.235)*	2.690 (0.235)*	2.690 (0.235)*
Supervisor's tenure	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)
Supervisor's span of control	0.007 (0.007)	0.007 (0.007)	0.007 (0.007)	0.007 (0.007)	0.007 (0.007)	0.007 (0.007)
Supervisor characteristic	--	--	--	--	--	--
Subordinate characteristic	--	--	--	--	--	--
Supervisor characteristic ²	--	--	--	--	--	--
Supervisor × Subordinate characteristic	--	--	--	--	--	--
Subordinate characteristic ²	--	--	--	--	--	--

Note. Entries are unstandardized regression coefficients, standard errors are in parentheses.

* $p < .05$.

Table 7
Polynomial Regression Results of Personality Variables on Trajectories of LMX Ratings

Variables	Extraversion	Neuroticism	Openness	Dominance	Agreeableness	Conscientiousness
<u>Trajectories of Supervisors' LMX Ratings</u>						
Intercept	-0.959 (0.415)*	0.109 (0.078)	0.109 (0.078)	-0.670 (0.279)*	0.109 (0.078)	0.109 (0.078)
Supervisor's tenure	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Supervisor's span of control	-0.005 (0.002)*	-0.003 (0.002)	-0.003 (0.002)	-0.004 (0.002)*	-0.003 (0.002)	-0.003 (0.002)
Supervisor characteristic	0.152 (0.059)*	--	--	0.107 (0.053)*	--	--
Subordinate characteristic	0.130 (0.078)	--	--	0.128 (0.053)*	--	--
Supervisor characteristic ²	--	--	--	--	--	--
Supervisor × Subordinate characteristic	--	--	--	--	--	--
Subordinate characteristic ²	--	--	--	--	--	--

Note. Entries are unstandardized regression coefficients, standard errors are in parentheses.

* $p < .05$.

Table 8
Polynomial Regression Results of Demographic Variables on Trajectories of LMX Ratings

Variables	Race	Gender	Age	Educational Level
<u>Trajectories of Supervisors' LMX Ratings</u>				
Intercept	0.109 (0.078)	-0.472 (0.202)*	0.109 (0.078)	0.109 (0.078)
Supervisor's tenure	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Supervisor's span of control	-0.003 (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.003 (0.002)
Supervisor characteristic	--	0.550 (0.184)*	--	--
Subordinate characteristic	--	0.499 (0.187)*	--	--
Supervisor characteristic ²	--	--	--	--
Supervisor × Subordinate characteristic	--	-0.505 (0.201)*	--	--
Subordinate characteristic ²	--	--	--	--

Note. Entries are unstandardized regression coefficients, standard errors are in parentheses.

* $p < .05$.

Figure 7. LMX trajectories as a function of supervisors' and subordinates' gender.

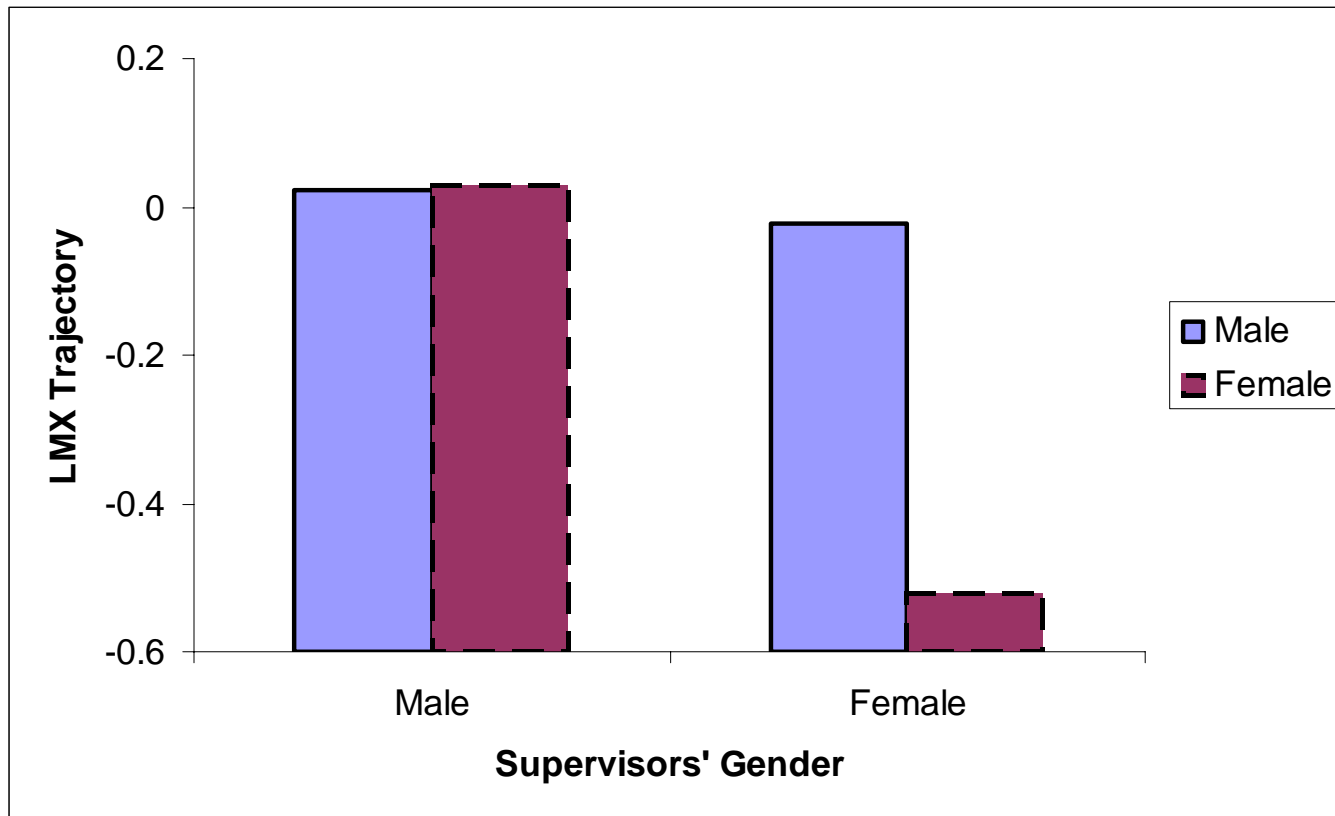
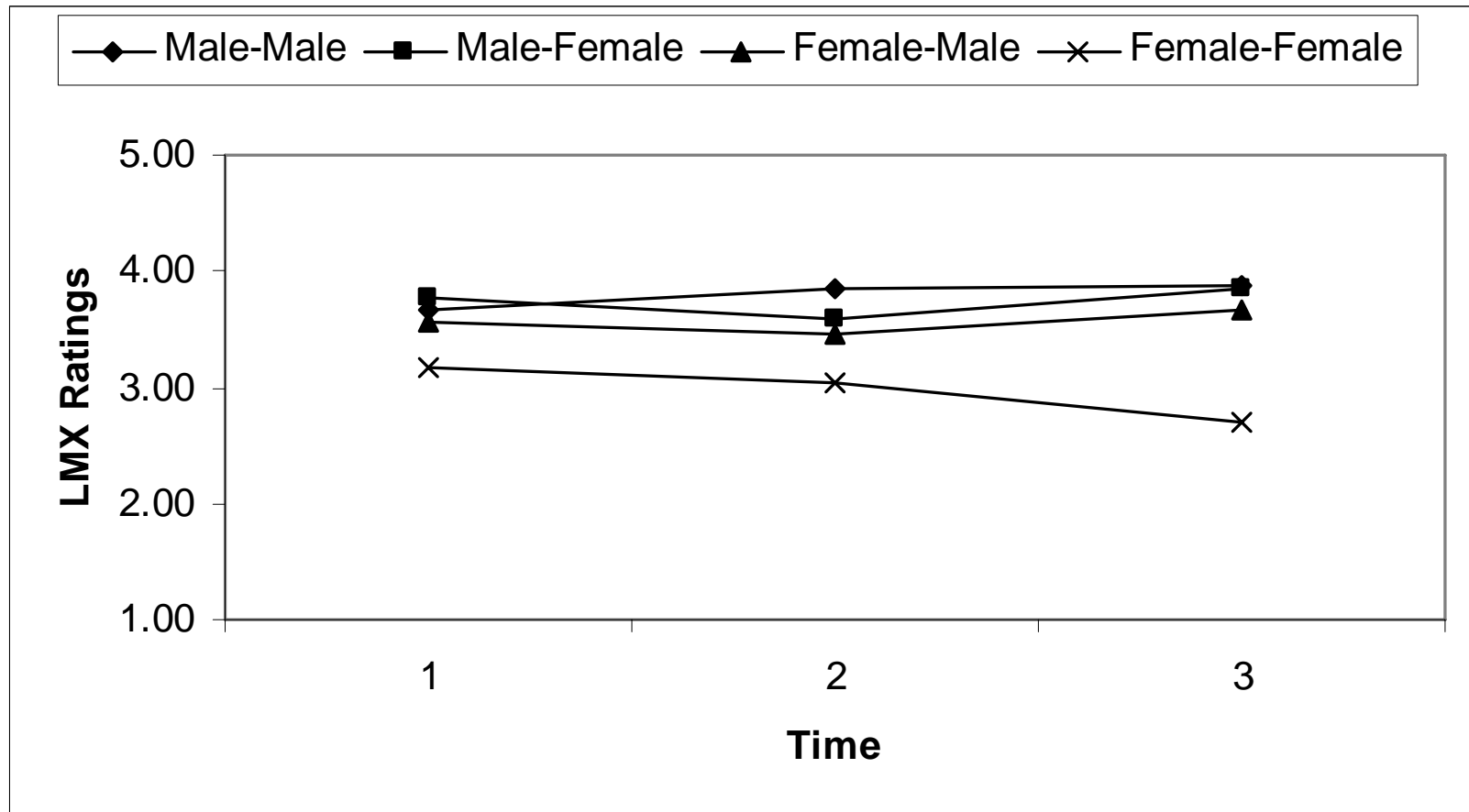


Figure 8. Mean LMX ratings across four types of gender compositions.



Likewise, while the other three sets of trajectories were very similar, the rate of change in LMX ratings was negative for the female-female dyads. No other effect was significant.

Summary of the Level-2 Model Results

For the prediction of initial LMX, the results indicated that supervisors who are higher on extraversion and dominance rated the quality of exchange as better. However, when both supervisor and subordinates were female, the supervisor gave significantly lower LMX ratings. Finally, subordinates rated the quality of exchange as better when the supervisors were Chinese. Results regarding the prediction of LMX trajectories indicated that quality of exchange progressed faster when the supervisors were higher on extraversion and dominance and when subordinates were higher on dominance. However, quality of LMX deteriorated when both supervisors and subordinates were females.

CHAPTER 5
DISCUSSION

Given the large amount of research evidence that LMX is positively related to several important organizational outcomes (e.g., Gerstner & Day, 1997; Graen et al., 1982; Klein & Kim, 1998), the present study sought to extend the literature by investigating the antecedents of LMX development. This is particularly essential because the small, though growing, body of studies that examined the predictors of LMX has yielded mixed results (e.g., Bauer & Green, 1996; Engle & Lord, 1997; Green et al., 1996; Liden et al., 1993; McClane, 1991). Overall, the results from the present study demonstrated that in spite of an apparent stability in LMX ratings that was consistent with past research (Liden et al., 1993; Wakabayashi et al., 1988), the trajectories in LMX development can still be meaningfully modeled and predicted. However, none of the proposed hypotheses was supported, and the findings will be discussed in greater detail next.

Demographic Variables as Predictors of LMX

Based on the similarity-attraction paradigm (Byrne, 1971), it was proposed that supervisor-subordinate dyads with same race (H2a) and gender (H2b) would have higher level of initial LMX. The results showed that race had no impact on the supervisors' LMX ratings. On the other hand, subordinates of all races consistently reported a higher level of initial LMX when their supervisors were Chinese. While it is not clear why subordinates reported higher initial LMX with Chinese supervisors, the overall lack of a race similarity effect could be a function of the overall racial tolerance and harmony in the country of study. For the last four decades, the society as a whole was extremely well integrated socially and politically. Thus racial identity may not be an important social cue in their interactions.

In terms of the effect of gender, quality of exchange was lower initially and also degenerated over time when both supervisor and subordinate were female. One possible explanation could be the occupational context of the study. Being law enforcement officers, which is a traditionally or stereotypically male-dominated occupation, female supervisors would find it more challenging to prove themselves as effective leaders in general (e.g., Eagly, Makhijani, & Klonsky, 1992). By extension, they may regard the assignment of female subordinates as a vote of no confidence for their leadership ability (i.e., they could not lead male subordinates) and reacted negatively. This explanation is admittedly tentative and speculative.

Drawing upon Tsui and coworkers' works on relational norms (Tsui et al., 1995, 2002), it was proposed that dissimilarity between supervisor and subordinate in terms of age (H3a) and educational level (H3b), with the supervisors being higher, would be related to higher initial level of LMX quality. However, no significant effect was found for either variable. Given the extremely low variability in the subordinates' age and educational level, one might posit that the current sample simply did not allow for a "fair" test of the hypothesized relationships. Thus, the ideas of dissimilarity effect via relational norms remain viable and should be further investigated in future research.

Personality Variables as Predictors of LMX

Relying on interpersonal interaction theory (Carson, 1969; Kiesler, 1983, 1996) and past team diversity research (Harrison et al., 1998, 2002; Pelled et al., 1999), it was proposed that supervisors' and subordinates' personality would affect the development of LMX over time via either similarity (H4) or complementarity (H5) mechanisms. However, neither a similarity nor complementarity effect was found for any of the six personality variables investigated. Instead,

supervisors' extraversion and dominance positively predicted the initial quality of exchange as well as subsequent development of LMX. It could be that more extroverted and dominant supervisors were more capable or confident at initiating and nourishing the building of trust and respect with their subordinates. However, the lack of replication with the subordinates' LMX ratings means that one could not rule out completely the possibility of common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

More interestingly, subordinates' dominance was positively related to the trajectory of LMX development as rated by the supervisors. That is, supervisors rated that the exchange quality advanced faster when the subordinates were more dominant. It could be that more dominant subordinates were actually performing better on the job, which led to enhanced relationship quality over time. However, this mediating role of job performance is doubtful as subordinates' conscientiousness, a robust predictor of job performance (Barrick & Mount, 1991), would also have been but was not related to LMX trajectories. Alternatively, it is possible that rather than preferring subordinates who were relatively lower in dominance according to the relational norms perspective (i.e., complementarity effect), supervisors simply viewed it as a valued trait in law enforcement and developed better relationships with those who were more dominant.

Emergent Theme in the Findings

A closer examination of Table 1 also shows that both perspectives of LMX have different patterns of relationships with various correlates. For example, the supervisors' LMX ratings were consistently related to the supervisors' race such that Chinese supervisors rated the relationship quality lower (r s ranged from $-.29$ to $-.39$). While the same pattern of relationship

was not found for the subordinates' within-source responses, across source, the subordinates rated the relationship quality as higher when their supervisors were Chinese (*rs* ranged from .16 to .33). In a similar way, subordinates gave higher LMX ratings when the supervisors were older (*rs* ranged from .24 to .40). These findings appear to lend some support to the relational norm perspective (Tsui et al., 1995, 2002), in that subordinates prefer and consider their relationship with more powerful supervisors (as indicated by the majority race and age) to be better.

Though the hypothesized similarity and complementarity effects were not supported, some of the significant findings appear to share a common thread in their patterns of relationships. In terms of race, subordinates consistently reported higher level of initial LMX when their supervisors were Chinese. As for gender, quality of exchange was lower initially and also degenerated over time when both supervisor and subordinate were female. Finally, supervisors' dominance also positively predicted the initial quality of exchange as well as subsequent development of LMX. The emergent theme for all these findings is the fact that subordinates have better or seek to develop better exchange relationships with supervisors who are powerful, as indicated by their majority status (i.e., race and gender) and trait dominance.

As mentioned in the chapter regarding the context of the present study, the nation in which this study was conducted ranked very high in terms of power distance. Moreover, the organization is a law enforcement agency and, like most paramilitary organizations, emphasizes in many ways order, respect, and discipline. This means that the dynamics of power inequality will be likely to operate both formally (through organizational structure) and informally (through cultural norms) among the participants.

