A multidimensional analysis of the relationship between Leader-Member Exchange and organizational citizenship behavior with an alternative measure of Leader-Member Exchange

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A MULTIDIMENSIONAL ANALYSIS OF THE RELATIONSHIP BETWEEN LEADER-MEMBER EXCHANGE AND ORGANIZATIONAL CITIZENSHIP BEHAVIOR WITH AN ALTERNATIVE MEASURE OF LEADER-MEMBER EXCHANGE

by

Yann-Jang Wu

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A Multidimensional Analysis of the Relationship between Leader-Member Exchange and Organizational Citizenship Behavior with an Alternative Measure of Leader-Member Exchange

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Yann-Jang Wu

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ABSTRACT

Leader-Member Exchange (LMX) theory proposed that a leader will develop a unique exchange pattern with each subordinate (Liden, Wayne, & Stilwell, 1993). Empirically, LMX has shown significant associations with many work outcomes (Gerstner & Day, 1997). One of these valued outcomes is organizational citizenship behavior (OCB), which is defined as action enacted beyond one’s assigned duties on the job (Farh, Podsakoff, & Organ, 1990). Positive correlations between LMX and OCB have been demonstrated in previous research (Podsakoff, MacKenzie, Paine, & Bachrach, 2000). Both LMX and OCB were proposed to comprise several sub-factors; nevertheless, correlations between LMX and OCB have always been computed with composite scores in past research. The current study aimed to explore the LMX-OCB relationship via a multidimensional analysis.

In addition, although a multidimensional scale of LMX has been developed by Liden and Maslyn (1998), there are continuing criticisms about the measurement and dimensionality issues in extant LMX scales to date. The current study proposed a modified measure of LMX, called LMX-M, by combining the multi-dimensional scale of LMX (LMX-MDM) (Liden and Maslyn, 1998) and the leader-member social exchange scale (LMSX) (Bernerth et al., 2007) to form a five-factor scale.

Correlations among the specific sub-factors of LMX and OCB were examined in the present study. The proposed integrated sub-factors of LMX included affect, loyalty, contribution, respect, and exchange; the sub-factors of OCB adopted Organ’s (1988) five-dimensional taxonomy, including altruism, courtesy, sportsmanship, conscientiousness, and civic virtue. The LMX data were assessed from the subordinate’s perspective and the
OCB data for each subordinate were collected from both the leader’s ratings and subordinate’s self-ratings. A hypothesized multidimensional correlation model between LMX and OCB was investigated. In addition, psychometric evidence was demonstrated for the validity of the LMX-M scale, and usefulness analyses were conducted to compare the LMX-M scale with the LMX-MDM scale and the most popular unidimensional LMX scale (LMX-7).

The present study adds to leadership literature by clarifying the process associated with the LMX-OCB relationship. The present study also noted the possible domain adequacy problem of the LMX-M and LMX-MDM scale. Implications and recommendations are made for future research.
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# TABLE OF CONTENTS

**ABSTRACT**  .................................................................................................................................................. III

**ACKNOWLEDGMENTS** ................................................................................................................................. V

**LIST OF TABLES AND FIGURES** ............................................................................................................... VIII

**CHAPTER 1. INTRODUCTION** ....................................................................................................................... 1

**CHAPTER 2. LITERATURE REVIEW** ............................................................................................................ 3

- Leader-Member Exchange ............................................................................................................................... 3
- Organizational Citizenship Behavior .............................................................................................................. 8
- Dimensionality of OCB and LMX .................................................................................................................. 10
- Criticisms of Existing Measures of LMX ...................................................................................................... 14
- Hypotheses .................................................................................................................................................. 22

**CHAPTER 3. METHODS** .................................................................................................................................. 27

- Procedures ................................................................................................................................................... 27
- Sample ......................................................................................................................................................... 29
- Measures ..................................................................................................................................................... 31
- Data Analysis Overview ............................................................................................................................... 32

**CHAPTER 4. RESULTS** .................................................................................................................................... 35

- Results of Testing Hypotheses 1, 2, and 3 .................................................................................................... 35
- Results of Testing Hypotheses 4a and 4b ..................................................................................................... 44
- Results of Analyzing Psychometric Properties of the LMX-M Scale ..................................................... 54