Drawing from extensive research in social psychology, Keltner, Gruenfeld, and Anderson (2003) reviewed the impact of power on how individuals act and feel within a social context. In

general, high-power individuals tend to experience positive affect, are more attentive to social rewards, and act in a more disinhibited manner. Conversely, low-power individuals tend to experience negative affect, are more attentive to threat and punishments, and engage in inhibited behaviors consistent with social norms. The implication for LMX theory and research is that when the power distance is very high (as in this study), the onus might rest on the supervisors to actively offer the subordinates the opportunity to develop high quality relationships. Otherwise, the subordinates are likely to constrain themselves to engage only in role-prescribed or task-related behaviors. This is consistent with the finding that the supervisors' extraversion was positively related to the initial quality of exchange as well as subsequent development of LMX.

In addition, Tiedens, Ellsworth, and Mesquita (2000) investigated the relationship between power and expectations about emotions. Through three vignette studies, they showed that high-power individuals were perceived as angry when things go wrong and displaying pride when things go well. Conversely, low-power individuals were perceived as displaying sadness and guilt for negative outcomes and as feeling appreciative for positive outcomes. In their second study, they also found support that power status was inferred from the emotions displayed. Specifically, individuals who displayed anger and pride were rated as high-status, whereas individuals who displayed sadness, guilt, and appreciation were rated as lower-status. This is consistent with the present findings that supervisors' dominance was positively related to the initial quality of exchange as well as subsequent development of LMX. That is, dominant supervisors may be viewed as more powerful as they are more likely to display emotions consistent with high-status individuals. Tiedens et al. (2000) also commented that when low-power individuals display anger and pride, they might be communicating their sense of competence, and "through such expressions, she or he might accrue status and power" (p. 572).

This could explain why the subordinates' dominance was positively related to the trajectory of LMX development as rated by the supervisors.

Finally, Vescio and colleagues (Vescio, Gervais, Snyder, & Hoover, 2005; Vescio, Snyder, & Butz, 2003) conducted a series of studies and demonstrated that high-power individuals may engage in patronizing behaviors when interacting with the low-power individuals. Specifically, the high-power individuals may offer much praise but provide few valued resources to the low-power individuals. When patronized, the low-power individuals often felt angry about the situation. One implication for LMX theory and research is that the relatively higher LMX ratings by the supervisors may reflect their perceptions that the quality of exchange is good. However, if that is accompanied only with much praise but little provision of valued resources, the subordinates might feel resentment and react negatively. This potential failure to see eye-to-eye in regards to the quality of relationships may also partially explain the lack of correlation between supervisory and subordinate LMX ratings in the present study. The Vescio et al. (2003; 2005) results also showed that high-power males are more likely to engage in patronizing behaviors towards low-power females in a masculine domain. However, the present study did not find dyads with male-supervisors and female-subordinates to have low LMX.

Comparisons with Past Studies on LMX Development

Table 9 attempts to lay out some of the main similarities and differences between the present study and two LMX development studies conducted in the past (Bauer & Green, 1996; Liden et al., 1993). First, in terms of the time frame of the studies, Liden et al. (1993) collected

Table 9
Predicting LMX Development: Comparisons between Liden et al., Bauer and Green, and the Present Study

	Liden et al. (1993)	Bauer & Green (1996)	Present Study
Time Frame	2 weeks, 6 weeks, 6 months	2 months, 9 months	1 week, 5 weeks, 9 weeks
LMX Ratings: ^a			
Member-rated	Time 1: 5.38 (0.96) Time 2: 5.32 (0.93) Time 3: 5.44 (0.97)	Time 1: 4.82 (1.23) Time 2: 4.81 (1.23)	Time 1: 3.31 (0.71) Time 2: 3.17 (0.72) Time 3: 3.41 (0.77)
Leader-rated	Time 1: 5.67 (0.77) Time 2: 5.68 (0.67) Time 3: 5.76 (0.67)	--	Time 1: 3.67 (0.51) Time 2: 3.75 (0.42) Time 3: 3.81 (0.38)
Key Predictors:	Demographic similarity Perceived similarity Liking Performance	Gender similarity Positive affect similarity Delegation Performance	Similarity on: Gender, Race; Extraversion, Neuroticism, Openness to experience Complementarity on: Age, Educational level; Dominance, Agreeableness, Conscientiousness

Note. ^a Means and standard deviations (in parentheses) of LMX ratings; Liden et al. and Bauer and Green used a 7-point response anchors while the present study used a 5-point response anchors. Reported means and standard deviations in Liden et al. were originally based on sums of seven items, whereas Bauer and Green and the present study reported averages across items. To facilitate the comparisons across studies, the means and standard deviations for Liden et al. had been averaged over seven items.

data at two weeks, six weeks, and six months of relationship tenure, whereas Bauer and Green (1996) assessed LMX twice, at two and nine months of relationship tenure. Similar to these two studies, the present study also examined the LMX development among new hires, but LMX were measured earlier and with shorter intervals, at weeks 1, 5, and 9 of the relationship tenure. Theoretical work on LMX had proposed that the exchange quality is developed “fairly quickly and remains stable after they have formed” (Dienesch & Liden, 1986, p. 621). Given that the primary research question in the present study is the prediction of LMX development, it is necessary to capture the mechanisms by which LMX develops before it stabilizes. Therefore, the timing and frequency of LMX measurements appear reasonable.

One observation regarding the present study is that all the means of both member- and leader-rated LMX were above 3, the mid-point on a five point response scale. This is the case even when relationship tenure was extremely short (i.e., at the end of week one). As illustrated in Table 9, such mean LMX levels are not peculiar to the current study. Past research that studied LMX of new entrants also reported LMX ratings that are above the mid-point when relationship tenure was very short. For example, Liden et al. (1993) reported that the means of member- and leader- LMX ratings at the end of 2 weeks were 5.38 and 5.67 (on a 7-point scale), respectively. Another noteworthy point is that, similar to the present findings, supervisors’ LMX ratings also had consistently higher means and smaller standard deviations than the subordinates’ ratings across the three measurement periods (in their case, two weeks, six weeks, and six months).

Finally, Table 9 also shows the key predictors of LMX development included in the studies. As mentioned earlier in the introduction section, the purpose of the present study was to extend past research by investigating the impact of supervisors’ and subordinates’ surface- and

deep-level attributes on LMX development in greater detail. While Bauer and Green (1996) looked only at gender similarity and Liden et al. (1993) computed a composite demographic similarity variable, the present study investigated a broader array of demographic variables including gender, race, age, and educational level. In terms of the deep-level attributes, the present study also included all the variables in the Big Five taxonomy as well as trait dominance. In addition, drawing upon the relational norm perspective (Tsui et al., 1995, 2002) and interpersonal interaction theory (Carson, 1969; Kiesler, 1983, 1996), the present study investigated both complementarity and similarity effects.

Supplementary Analyses

Given the low correlations between the supervisors' and subordinates' LMX ratings, one might question whether LMX is indeed dyadic in nature. That is, does LMX capture the quality of relationship *between* the two parties, or does it merely capture the idiosyncratic perception about the relationship quality *from* each party? The LMX ratings of the 46 supervisor-subordinate dyads are graphed and presented in Appendix C. As evident from the graphs, the supervisors generally tend to rate the quality of relationships more favorably than the subordinates' LMX ratings across all three survey administrations.

Differences or disagreements in ratings across sources are not uncommon in organizational research. For example, in performance appraisal research, performance ratings are likely to vary when several raters were asked to evaluate the same ratee (e.g., Harris & Schaubroeck, 1988; Murphy, Cleveland & Mohler, 2001; Viswesvaran, Ones & Schmidt, 1996). The correlations across raters for the performance ratings of the same ratee are rarely much greater than .50 (Viswesvaran et al., 1996). One perspective is that the disagreements between

raters represent substantial measurement error in the appraisal process (Viswesvaran et al., 1996). On the other hand, Cleveland and Murphy's (1992) review proposed an alternative perspective, which suggests that the variability in ratings across sources could be a reflection of the different goals pursued by different raters. Recent empirical evidence lends support to the latter perspective by demonstrating that raters' goals accounted for variance in ratings, even when actual performance levels of the ratees were statistically controlled (Murphy, Cleveland, Skattebo, & Kinney, 2004).

As illustrated above, evidence from performance appraisal research shows that disagreements in ratings across raters could be a function of random measurement error, as well as systematic and substantive differences in how the raters view the phenomenon. Similarly, the extremely low correlations between the supervisors' and subordinates' LMX ratings found in the present study cannot be solely attributable to random measurement error. While there are multiple potential sources of error in any set of observed ratings (Schmidt & Hunter, 1996), it is extremely unlikely that the low correlations were the results of inter-rater error alone given the relatively high inter-item reliabilities, with coefficient alphas ranging from .76 to .92.

There are two possible reasons for the substantive differences in the assessments of relationship quality across the two sources. First, supervisors and subordinates may be motivated by different goals when they rated LMX. While all the seven items in the LMX scale revolve around the dyadic relationship between the leader and member, one might argue from a closer inspection of the item wordings that the primary focus still appear to be the leader or supervisor. Except for the overall item "how would you characterize your working relationship with your supervisor/subordinate?", the other six items refer directly to the leaders' attitude (e.g., satisfaction with member), cognitions (e.g., understand member's job problems and needs,

recognize member's potential), and actions (e.g., help member solve work-related problems). In that regard, supervisors' LMX ratings may be a subtle form of self-ratings.

With respect to self-ratings, performance appraisal research has shown that correlations of self-other ratings tend to be lower than correlations of other-other ratings. Specifically, Harris and Schaubroeck's (1988) meta-analysis found stronger peer-supervisor correlations ($\rho = .62$) than self-supervisor ($\rho = .35$) and self-peer ($\rho = .36$) correlations. One important reason for the lower self-other correlation is individuals' tendency to overrate their own performance. For instance, Meyer (1980) reported that 40% of employees across all types of jobs and organizations consistently rate themselves in the top 10% of performance, and nearly all employees rate themselves as better than 75% of co-workers in similar jobs.

Research on upward performance feedback also suggest that inflated self-ratings might be a reason for low self-other correlations (Atwater, Roush, & Fischthal, 1995; Atwater, Waldman, Atwater, & Cartier, 2000). For example, Atwater et al. (1995) found that self-ratings decreased from time 1 to time two, which closed the gap between self- and subordinate ratings. The result was replicated in a follow-up study (Atwater et al., 2000), which found that between the first and second administration of an upward feedback system, those who overrated themselves gave much lower ratings the second time around. It is important to note that regression to the mean alone did not explain for the drop in self-ratings because the decline is evident only among raters who received feedback after time one but not for those who did not receive feedback. Thus, the leaders reduced the degree of inflated self-ratings after it was clearly shown to them that they had overrated themselves.

Therefore, to the extent that supervisors perceive, consciously or unconsciously, that LMX ratings were a form of self-ratings in leader performance, they will be more likely to

overrate the quality of relationship. From this perspective, one might consider the member-rated LMX as a more valid reflection of the true level of relationship quality.

Second, supervisors and subordinates may have different bases of comparisons when they rated relationship quality. This idea is related to research on frame of reference training, in which the stated goal of the training is that raters will rate the same stimulus in similar fashions (e.g., Sulsky & Day, 1992, 1994). The rationale for frame of reference training is that raters often do not share the same conceptualization in terms of the correspondence between observed behaviors and performance ratings. Thus, during training, raters were given feedback on their ratings on samples of behavioral incidents representing various levels of performance. This method trained raters to focus on essential job behaviors using the same rating criteria and taught them to ignore distracters when making performance judgments. Sulsky and Day (1992, 1994) demonstrated that trained raters were more accurate in their ratings compared to the control group.

In a similar manner, both supervisors and subordinates may look at the same dyadic relationship but give different LMX ratings because they compare the quality of exchange using different yardsticks. For example, supervisors may compare the relationship with the target subordinate in the context of the web of relationships he or she has with the other subordinates. On the other hand, the bases of comparison for the subordinates, in this case new hires, may be supervisors they worked with in previous jobs or even an ideal boss that they have in their cognitive schema. In that case, one might argue that the supervisors' LMX ratings were more valid because their assessments of relationship quality were rooted in the context of the workgroup and organization as well as the nature of the job. With relatively short tenure, the new hires' perceptions may be based inappropriately on their past experiences. Another possible

implication from this perspective is that LMX might be meaningfully studied only after there is sufficient time for both parties to accept or reject the relationship development process. Thus, over time, both parties will have a more accurate and realistic view about the quality of relationship, and at that point, there should be higher congruence between the two sources of LMX ratings.

Since the former perspective suggests that the subordinate ratings were more valid whereas the latter perspective suggests that the supervisor ratings were more valid, further research is definitely warranted to explicate the underlying cause for the discrepancies in LMX ratings.

However, there also appears to be substantial variability in terms of the degree of agreement in the LMX ratings across dyads. One might wonder if the discrepancies in LMX ratings across sources might be substantively meaningful. That is, does the degree of disagreement relate to other variables systematically? To examine that, follow-up exploratory analyses were conducted. Specifically, correlations between the study variables and discrepancies in LMX ratings were examined. To do that, the extent of disagreement in LMX ratings were computed by subtracting the subordinates' ratings from the supervisors' ratings, such that high LMX discrepancy scores mean that the supervisors rated the quality of relationship higher than the subordinates. The LMX discrepancy scores ranged from -1.29 to 2.15, -1.15 to 2.43, and -2.15 to 1.86, across the three time periods, indicating that some subordinates gave higher LMX ratings than their supervisors. However, Table 10 shows that, on average, supervisors rated the relationship higher in all three survey administrations. In addition, Table 10 also shows that the LMX discrepancy scores appear to be very stable across time, with correlations ranging from .54 to .76.

Table 10
Means, Standard Deviations, Reliabilities, and Correlations among Discrepancy in LMX, Performance, and Communication

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. LMX Discrepancy at T1	0.36	0.93	-								
2. LMX Discrepancy at T2	0.49	0.87	.54*	-							
3. LMX Discrepancy at T3	0.39	0.77	.62*	.76*	-						
4. Performance at T1	3.48	0.54	-.03	-.14	.15	(.76)					
5. Performance at T2	3.56	0.53	.07	.01	.22	.64*	(.73)				
6. Performance at T3	3.47	0.73	.08	-.16	.28	.73*	.63*	(.88)			
7. Communication at T1	2.00	0.79	-.47*	-.28	-.24	.11	-.06	.03	(.86)		
8. Communication at T2	2.18	0.64	-.18	-.51*	-.29	.16	-.05	.48*	.42*	(.80)	
9. Communication at T3	2.58	1.04	-.18	-.33*	-.36*	.12	.09	.16	.19	.64*	(.91)

Note: Coefficient alpha estimates of reliabilities are in parentheses. LMX Discrepancy = Supervisors' LMX ratings – Subordinates' LMX ratings; performance ratings were supervisors' assessments of their subordinates; frequency of communication was rated by the subordinates.

* $p < .05$

Table 11
Means, Standard Deviations, and Correlations between Study and Exploratory Variables

Variable	M	SD	LMX1	LMX2	LMX3	Perf1	Perf2	Perf3	Comm1	Comm2	Comm3
Control Variables											
1. Supervisors' Tenure	242.03	105.24	-.11	-.20	-.21	-.04	.00	.01	-.03	.16	.11
2. Supervisors' Span of Control	25.24	13.90	-.22	-.23	-.31*	-.08	-.18	-.24	-.01	-.21	-.12
Supervisors' Ratings											
3. Age	40.91	8.32	-.12	-.21	-.21	-.04	.05	.08	-.08	.19	.14
4. Gender ^a	0.87	0.34	.01	.15	.19	-.18	-.08	.20	.17	.29	.12
5. Educational Level	3.09	1.32	.18	.09	.22	.21	.18	.18	.16	-.07	.00
6. Race Code 1 ^b	0.57	0.50	-.47*	-.35*	-.39*	-.05	.03	.03	.33*	.10	.05
7. Race Code 2 ^b	0.32	0.47	.25	.24	.22	-.16	-.30	-.11	-.20	-.07	-.12
8. Neuroticism	2.12	0.49	-.11	-.17	-.21	.19	.05	-.06	-.16	.06	.23
9. Extraversion	3.63	0.42	.23	.16	.24	-.15	.05	.12	.24	.08	-.02
10. Openness to Experience	3.31	0.43	.30*	.28	.24	-.12	.18	-.04	-.14	-.24	-.21
11. Agreeableness	3.68	0.38	.04	-.01	.23	.21	.24	.46*	.31*	.20	-.21
12. Conscientiousness	3.89	0.36	.22	.28	.17	-.20	.07	-.27	.04	-.31	-.17
13. Dominance	4.05	0.51	.18	.03	.02	-.08	.32	.29	.06	.09	.02
14. LMX at T1	3.67	0.51	.66*	.34*	.44*	.16	.15	.30	-.06	.09	.01
15. LMX at T2	3.75	0.42	.49*	.60*	.58*	.14	.38*	.21	-.02	-.02	-.08
16. LMX at T3	3.81	0.38	.35*	.26	.56*	.42*	.42*	.67*	.10	.29	.12

Note: ^a Gender dummy coded as male = 1 and female = 0. ^b Race dummy coded as Chinese = 1 and Malays/Indians = 0 for Race Code 1; Malays = 1 and Chinese/Indians = 0 for Race Code 2. LMX 1, LMX2, LMX3 = LMX discrepancy at T1, T2, and T3; Perf1, Perf2, Perf3 = Performance at T1, T2, and T3; Comm1, Comm2, Comm3 = frequency of communication at T1, T2, T3.

* $p < .05$

Table 11 (continued)
Means, Standard Deviations, and Correlations between Study and Exploratory Variables

Variable	M	SD	LMX1	LMX2	LMX3	Perf1	Perf2	Perf3	Comm1	Comm2	Comm3
Subordinates' Ratings											
17. Age	22.10	1.68	-.05	-.08	-.19	.05	.04	-.16	.04	-.08	.10
18. Gender ^a	0.70	0.46	.02	.10	.15	-.18	-.07	-.05	.06	-.19	-.03
19. Educational Level	3.66	0.87	.08	.06	-.02	-.05	.00	-.12	-.26	-.06	-.06
20. Race Code 1 ^b	0.66	0.48	.01	-.07	.08	.08	.27	.26	-.05	.01	.07
21. Race Code 2 ^b	0.18	0.39	.11	.23	.11	-.02	-.24	.13	.09	.03	-.04
22. Neuroticism	2.12	0.44	.24	.37*	.16	-.15	-.06	-.15	-.08	-.15	-.14
23. Extraversion	3.89	0.37	-.05	-.12	-.02	-.13	-.04	.11	.13	.20	.11
24. Openness to Experience	3.36	0.42	-.13	-.14	-.08	.23	.26	.36*	.31*	.17	.14
25. Agreeableness	3.87	0.34	-.07	-.16	-.13	.02	.26	.19	.02	.10	.23
26. Conscientiousness	4.18	0.44	-.13	-.25	-.18	.20	.17	.38*	.14	.08	.21
27. Dominance	3.11	0.54	-.12	.02	.11	-.12	-.04	.01	.26	-.03	-.24
28. LMX at T1	3.31	0.71	-.86*	-.48*	-.51*	.15	.01	.08	.57*	.28	.24
29. LMX at T2	3.17	0.72	-.40*	-.90*	-.61*	.25	.20	.33	.35*	.59*	.38*
30. LMX at T3	3.41	0.77	-.55*	-.77*	-.91*	.02	-.05	.02	.33*	.45*	.48*

Note: ^a Gender dummy coded as male = 1 and female = 0. ^b Race dummy coded as Chinese = 1 and Malays/Indians = 0 for Race Code 1; Malays = 1 and Chinese/Indians = 0 for Race Code 2. LMX 1, LMX2, LMX3 = LMX discrepancy at T1, T2, and T3; Perf1, Perf2, Perf3 = Performance at T1, T2, and T3; Comm1, Comm2, Comm3 = frequency of communication at T1, T2, T3.

* $p < .05$

Next, Table 11 shows the correlations between LMX discrepancy scores and the study variables. Given the manner in which the discrepancy scores were computed, they were positively related to the supervisors' LMX ratings (r s ranged from .26 to .66) but negatively related to the subordinates' LMX ratings (r s ranged from -.40 to -.91). Based on these correlations, it is evident that the LMX discrepancy scores were more strongly related to the subordinates' ratings than the supervisors' ratings. This is attributable to the fact that the variances in subordinates' ratings were larger than the variances in supervisors' ratings. Table 11 also shows that LMX discrepancy scores were negatively related with the supervisors' race, such that the discrepancies were smaller when the supervisors were Chinese (r s ranged from -.35 to -.47). Note that the subordinates' race did not significantly relate to the LMX discrepancies. This pattern of results is consistent with the relationships presented in Table 1. Essentially, the discrepancies scores were negatively related to the supervisors' race because Chinese supervisors tended to rate the relationship quality lower whereas the subordinates tended to rate the relationship quality as higher when their supervisors were Chinese.

Finally, subordinates' job performance and frequency of communication were also examined as part of the exploratory analyses. Three items were used to measure subordinates' job performance. Supervisors were asked to rate, on a five-point Likert-type scale, the extent to which they agreed with statements such as "all things considered, this subordinate's job performance is outstanding." These three items had an internal consistency of $\alpha = .76, .73$ and $.88$ for the three survey administrations. The subordinates rated the frequency of communication they have with their supervisors via the 8-item scale adapted from Kacmar, Witt, Zivnuska, and Gully (2003). Ratings were given on a five-point response format on items such as "initiate

face-to-face conversations with your supervisor.” The estimated reliabilities were $\alpha = .86, .80,$ and $.91$ for the three survey administrations.

Table 10 shows that within the same time period, LMX discrepancy scores were negatively correlated with the frequency of communication (r s ranged from $-.36$ to $-.51$). This suggests that with greater frequency of interactions between the supervisors and subordinates, their LMX ratings will be more like to be similar. This is consistent with the related research by Bauer and Green (1998), which demonstrated that the frequency of supervisors’ behaviors in terms of clarifying tasks or providing support are positively related to the subordinates’ role clarity and feelings of acceptance by their supervisors. Patterns of correlations from Table 11 show, however, that frequency of communication was strongly related to the subordinate LMX ratings (which is same source; r s ranged from $.24$ to $.59$) but unrelated to the supervisor LMX ratings. Thus, the relationships between LMX and frequency of communication could be due to the subordinates’ implicit theory that frequent communication implies better working relationship.

While Table 10 shows that LMX discrepancies were not related to the subordinates’ performance, Table 11 shows a more interesting pattern of results. Specifically, cross source ratings between member-rated LMX and supervisor-rated subordinate performance were not related. However, correlations between supervisors’ ratings of LMX and job performance (i.e., same source data) increased over time from $.16$ to $.38$ to $.67$ across the three time periods. In addition, time-lagged correlations show that early performance was related to later LMX ratings whereas early LMX ratings were not related to later performance ratings. This suggests that supervisors appear to have first identified the high performing subordinates and went on to develop (or perceive to have developed) better working relationships with them after that.

Limitations

With only 46 matched dyads, one important limitation of the present study was small sample size, which translated to low statistical power to detect significant relationships (Cohen, 1988). This was further exacerbated by the fact that the hypothesized relationships involved higher order polynomial terms. While it is possible to calculate the statistical power of a study in a post-hoc manner using the observed effect sizes or proportion of variance explained (e.g., Murphy & Myors, 2004), the same could not be done for the present study because HMLM does not produce any effect size statistic. Nevertheless, it is advised that one should interpret the lack of support for the proposed relationships rather cautiously (cf., Aguinis, 1995).

Another possible limitation is the adequacy of the LMX measures used in the present study. The review by Schriesheim, Castro, and Cogliser (1999) showed that, during the last 30 years of research, LMX has been measured via dozens of different scales that ranged from two to 25 items. Earlier research relied mainly on the two- (e.g., Dansereau et al., 1975) or four-item (e.g., Vecchio & Gobdel, 1984) negotiating latitude scale. While different scales were still used in the late 1980s and 1990s, the field on the whole appears to gravitate towards the seven-item (LMX-7) scale used in Graen et al. (1982) and reported in Scandura and Graen (1984), which became the most commonly-used scale in LMX research (Gerstner & Day, 1997). Given the more superior psychometric properties and common usage of the LMX-7 scale, the present study also operationalized LMX via this measure.

However, as shown earlier, the means of LMX ratings were relatively high even when the relationship tenure was very short. This seems to suggest that the scale items were only able to capture moderate to high degree of relationship quality but failed to elicit responses that

correspond to low quality of exchange. One possible reason could be that both supervisors and subordinates felt that they lack the information to give low ratings. If this is the case, one would expect the variance of LMX ratings to be small at the beginning and become larger over time as respondents gained the necessary information to provide more differentiated judgments on the quality of relationship. As the variances of LMX remained the same for the subordinate ratings but actually decreased for the supervisor ratings, this does not appear to be the reason.

A second and more probable reason is leniency bias, in that raters find it hard to give low ratings. Guilford (1954, p. 278) defined leniency biases as raters' tendency "to rate those whom they know well, or whom they are ego involved, higher than they should." Since the focus of the assessment in LMX is the dyadic relationship, both supervisors and subordinates are ego involved and might fall prey of the leniency bias even if they had not known each other very well.

Finally, another limitation of the present study was the possibility that the time window of the LMX measurements may not be long enough (cf., Zaheer, Albert, & Zaheer, 1999). In other words, the development of LMX may not have fully evolved, which would explain for the null findings in the trend and variability of the subordinates' ratings. Also, supervisors and subordinates may need more time to interact before the effects of similarity or complementarity with respect to personality traits may be detectable.

Future Research

Though it was not part of the substantive investigations in the present study, one important observation was that the cross source correlations of LMX between supervisors' and subordinates' ratings were very low, and mostly negative. In addition, the two perspectives of

exchange quality were also related to different sets of predictor variables. Based on 24 studies, and corrected for unreliabilities, Gerstner and Day (1997) reported a mean correlation of .37 between leader and member ratings of LMX. They also reported that nine studies (38%) with extreme values needed to be removed before a homogeneous effect size was obtained. While it was not clear if these outliers included correlations that were negative in values, it showed that there was a substantial variability in the cross source correlations of LMX. On the whole, all these suggest that more research is warranted to explicate the causes and consequences of the discrepancy between the two views of exchange quality on the same dyadic relationship.

Conclusion

While the proposed similarity and complementarity effects were not supported, the present study contributed to the literature by demonstrating that trajectories of LMX development can be systematic and tractable in spite of the high apparent stability. In addition, the present findings also provided further evidence that the sources of LMX ratings are not interchangeable, an issue awaiting further theoretical and empirical exposition.

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APPENDIX A
ITEMS FOR SUPERVISOR QUESTIONNAIRE

Supervisor Questionnaire: Items for LMX

The phrases below describe your relationship with your subordinate. When answering these questions, please circle the number that best describes the relationship that you have with your newly assigned subordinate.

	Rarely	Occasionally	Sometimes	Fairly Often	Very Often
Does this subordinate know where he/she stands with you...does he/she usually know how satisfied you are with what he/she does?	1	2	3	4	5
	Not a Bit	A Little	A Fair Amount	Quite a Bit	A Great Deal
How well do you understand this subordinate's job problems and needs?	1	2	3	4	5
	Not at All	A Little	Moderately	Mostly	Fully
How well do you recognize this subordinate's potential?	1	2	3	4	5
	None	Small	Moderate	High	Very High
Regardless of how much formal authority you have in your position, what are the chances that you would use your power to help this subordinate solve problems in his/her work?	1	2	3	4	5
Again, regardless of the amount of formal authority you have, what are the chances that you would 'stand up for him/her' at your expense?	1	2	3	4	5
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
This subordinate would have enough confidence in you that he/she would defend and justify your decision if you were not present to do so.	1	2	3	4	5
	Extremely Ineffective	Worse than Average	Average	Better than Average	Extremely Effective
How would you characterize your working relationship with this subordinate?	1	2	3	4	5

Supervisor Questionnaire: Items for Dominance

The phrases below describe people's behaviors. Please read each statement carefully and then circle the number indicating how often you do each of the following behaviors.

	Never	Once in a while	Sometimes	Fairly Often	Often	Almost Always	Always
I set goal(s) for the other(s).	0	1	2	3	4	5	6
I gave information.	0	1	2	3	4	5	6
I expressed an opinion.	0	1	2	3	4	5	6
I criticized the other(s).	0	1	2	3	4	5	6
I took the lead in planning/organizing a project or activity.	0	1	2	3	4	5	6
I asked for a volunteer.	0	1	2	3	4	5	6
I spoke with a clear firm voice.	0	1	2	3	4	5	6
I asked the other(s) to do something.	0	1	2	3	4	5	6
I got immediately to the point.	0	1	2	3	4	5	6
I tried to get the other(s) to do something else.	0	1	2	3	4	5	6
I made a suggestion.	0	1	2	3	4	5	6
I assigned someone to a task.	0	1	2	3	4	5	6
I waited for the other person to act or talk first.	0	1	2	3	4	5	6
I went along with the other(s).	0	1	2	3	4	5	6
I did not express disagreement.	0	1	2	3	4	5	6
I spoke softly.	0	1	2	3	4	5	6
I let other(s) make plans or decisions.	0	1	2	3	4	5	6
I gave in.	0	1	2	3	4	5	6
I spoke only when I was spoken to.	0	1	2	3	4	5	6
I did not say what I wanted directly.	0	1	2	3	4	5	6
I did not state my own views.	0	1	2	3	4	5	6
I did not say how I felt.	0	1	2	3	4	5	6
I avoided taking the lead or being responsible.	0	1	2	3	4	5	6
I did not say what was on my mind.	0	1	2	3	4	5	6

Supervisor Questionnaire: Items for Job Performance

The phrases below describe people's behaviors at work. Please circle the number indicating how well each of the following items describes your newly assigned subordinate at work.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
All things considered, this subordinate's performance is outstanding.	1	2	3	4	5
This subordinate performs his/her job the way I like to see it performed.	1	2	3	4	5
This subordinate is one of the unit's most valuable employees.	1	2	3	4	5

APPENDIX B
ITEMS FOR SUBORDINATE QUESTIONNAIRE

Subordinate Questionnaire: Items for LMX

The phrases below describe your relationship with your supervisor. When answering these questions, please circle the number that best describes the relationship that you have with your assigned supervisor.

	Rarely	Occasionally	Sometimes	Fairly Often	Very Often
Do you know where you stand with your supervisor...do you usually know how satisfied your supervisor is with what you do?	1	2	3	4	5
	Not a Bit	A Little	A Fair Amount	Quite a Bit	A Great Deal
How well does your supervisor understand your job problems and needs?	1	2	3	4	5
	Not at All	A Little	Moderately	Mostly	Fully
How well does your supervisor recognize your potential?	1	2	3	4	5
	None	Small	Moderate	High	Very High
Regardless of how much formal authority he/she has in his/her position, what are the chances that your supervisor would use his/her power to help you solve problems in your work?	1	2	3	4	5
Again, regardless of the amount of formal authority your supervisor has, what are the chances that he/she would 'stand up for you' at his/her expense?	1	2	3	4	5
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I have enough confidence in my supervisor that I would defend and justify his/her decision if he/she was not present to do so.	1	2	3	4	5
	Extremely Ineffective	Worse than Average	Average	Better than Average	Extremely Effective
How would you characterize your working relationship with your supervisor?	1	2	3	4	5

Subordinate Questionnaire: Items for Dominance

The phrases below describe people's behaviors. Please read each statement carefully and then circle the number indicating how often you do each of the following behaviors.