**CHAPTER 5. DISCUSSION** ........................................................................................................................... 65

- Summaries of Research Findings ............................................................................................................... 65
- Implications and Importance of the Research .............................................................................................. 69
Possible Limitations of the Research ...............................................................72
Directions for Future Research .................................................................74
REFERENCES ............................................................................................................79
APPENDIX A: THE LMX-7 SCALE RECOMMENDED BY GRAEN AND UHL-BIEN (1995) ..............................................................90
APPENDIX B: PROPOSED WORDING OF THE LMX-M SCALE .........................91
APPENDIX C: CONTENT LETTER TO IRB PROTOCOL ........................................93
APPENDIX D: IMPLIED CONSENT COVER LETTER (LEADER) .........................94
APPENDIX E: IMPLIED CONSENT COVER LETTER (SUBORDINATE) .............96
APPENDIX F: FOLLOW-UP POSTAL CARD .............................................................98
APPENDIX G: MANDERIN VERSION OF LEADER QUESTIONNAIRE ..............99
APPENDIX H: MANDERIN VERSION OF SUBORDINATE QUESTIONNAIRE 101
LIST OF TABLES AND FIGURES

TABLE 2.1 OCB Sub-dimensions and Associated Survey Questions 13
TABLE 2.2 Leader-member Exchange Sub-constructs and Survey Questions 17
TABLE 2.3 Survey Questions of LMSX 20
FIGURE 2.1 Hypothesized Associations between Subordinates’ LMX and Leader’s Ratings of OCB 25
TABLE 4.1 Means, Standard Deviations, and Correlations of Matched Dyadic Sample 36
TABLE 4.2 Multiple Correlations and Standardized Beta Weights Predicting leader-rated OCB from LMX-M 37
TABLE 4.3 Means, Standard Deviations, and Correlations of Subordinate-only Sample 39
TABLE 4.4 Multiple Correlations and Standardized Beta Weights Predicting self-rated OCB from LMX-M 40
TABLE 4.5 Multiple Correlations and Standardized Beta Weights Predicting Leader-rated OCB from Subordinate-rated LMX-MDM 45
TABLE 4.6 Multiple Correlations and Standardized Beta Weights Predicting Self-rated OCB from LMX-MDM 46
TABLE 4.7 Results of Hierarchical Regression Estimating the Incremental Variance in OCB Accounted for by LMX-M above LMX-MDM 50
TABLE 4.8 Results of Hierarchical Regression Estimating the Incremental Variance in OCB Accounted for by LMX-M above LMX-7 51
TABLE 4.9 Results of Hierarchical Regression Estimating the Incremental Variance in OCB Accounted for by LMX-MDM above LMX-M 52
TABLE 4.10 Results of Hierarchical Regression Estimating the Incremental Variance in
CHAPTER 1. INTRODUCTION

LMX theory, as originally proposed by Graen and his colleagues (Dansereau, Graen, & Haga, 1975; Graen & Scandura, 1987; Graen & Uhl-Bien, 1995), posits that a leader will develop a unique relationship with each subordinate. The basic premise of this theory is that leaders do not form a single universal relationship with each subordinate; instead, leaders develop separate relationships with each subordinate as the two parties engage in a mutual role-making process (Graen & Uhl-Bien, 1995). Leader-member dyads with high levels of trust, liking, and respect will establish a high exchange relationship and contribute to each other beyond the requirements of the work contract (Dienesch & Liden, 1986). On the other hand, dyads of low quality exchange relationships will tend only to comply with the formal requirements of the work contract (Liden & Maslyn, 1998).

The quality of the leader-member relationship, generally indexed by the LMX-7 scale (Scandura & Graen, 1984), has shown significant associations with many work outcomes (Gerstner & Day, 1997), such as subordinates’ satisfaction with supervision, role clarity, overall satisfaction, and organizational commitment. More recently, evidence has suggested that LMX is positively related to Organizational Citizenship Behavior (OCB) (e.g., Hackett & Lapierre, 2004; Lapierre & Hackett, 2007; Podsakoff, MacKenzie, Paine, & Bachrach, 2000; Wat & Shaffer, 2005). OCB is discretionary behavior involving extra-role performance in the workplace (Organ, 1988). Extra-role performance includes behaviors that go above and beyond the job roles specified by a formal job description. Like LMX, the theoretical basis of OCB is predominantly based on social exchange theory (Van Dyne, Graham, & Dienesch, 1994). Podsakoff and
MacKenzie (1993) posited that employees will reciprocate positive, fair treatment from their superiors by demonstrating OCB in the workplace.