	Never	Once in a while	Sometimes	Fairly Often	Often	Almost Always	Always
I set goal(s) for the other(s).	0	1	2	3	4	5	6
I gave information.	0	1	2	3	4	5	6
I expressed an opinion.	0	1	2	3	4	5	6
I criticized the other(s).	0	1	2	3	4	5	6
I took the lead in planning/organizing a project or activity.	0	1	2	3	4	5	6
I asked for a volunteer.	0	1	2	3	4	5	6
I spoke with a clear firm voice.	0	1	2	3	4	5	6
I asked the other(s) to do something.	0	1	2	3	4	5	6
I got immediately to the point.	0	1	2	3	4	5	6
I tried to get the other(s) to do something else.	0	1	2	3	4	5	6
I made a suggestion.	0	1	2	3	4	5	6
I assigned someone to a task.	0	1	2	3	4	5	6
I waited for the other person to act or talk first.	0	1	2	3	4	5	6
I went along with the other(s).	0	1	2	3	4	5	6
I did not express disagreement.	0	1	2	3	4	5	6
I spoke softly.	0	1	2	3	4	5	6
I let other(s) make plans or decisions.	0	1	2	3	4	5	6
I gave in.	0	1	2	3	4	5	6
I spoke only when I was spoken to.	0	1	2	3	4	5	6
I did not say what I wanted directly.	0	1	2	3	4	5	6
I did not state my own views.	0	1	2	3	4	5	6
I did not say how I felt.	0	1	2	3	4	5	6
I avoided taking the lead or being responsible.	0	1	2	3	4	5	6
I did not say what was on my mind.	0	1	2	3	4	5	6

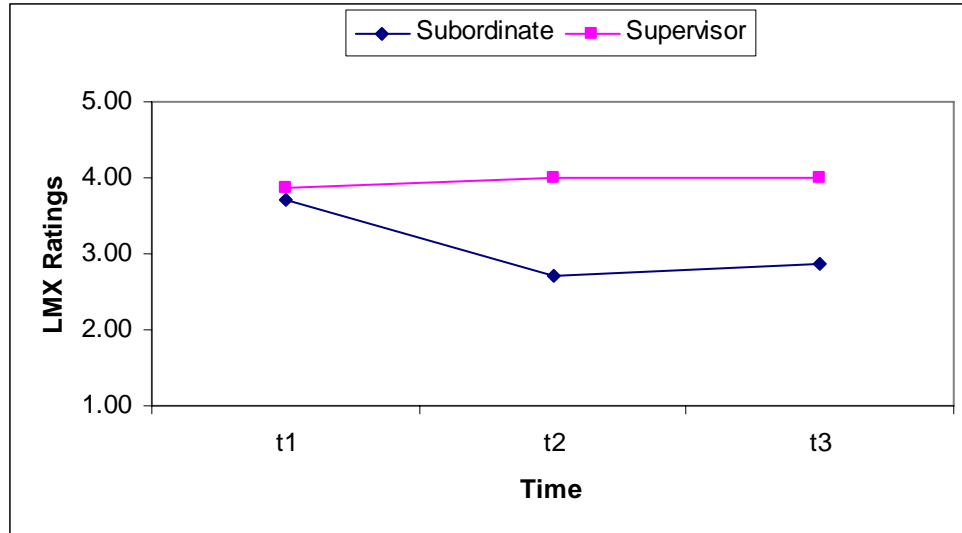
Subordinate Questionnaire: Items for Frequency of Communication

*The phrases below describe the nature of work you have with your **assigned supervisor**. Please read each statement carefully and then circle the most appropriate number on the scale.*

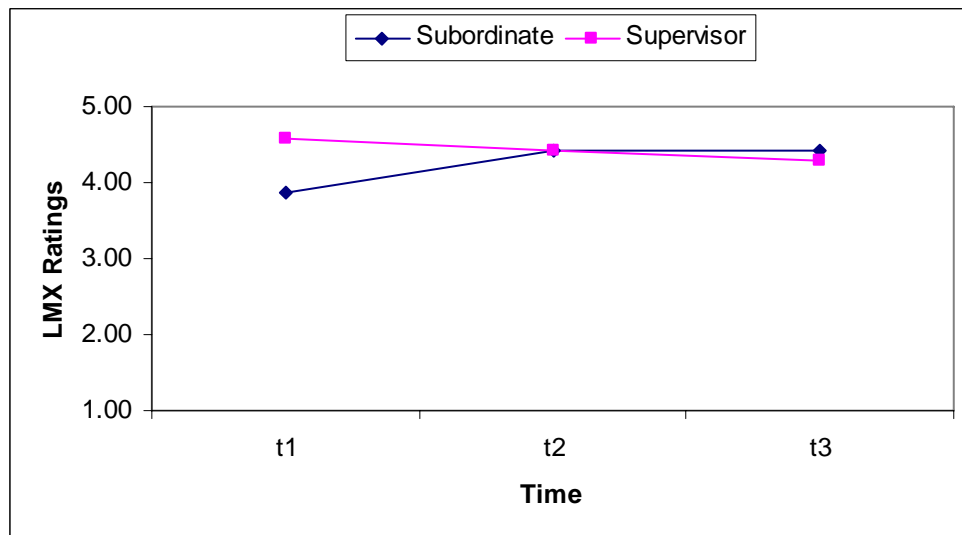
How frequently do you:	Less Than Once a Month	Once or Twice a Month	Once or Twice a Week	Once a Day	More Than Once a Day
Write memos to your supervisor?	1	2	3	4	5
Receive memos from your supervisor?	1	2	3	4	5
Initiate face-to-face conversations with your supervisor?	1	2	3	4	5
Have face-to-face conversations with your supervisor that were initiated by him/her?	1	2	3	4	5
Send your supervisor an email message?	1	2	3	4	5
Receive an email message from your supervisor?	1	2	3	4	5
Call your supervisor on the phone?	1	2	3	4	5
Receive phone calls from your supervisor?	1	2	3	4	5

APPENDIX C
LMX RATINGS ACROSS DYADS

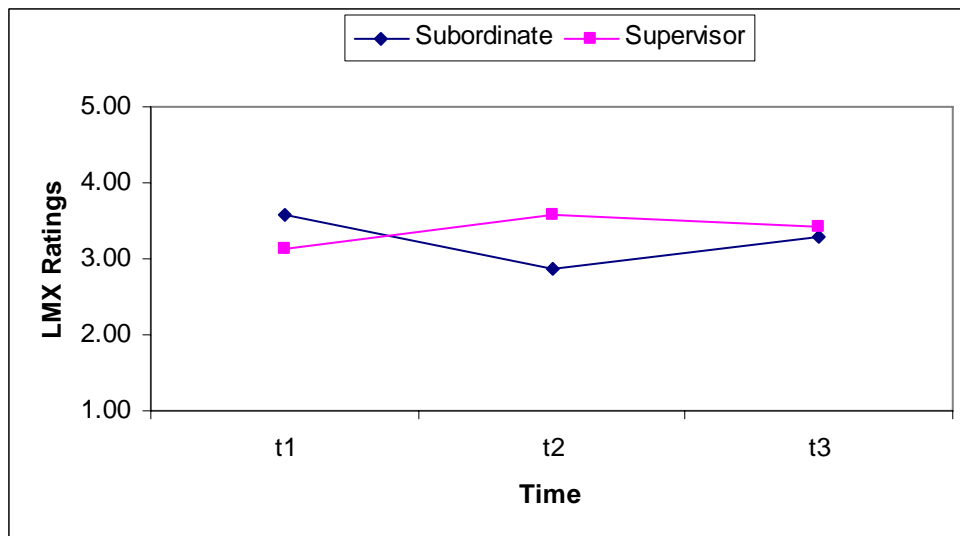
Dyad #1



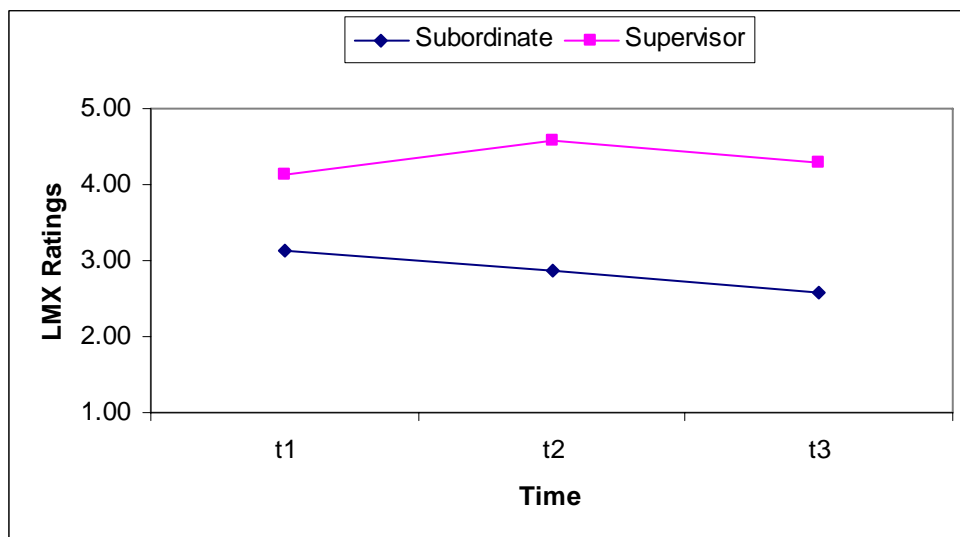
Dyad #2



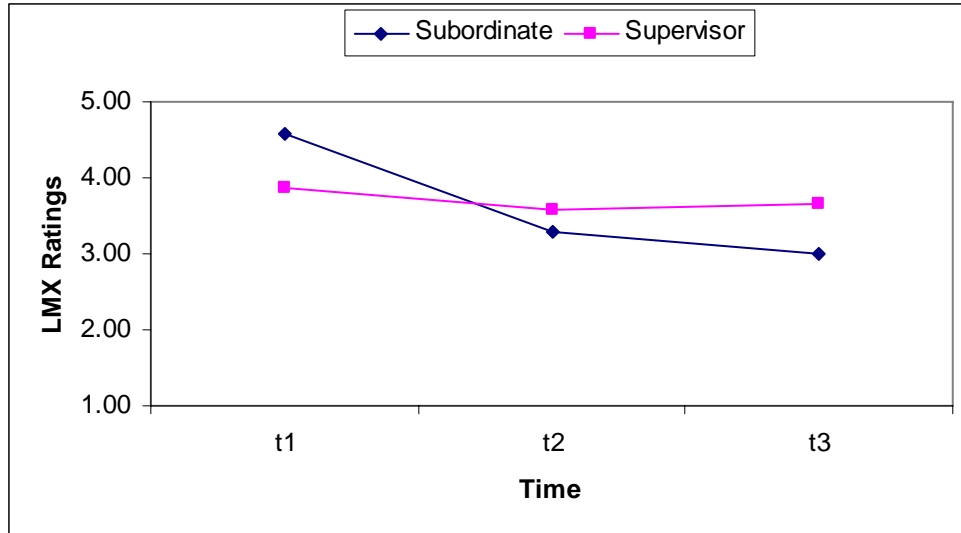
Dyad #3



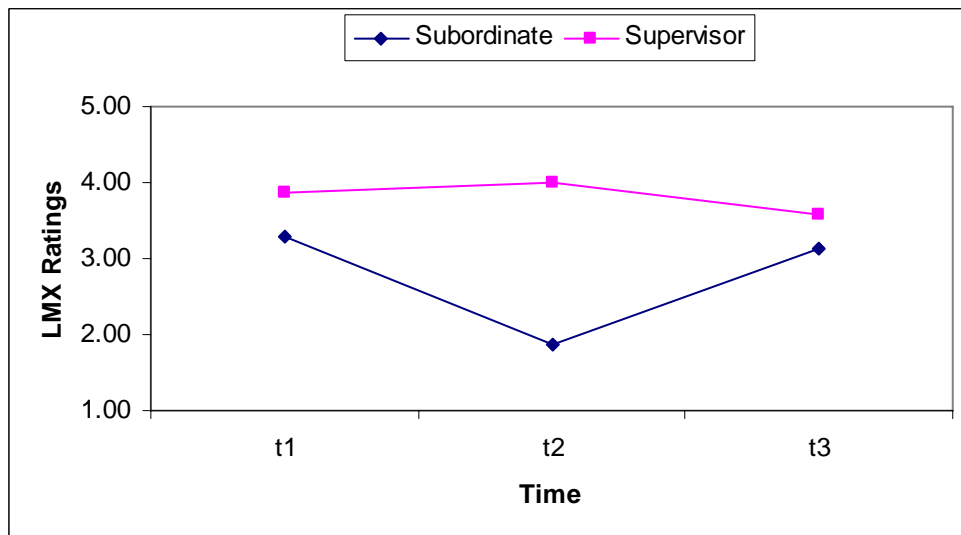
Dyad #4



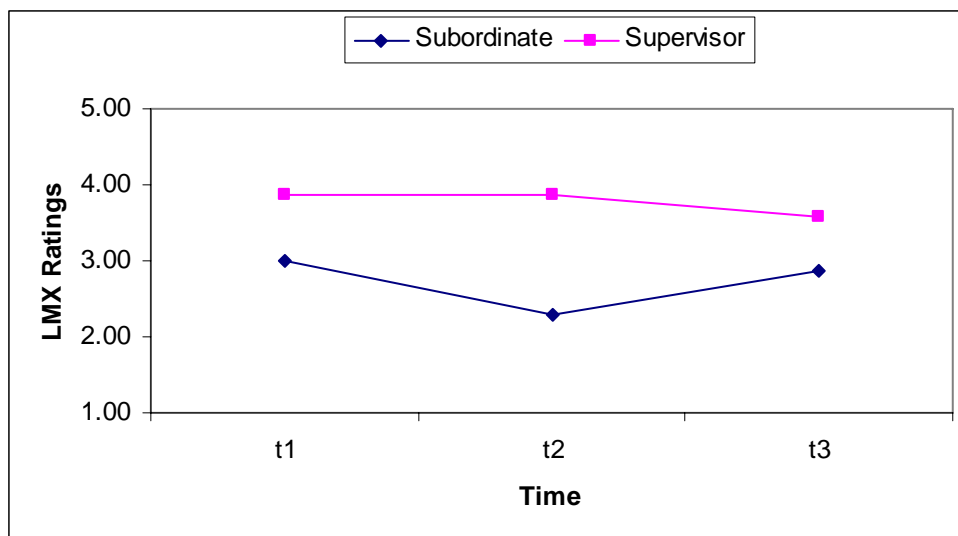
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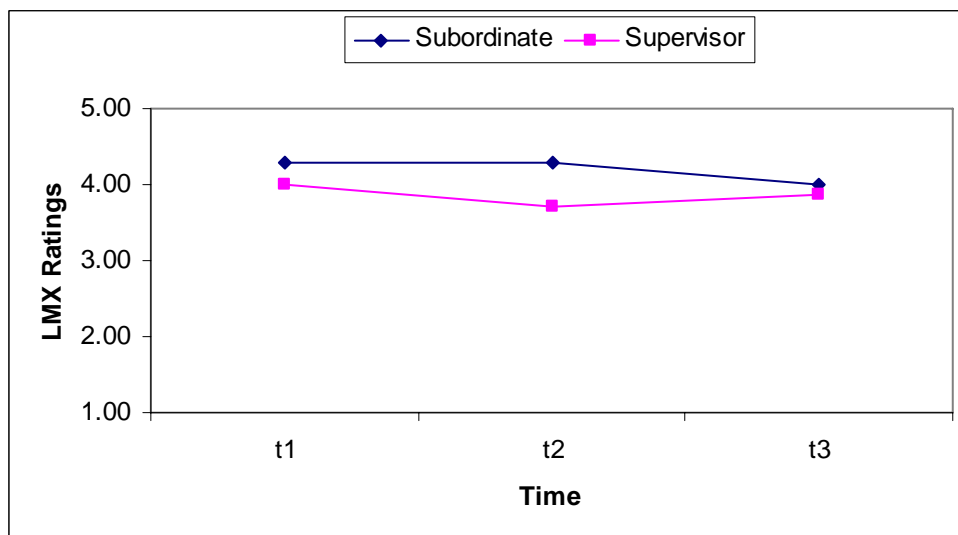
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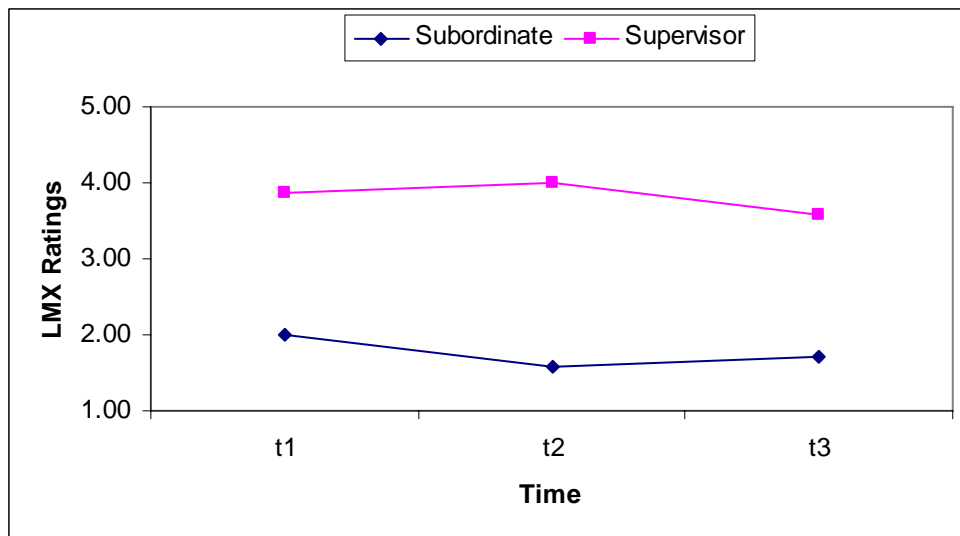
Dyad #7



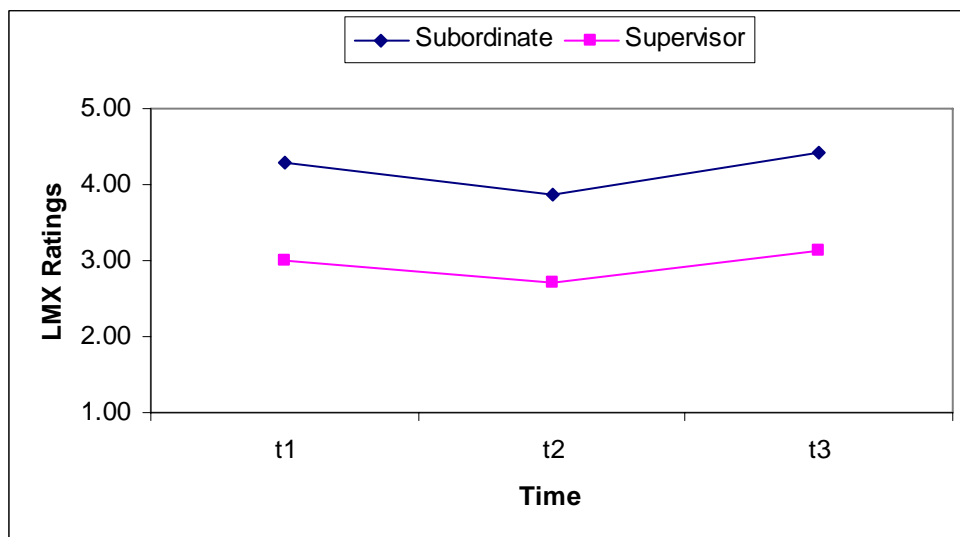
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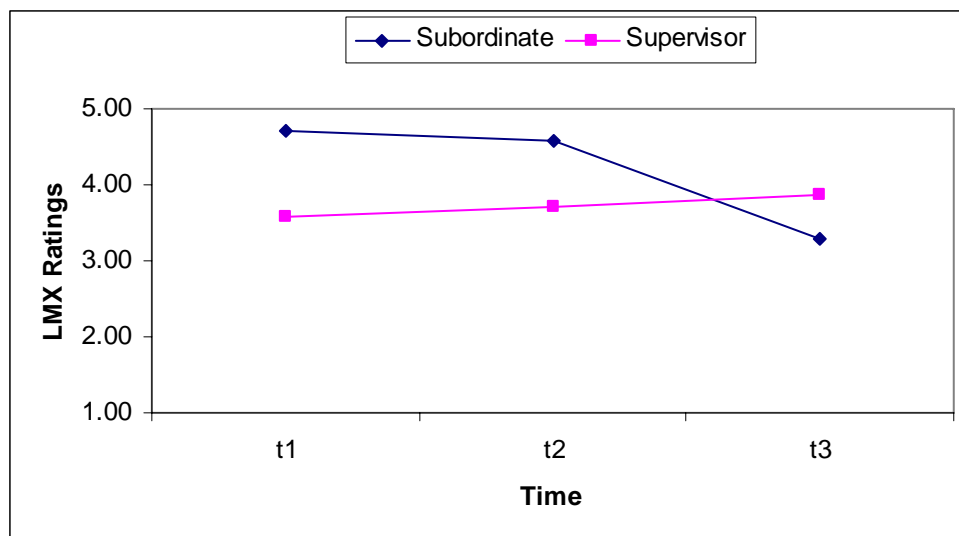
Dyad #9



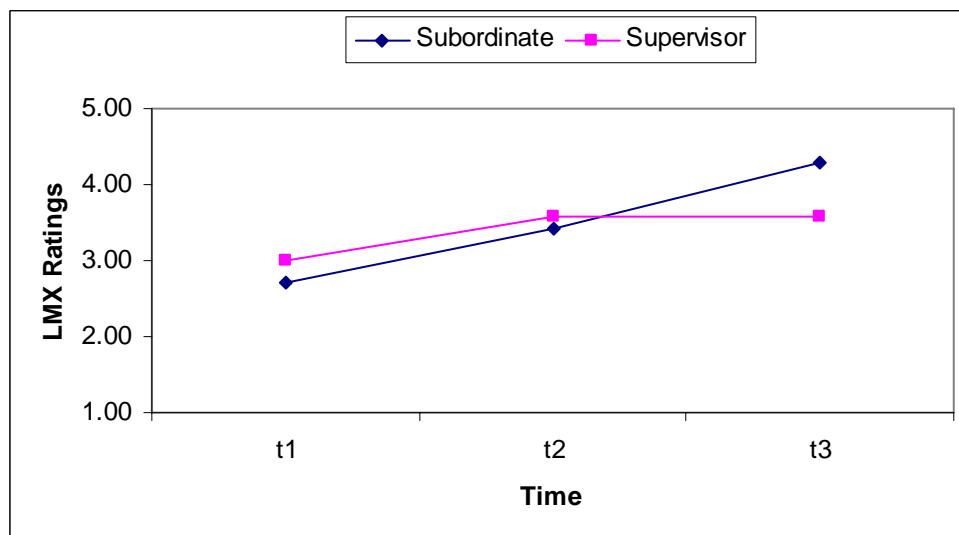
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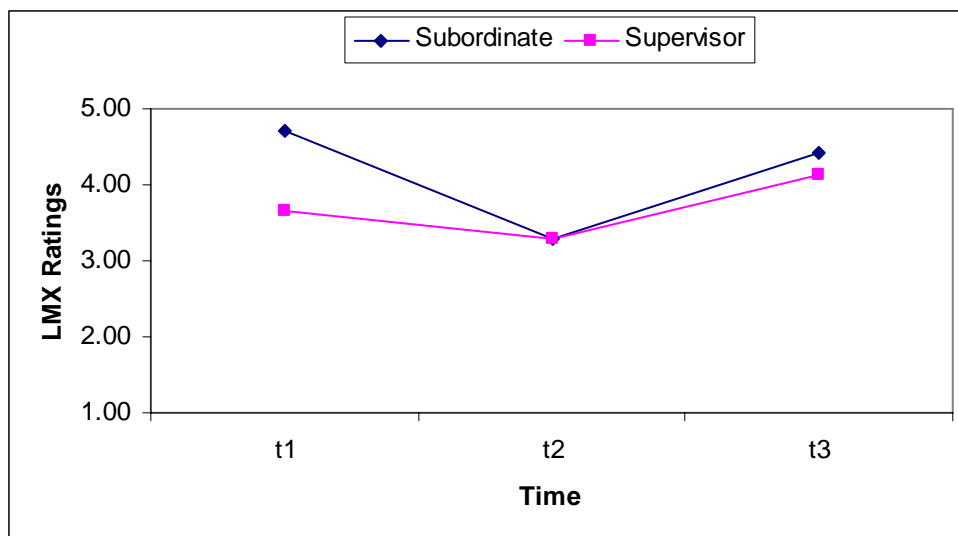
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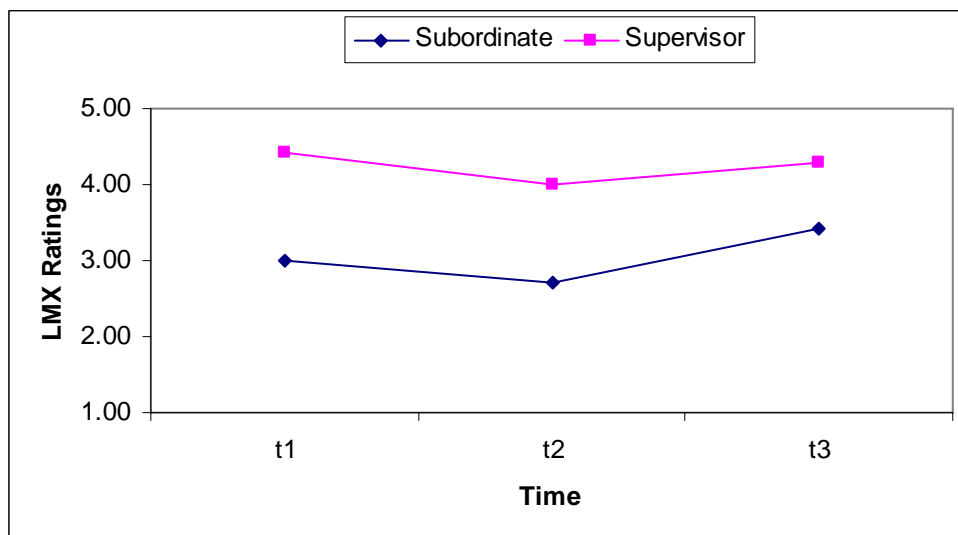
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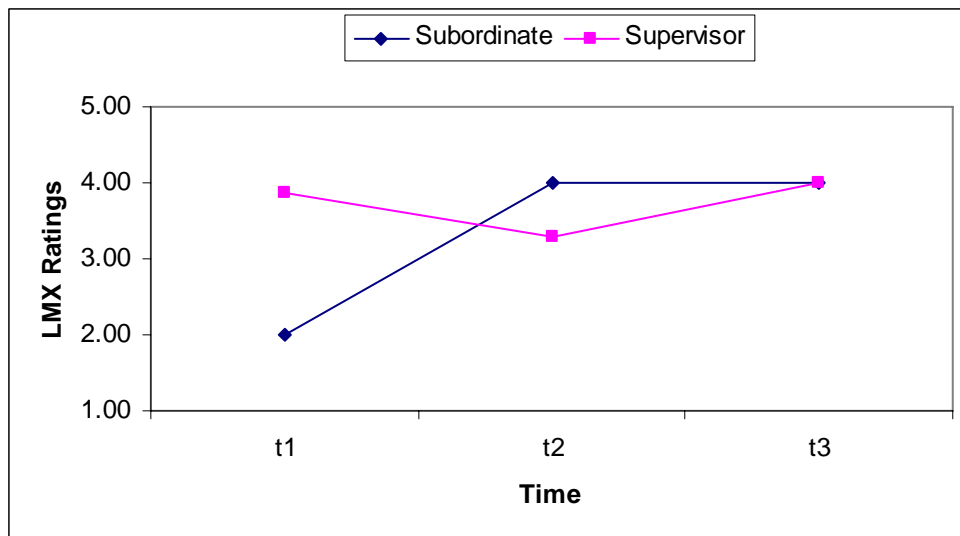
Dyad #13



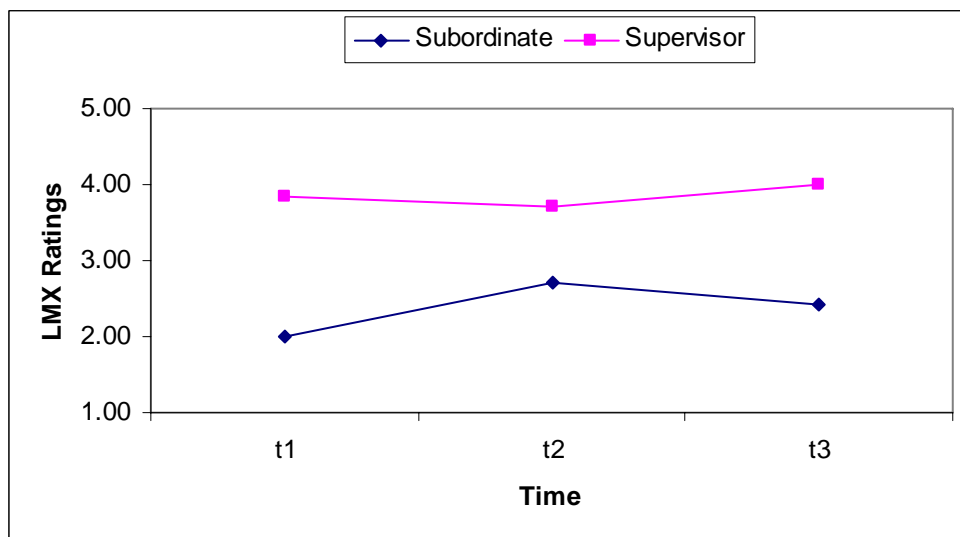
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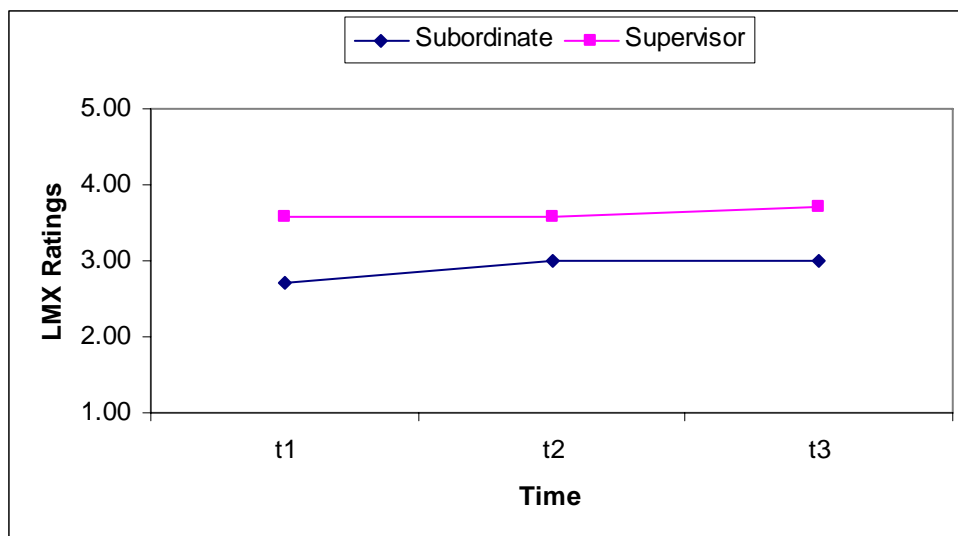
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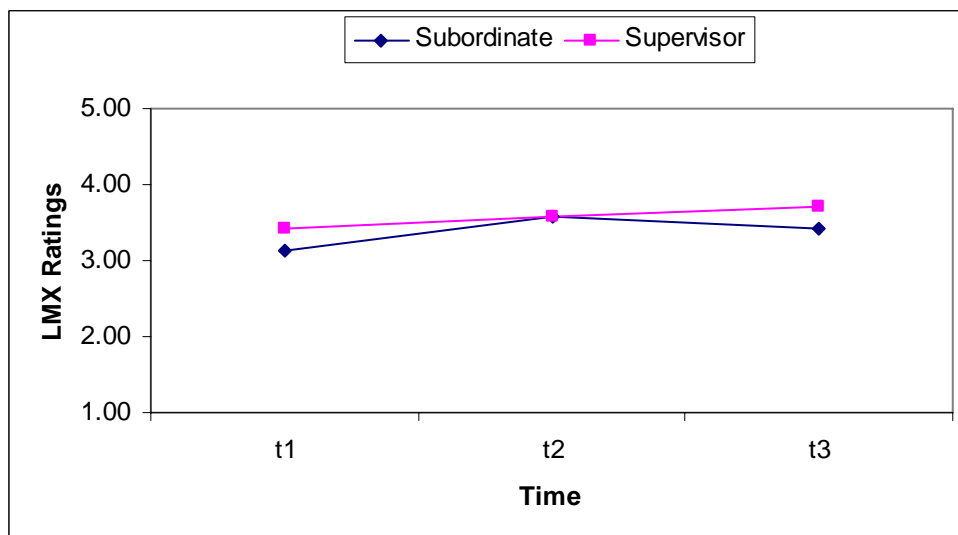
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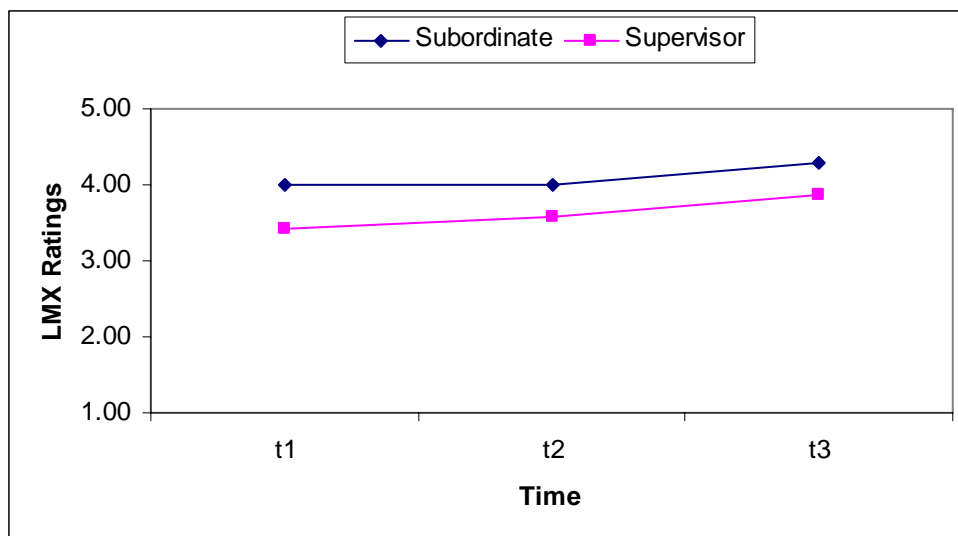
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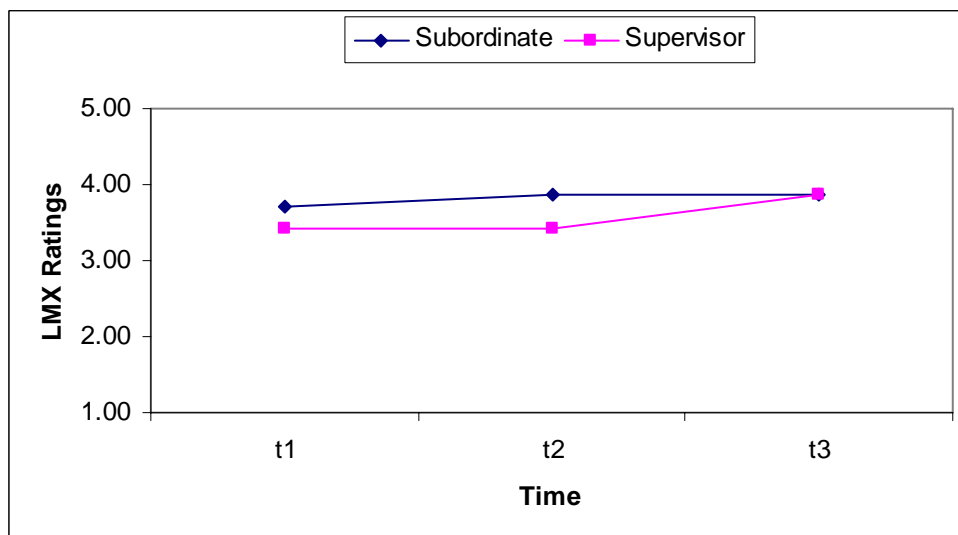
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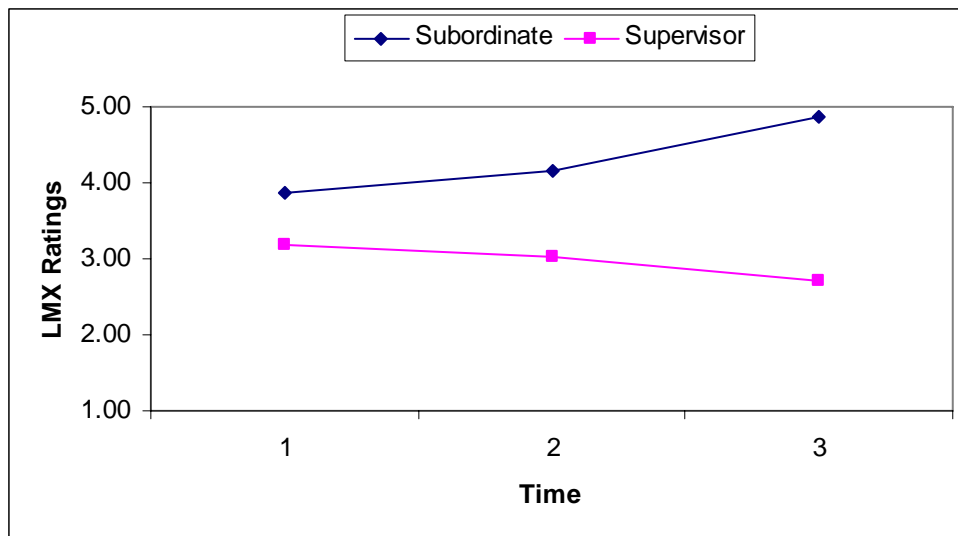
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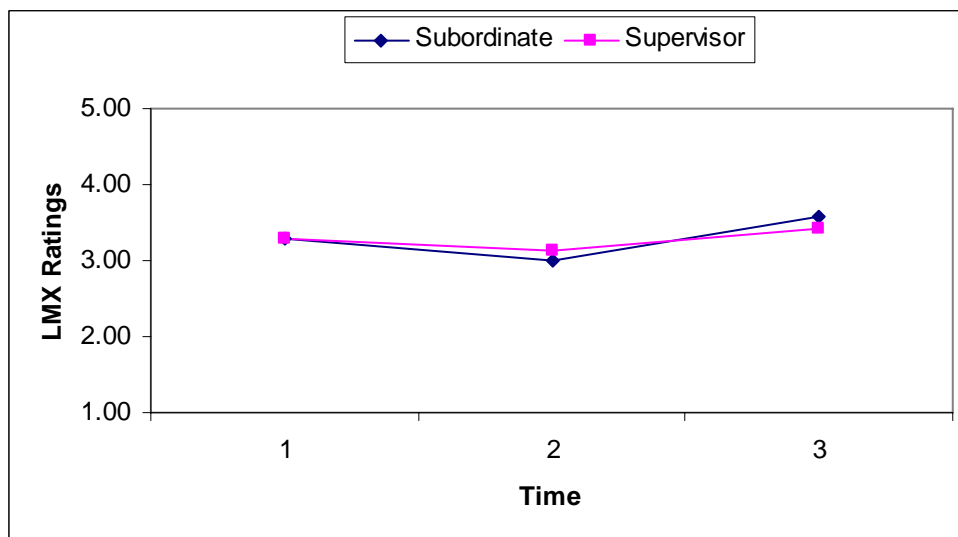
Dyad #20