Traditionally, LMX theory has assessed the quality of the leader-member relationship as a global, unidimensional construct. However, some researchers have argued that it is more appropriate to view LMX as a multidimensional construct, rather than a unidimensional construct, because LMX is based on several “currencies of exchange” (Dienesch & Liden, 1986, p. 625) and these currencies of exchange (e.g., trust, affect, and respect) may have different weights in predicting outcome variables (Dienesch & Liden, 1986; Liden & Maslyn, 1998; Maslyn & Uhl-Bien, 2001). Similarly, OCB generally has been operationalized as a higher-order construct with multiple sub-factors. However, most previous empirical studies assessed OCB using a single composite scale. Therefore, previous research on the LMX-OCB relationship has been limited, since it has used unidimensional scales to index multi-dimensional constructs. To overcome that limitation, one objective of the current research is to test the relationship between LMX and OCB using multi-dimensional measures of both constructs, which has not yet been done in the research literature.

The existing LMX measures do not capture the concept of exchange as the theory implicitly proposed and have not gone through adequate psychometric testing (Liden & Maslyn, 1998; Schriesheim, Castro, & Cogliser, 1999). Therefore, a second objective of the present research is to develop and validate a modified and integrated LMX instrument that will redress the measurement and dimensionality limitations of current LMX scales.
CHAPTER 2. LITERATURE REVIEW

Leader-Member Exchange

Theoretical Base. The predecessor of LMX theory, called vertical dyad linkage (VDL) theory (Dansereau, Graen, & Haga, 1975), focused on the relationship and development process within particular leader-member dyads, rather than the leader’s general relationship to his/her total work group. Unlike most previous leadership theory, which assumed that leaders show uniform style to all subordinates, VDL proposed that only specific subordinates will be chosen for a close, trusting relationship with the leader because of their “(a) competence and skill, (b) extent to which they can be trusted …, (c) motivation to assume greater responsibility within the unit” (Liden & Graen, 1980, pp. 451-452). The premise of the theory was that the leader controls or owns limited resources that are appealing to the subordinate (Green, Anderson, & Shivers, 1996; Liden & Graen, 1980). This trusting exchange relationship within the dyad arises partly from the time pressures on leaders (Bauer, Erdogan, Liden, & Wayne, 2006; Liden & Graen, 1980). That is, leaders have a limited amount of time available to manage their work groups and may feel they have to rely more heavily on some key subordinates by allocating them heavier responsibilities, while treating the remaining subordinates with equal and formal authority to ensure the performance of the work group. In response, these selected subordinates reciprocate with the leader by putting more effort into their work.

The VDL approach provided a specific avenue for leadership research to study the dyadic leader-member relationship (Graen, Chun, & Taylor, 2006; Schriesheim, Castro, & Cogliser, 1999). Since the 1980s, Graen and colleagues continued to advocate the
importance of the quality of exchange between leaders and subordinates and renamed this kind of relationship leader-member exchange, or LMX (Graen, Novak, & Sommerkamp, 1982). LMX emphasized the reciprocal contributions within the leader-subordinate dyad instead of the negotiation process in the VDL (Dienesch & Liden, 1986). Scandura et al. (1986) first provided a definition of LMX as “a system of components and their relationships involving both members of a dyad, involving interdependent patterns of behaviors, and sharing mutual outcome instrumentalities, and producing conceptions of environments, cause maps, and value” (p. 580). Graen and Scandura (1987) further posited that the components of the LMX relationship and the exchange process of LMX should be explained using multiple facets. The LMX relationship is built on mutual desirable benefits offered from both parties within the dyad (Schriesheim, Neider, Scandura, & Tepper, 1992). Dienesch and Liden (1986) coined the efforts that both parties bring into the relationship as “currencies of exchange” (p. 625).