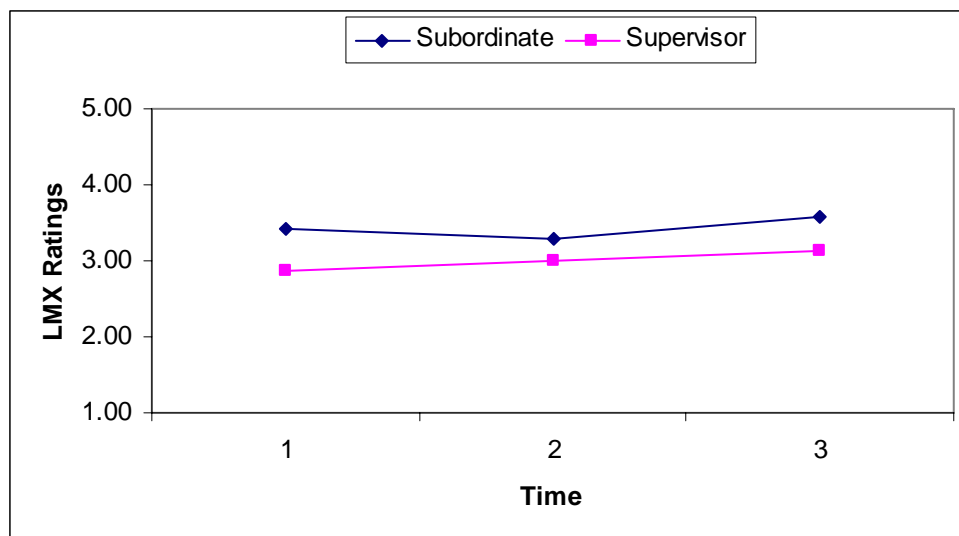
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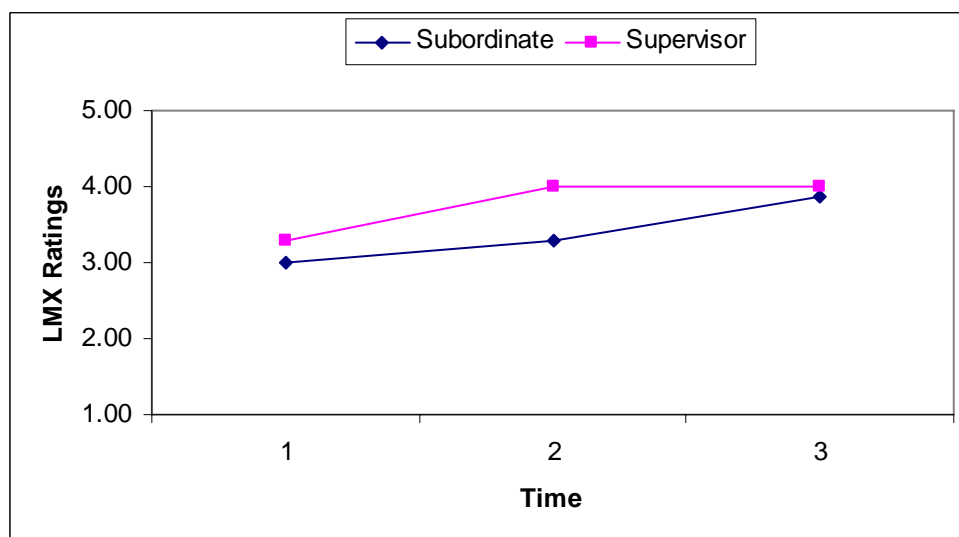
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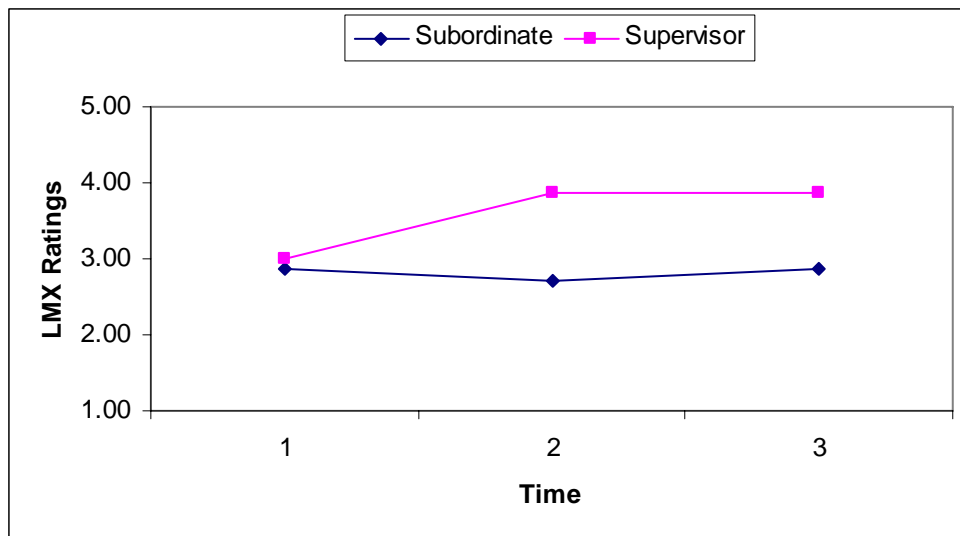
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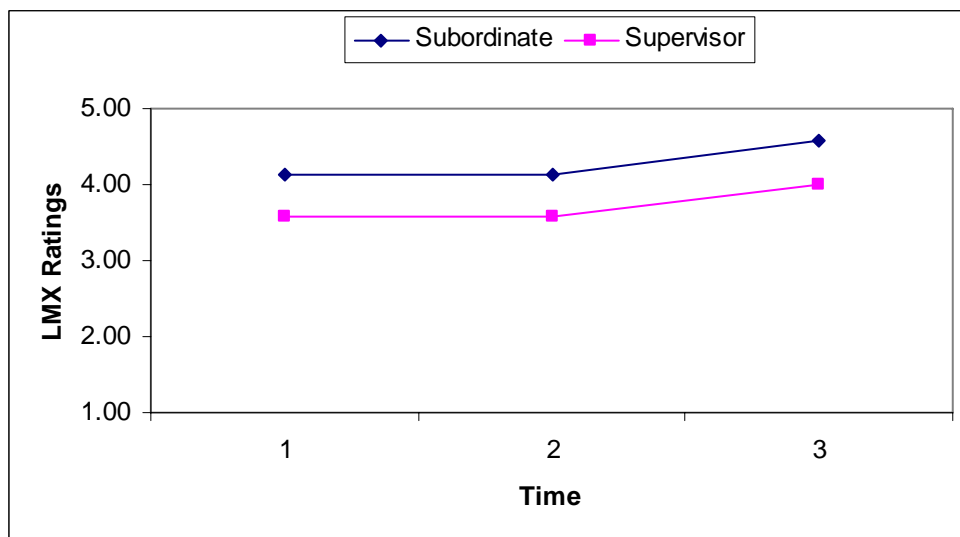
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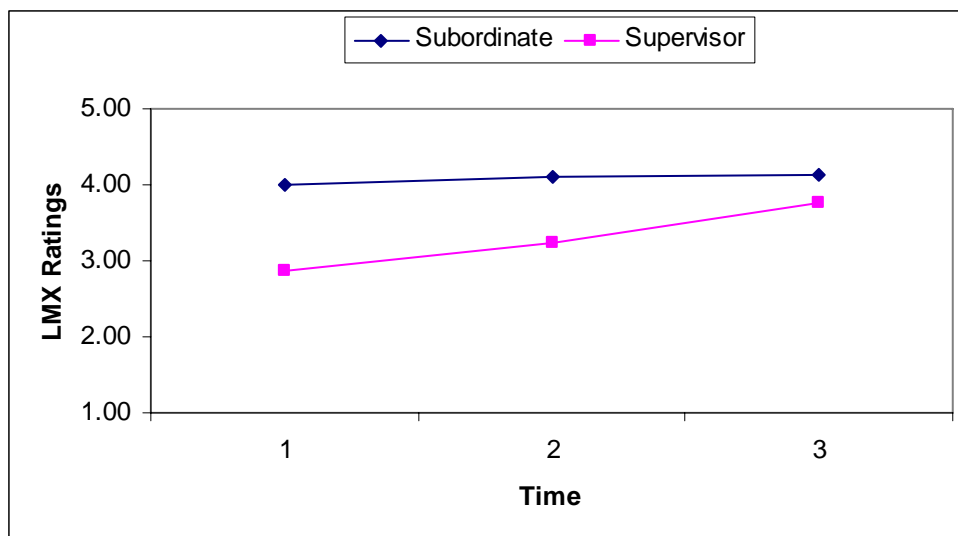
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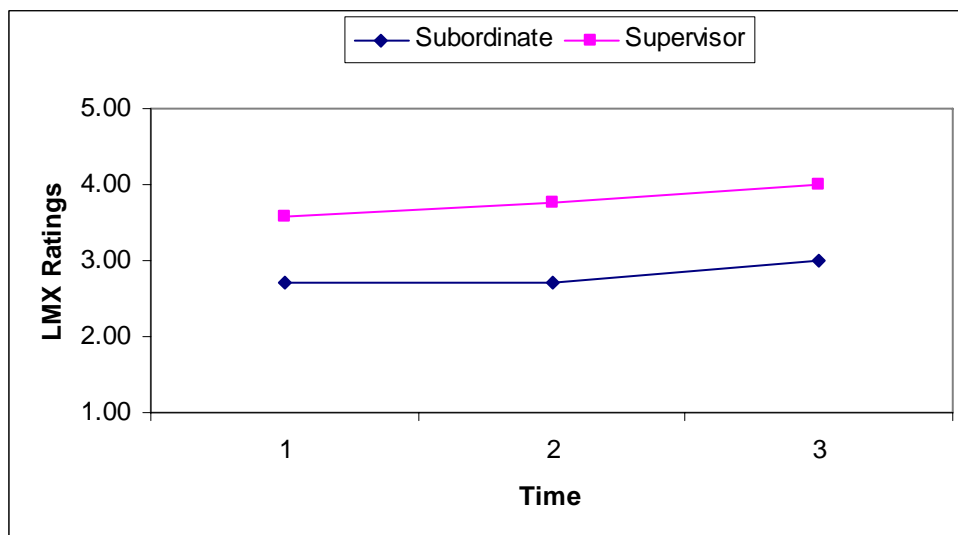
Dyad #26



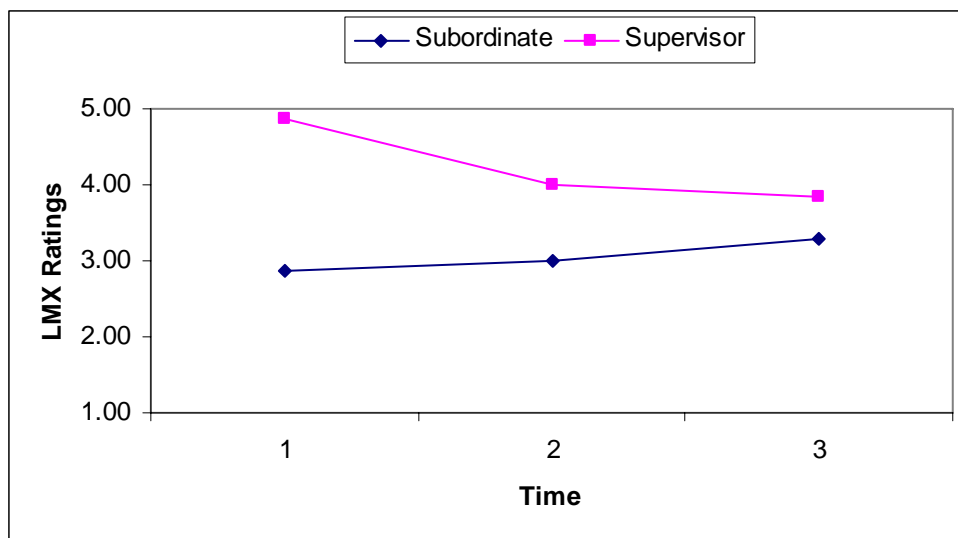
Dyad #27



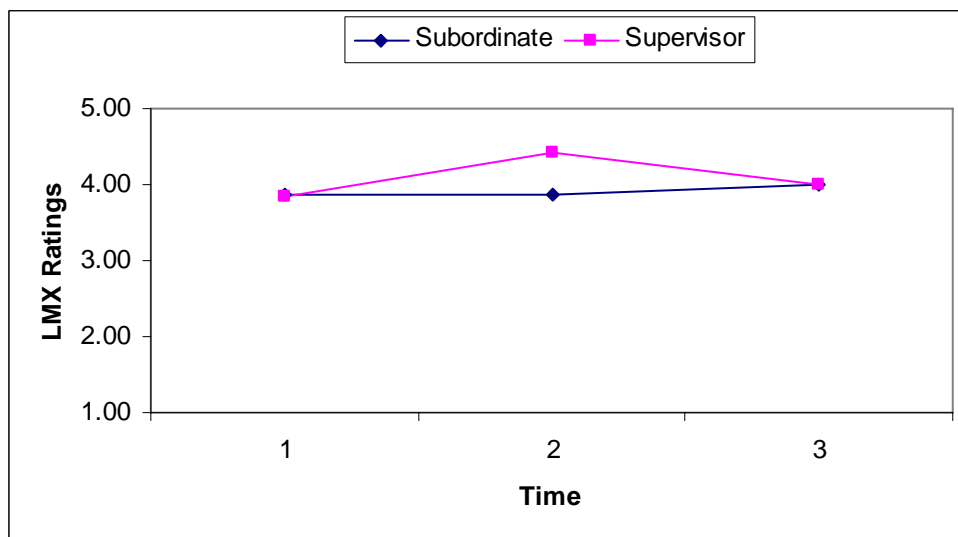
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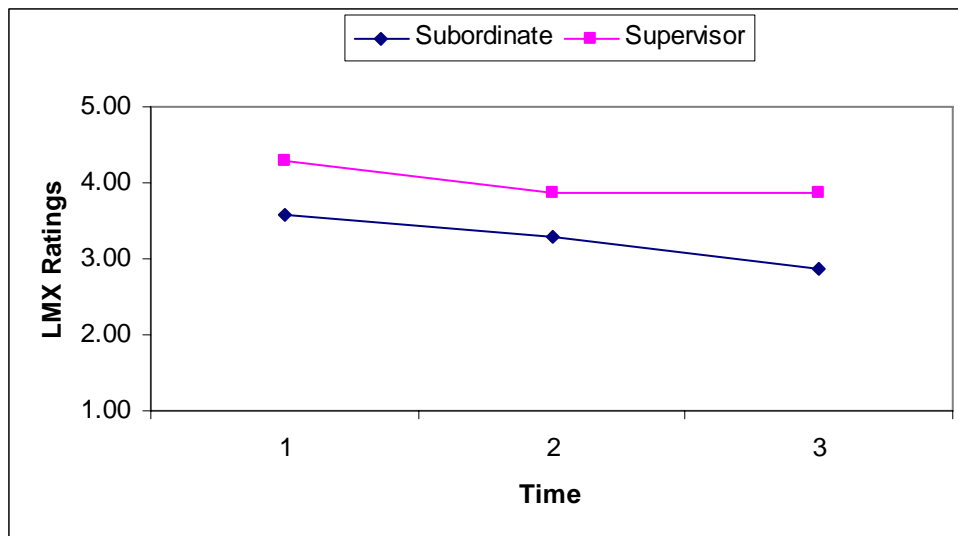
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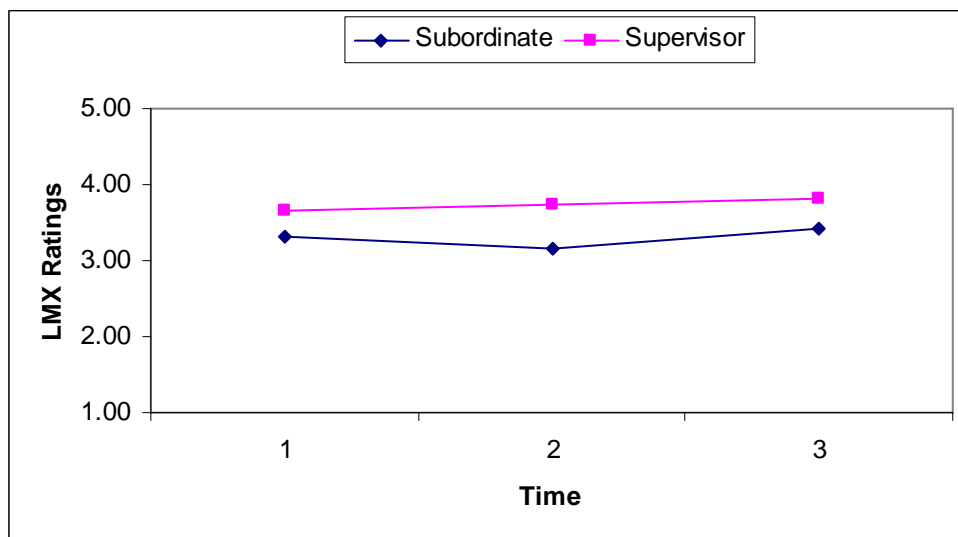
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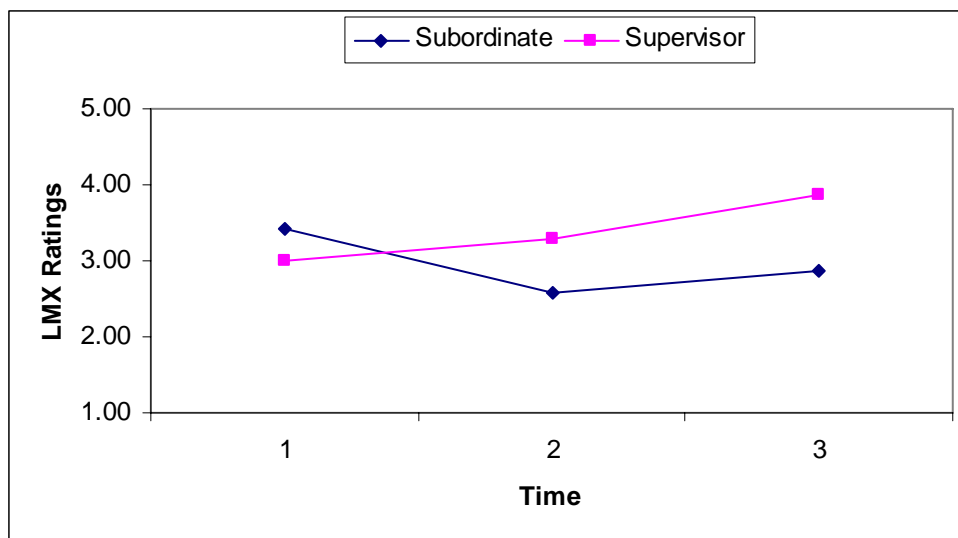
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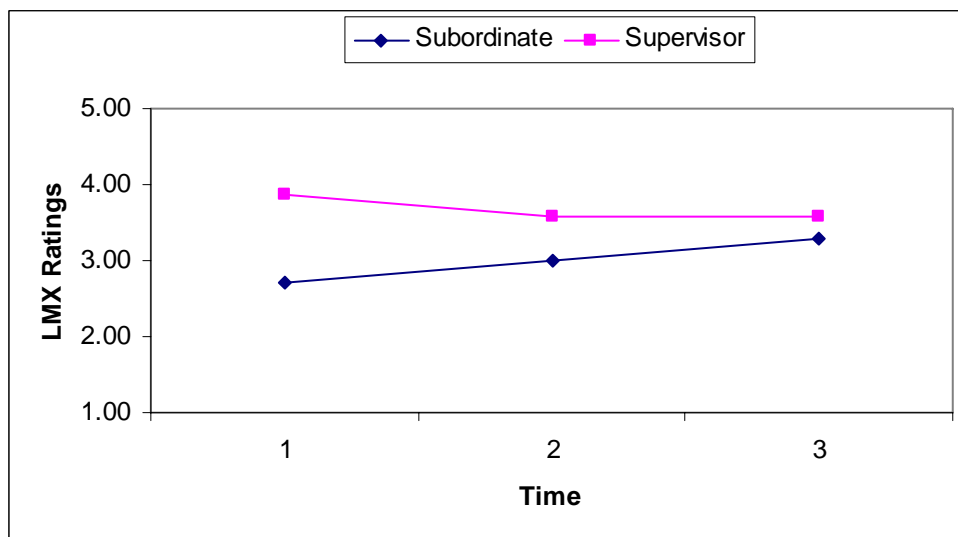
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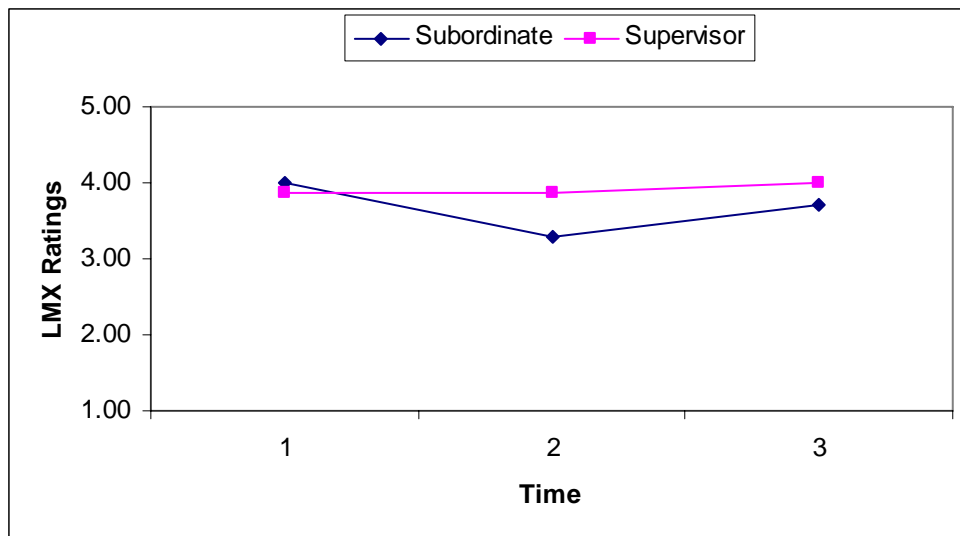
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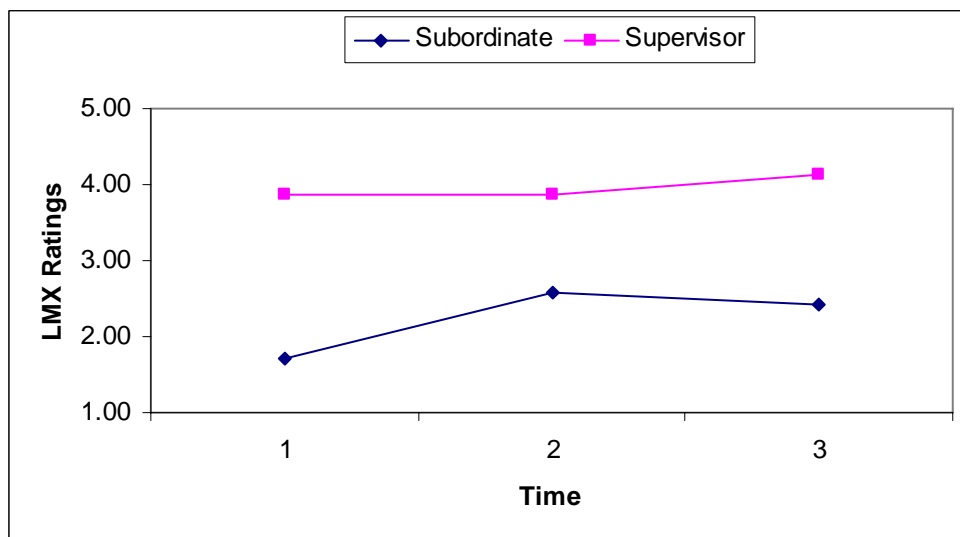
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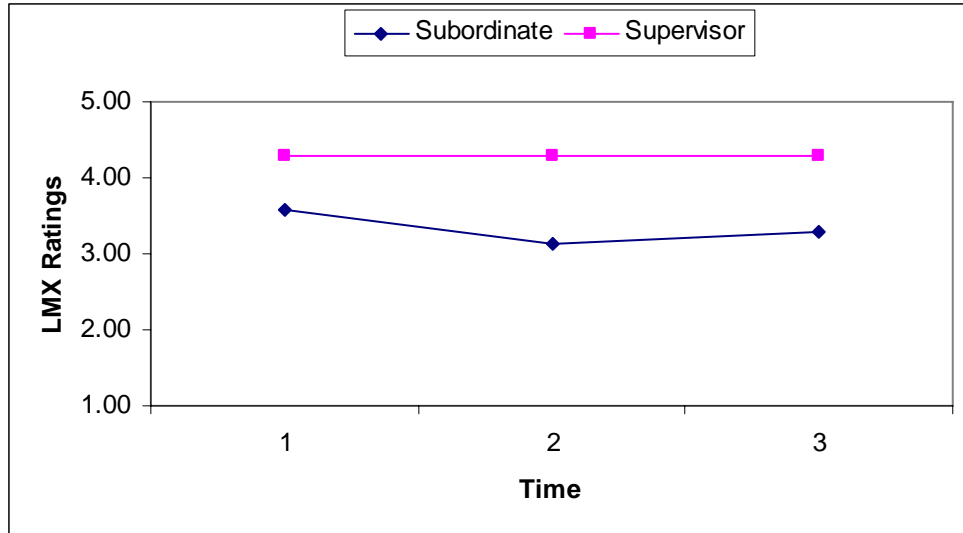
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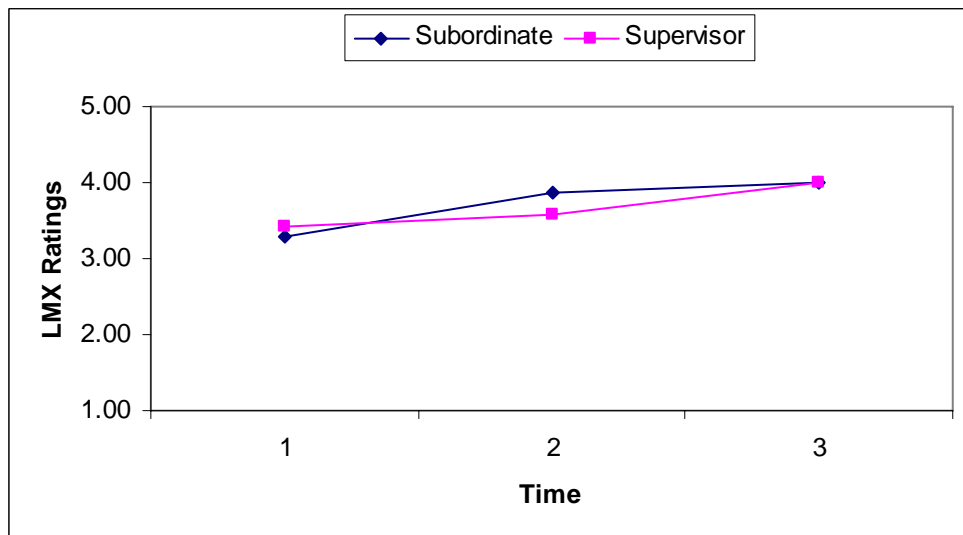
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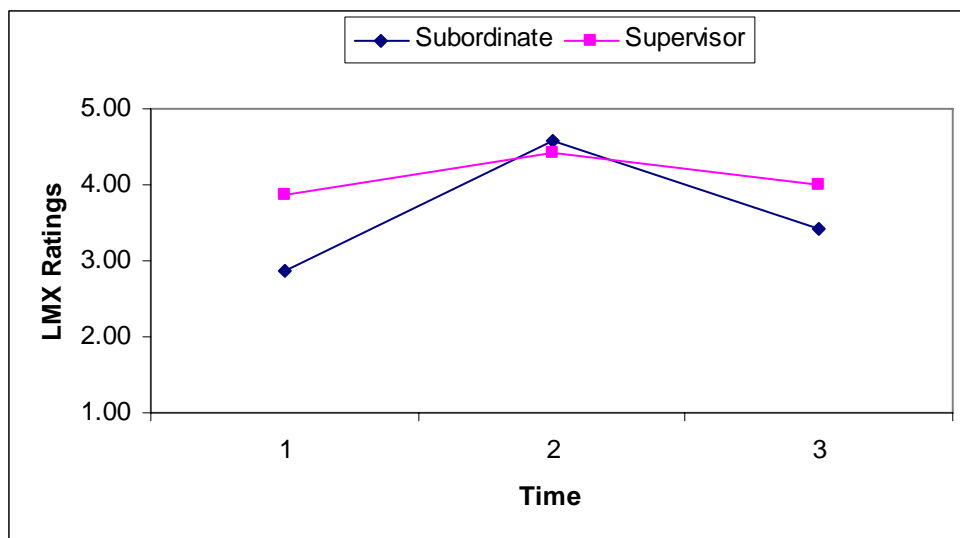
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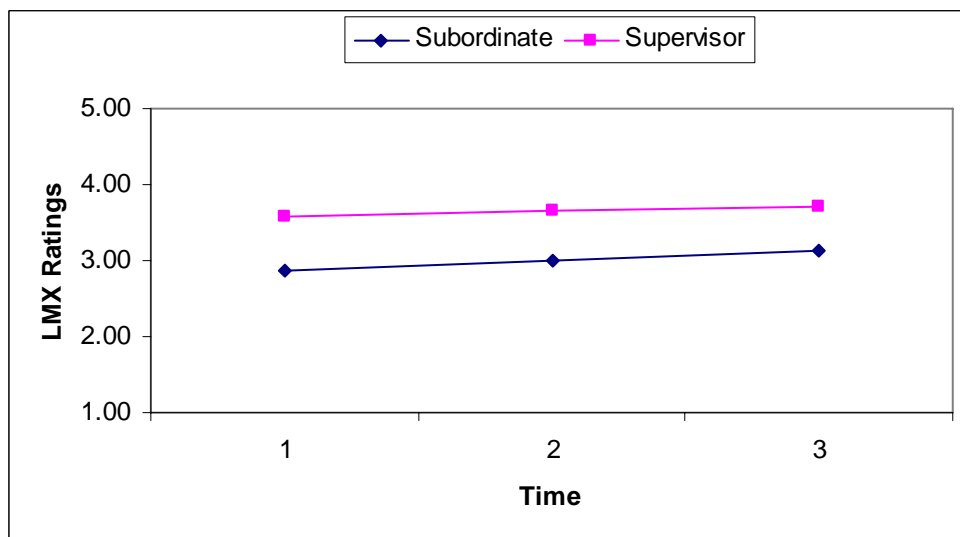
Dyad #38



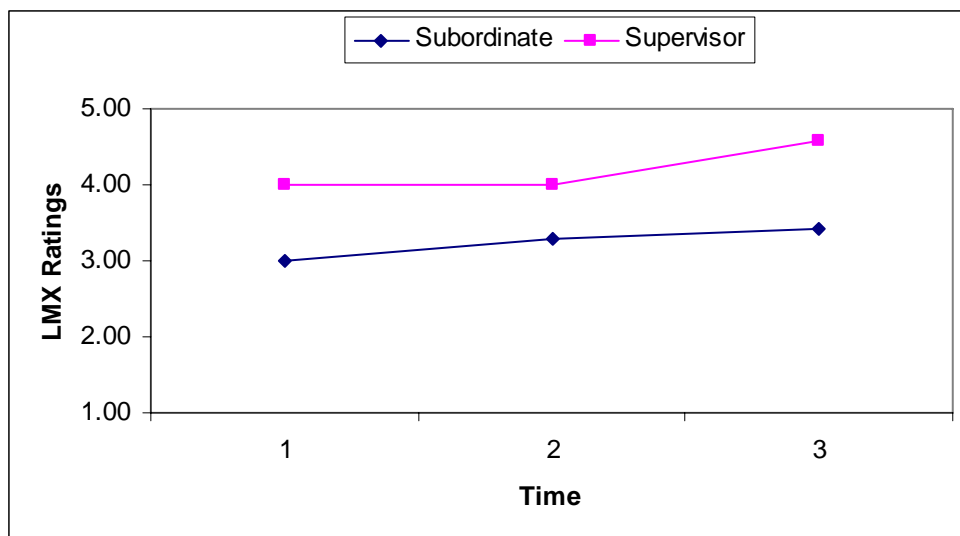
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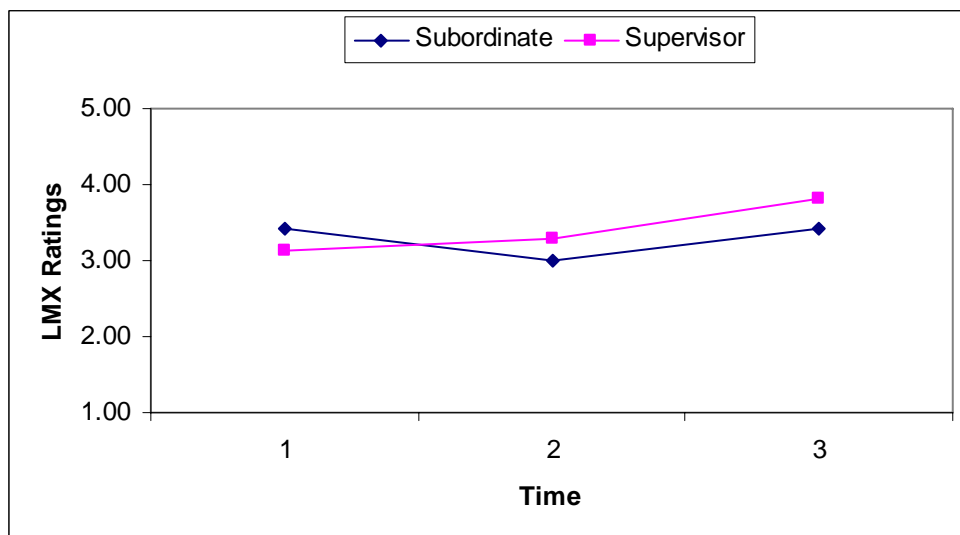
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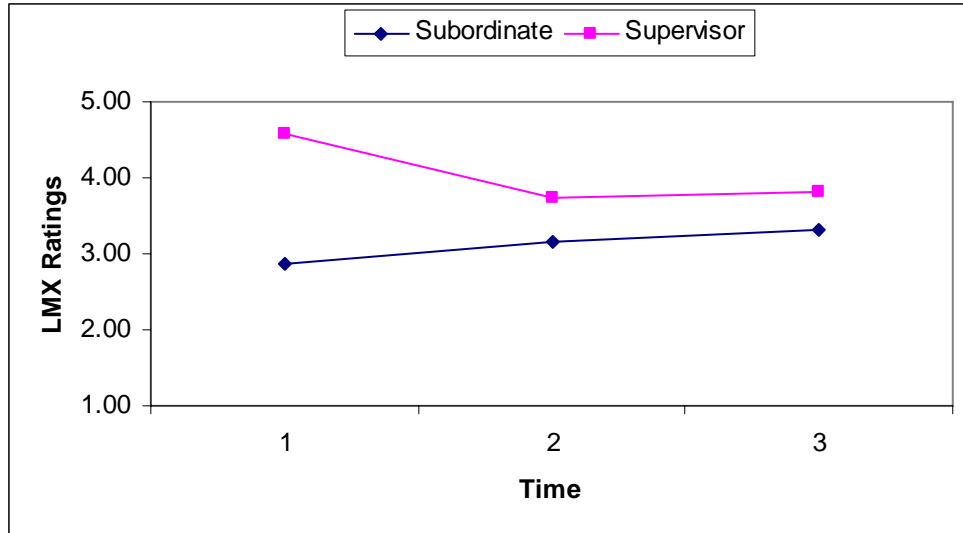
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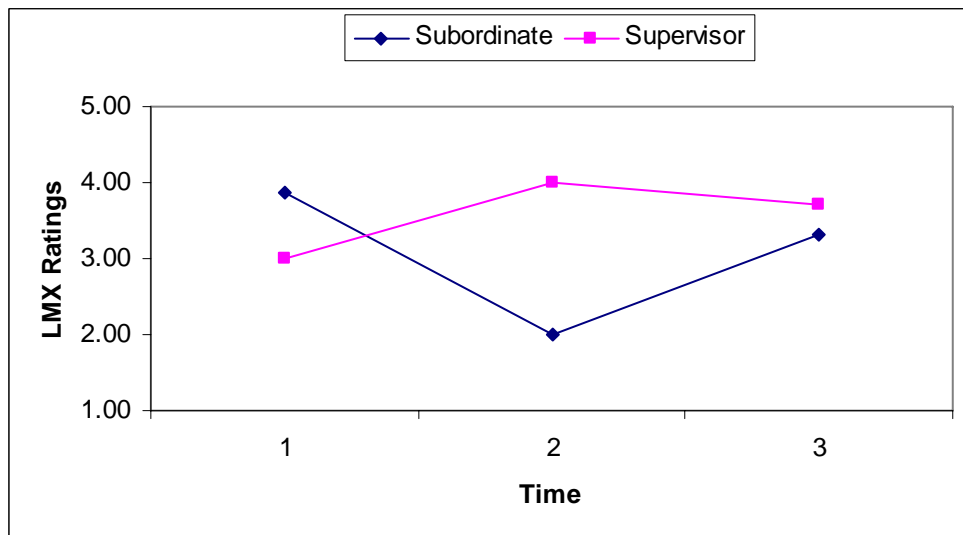
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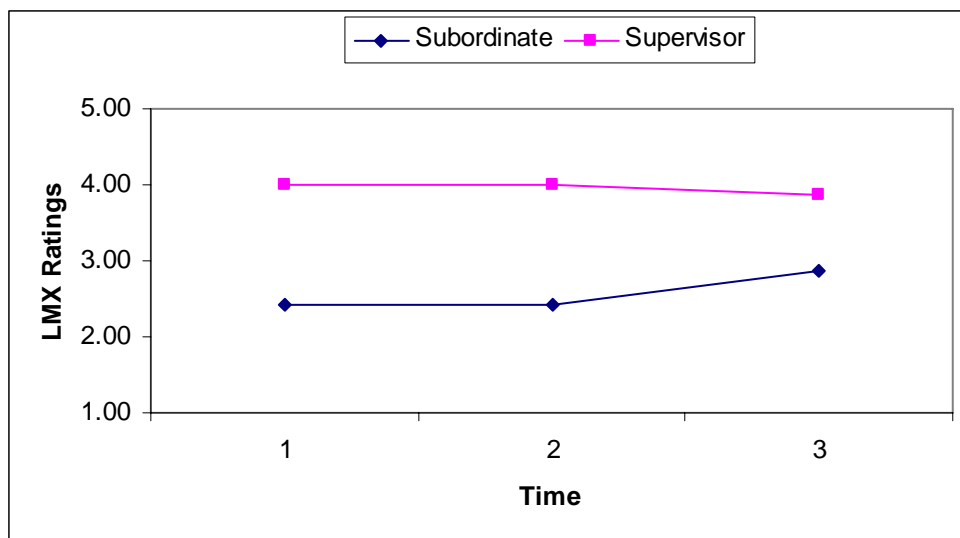
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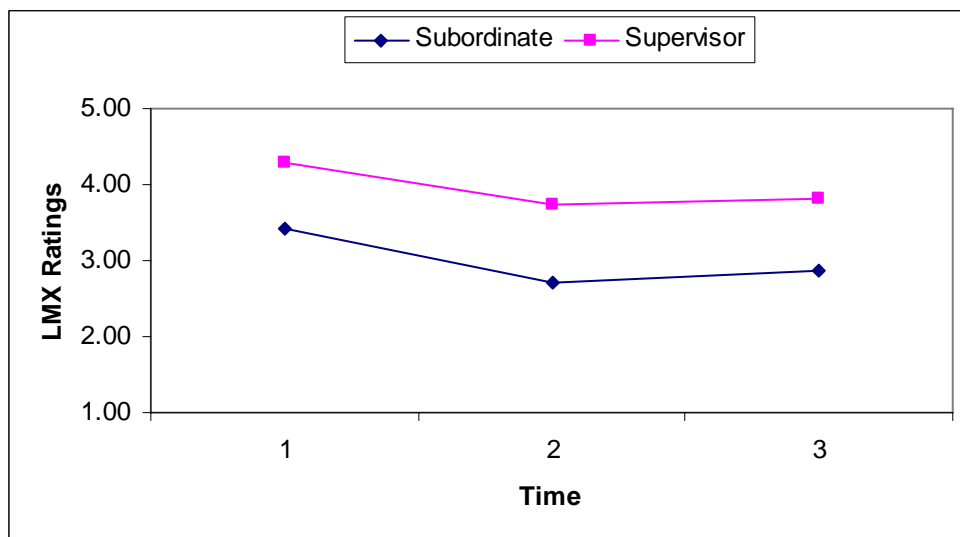
Dyad #44



Dyad #45



Dyad #46



VITA

HOCK-PENG SIN

PROFESSIONAL EXPERIENCE

2006- Assistant Professor, Department of Management, Michigan State University
2005-2006 Graduate Fellow, Social Science Statistics Partnership, Pennsylvania State University
2004-2005 Graduate Lecturer, Department of Management, Department of Psychology, Department of Labor Relations, Pennsylvania State University
2001-2004 Graduate Assistant, Department of Psychology, Pennsylvania State University
2000-2001 Senior Tutor, Department of Management, National University of Singapore
1998-1999 Tutor, Department of Psychology, National University of Singapore

SELECTED PUBLICATIONS

- Harrison, D. A., & Sin, H. P. (in press). Heterogeneity as misfit. In C. Ostroff and T. Judge (Eds.), *Perspectives on Organizational Fit*. NJ: Erlbaum.
- Foo, M. D., Sin, H. P., & Yiong, L. P. (2006). Effects of team inputs and intrateam processes on perceptions of team viability and member satisfaction in nascent ventures. *Strategic Management Journal*, 27, 389-399.
- Harrison, D. A., & Sin, H. P. (2006). What is diversity and how should it be measured? In A. M. Konrad, P. Prasad, and J. K. Pringle (Eds.), *Handbook of Workplace Diversity* (pp. 191-216). Thousand Oaks, CA: Sage.
- Day, D. V., Sin, H. P., & Chen, T. T. (2004). Assessing the burdens of leadership: Effects of formal leadership roles on individual performance over time. *Personnel Psychology*, 57, 573-605.
- Grandey, A. A., Dickter, D. N., & Sin, H. P. (2004). The customer is *not* always right: Customer aggression and emotion regulation of service employees. *Journal of Organizational Behavior*, 25, 397-418.
- Farr, J. L., Sin, H. P., & Tesluk, P. E. (2003). Knowledge management processes and work group innovation. In L. V. Shavinina (Ed.), *International Handbook on Innovation* (pp. 574-586). Oxford, UK: Elsevier Science.

SELECTED AWARDS AND HONORS

- Graduate Fellowship, Penn State Social Science Statistics Partnership, 2005-2006
- Best Student Paper Award, Academy of Management Research Methods Division, 2005
- Best Student Paper Award, Academy of Management Human Resources Division, 2004
- Penn State Research and Graduate Studies Office Travel Award, 2002, 2004, 2005, 2006
- Leibowitz Graduate Travel Award, Penn State University, Department of Psychology, 2003