Different exchange relationships are developed between leaders and subordinates according to the compatibility, capability, and reliability of the members of the dyad and only a few trusted subordinates are selected to form a more close working relationship (Erdogan & Liden, 2002). High exchange relationships are characterized by high levels of trust, liking, and respect (Graen & Uhl-Bien, 1995). Specifically, the leader will reward a subordinate with whom he/she shares a high LMX relationship with desired outcomes (Yukl, 2006) such as increased job responsibility or authority, stronger support and consideration, assignment to interesting tasks, and/or monetary or other tangible rewards (e.g., a desired office).
LMX theory proposed that leaders are prone to establish a high-exchange relationship with in-group subordinates because of their possible high degree of reciprocal dependence, mutual support, loyalty, greater contribution and responsibility. In contrast, leaders are likely to develop a relatively normal relationship with out-group subordinates, who merely meet formal requirements and only need the standard benefits they are felt to deserve (Erdogan, Liden, & Kraimer, 2006).

The differentiated perception of subordinates called for by the LMX model may provide a better contribution to organizational studies than does the average leadership style (ALS) model (Dienesch & Liden, 1986). It has been argued that the ALS model of leadership might be the cause of slow progress in leadership research (Dansereau, Graen, & Haga, 1975). Analytically, the ALS model treats between-subordinate variation in leader behavior as error variance. In contrast, Katerberg and Hom (1981) and Jago (1982) have argued that understanding dyadic (within-group) variation has the potential for providing a significant contribution beyond the effect of between-group variation. The implication is that the LMX model should provide better predictions of group performance criteria than does the ALS model.

**Measures of LMX.** Traditionally, LMX has been treated as a unidimensional construct measuring the quality of the leader-subordinate exchange relationship within a dyad. Over the past few decades, a variety of measures have been developed to assess LMX (Erdogan & Liden, 2002). Among these measures, LMX-7, the seven-item measure detailed by Scandura and Graen (1984), is the most commonly adopted one (Yukl, 2006). The most recent version of the scale (Graen & Uhl-Bien, 1995, p. 237) is shown in Appendix A.
Review articles (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995) have claimed that LMX-7 is the soundest measure of LMX. However, other researchers have posited that LMX-7 has problems (Bauer & Green, 1996; Dienesch & Liden, 1986; Liden & Maslyn, 1998; Maslyn & Uhl-Bien, 2001). These problems include lack of reliable psychometric support in previous empirical research, the use of a double-barreled item in the scale (“Do you know where you stand with your boss… do you usually know how satisfied your boss is with what you do?”), and different response anchors for each item. Most important, there has not been a sound psychometric validation for the convergent, discriminant, and criterion-related validity of the LMX-7 scale (Liden & Maslyn, 1998; Schriesheim, Castro, & Cogliser, 1999). Nonetheless, review articles (e.g., Erdogan & Liden, 2002; Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Schriesheim, Castro, & Cogliser, 1999) have argued that the soundness of LMX-7 was demonstrated by its significant correlations with outcome criteria.

**Correlates of LMX.** Research on LMX has shown important correlations with many organizational/work outcome variables in the leadership field (Erdogan & Liden, 2002; Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Schriesheim, Castro, & Cogliser, 1999). Yukl (2006) summarized the research on LMX as showing a positive relationship with various outcomes, such as subordinate performance, job satisfaction, organizational commitment, and organizational citizenship behaviors. In their meta-analytic review, Gerstner and Day (1997) found positive associations between LMX and work outcomes, such as subordinates’ satisfaction with supervision, role clarity, overall satisfaction, and organizational commitment, and negative associations between LMX and undesirable outcomes, such as turnover intention and role conflict. A more recent review by Erdogan
and Liden (2002) included several of the above noted outcome variables as well as performance appraisal, empowerment, procedural and distributive justice, a reduction of job stress, and leader power, among others.

On the other hand, whether LMX and the outcome variables were provided by the same source or not also influenced the effect size of correlation (Paglis & Green, 2002). The mean sample-weighted correlation between (a) leader-rated LMX and leader’s performance ratings and (b) member-rated LMX and leader’s performance ratings in Gerstner and Day’s (1997) meta-analysis were .41 and .28, respectively. The association was stronger when both constructs were measured from the same source. Moreover, member-rated LMX also demonstrated higher correlations with outcome variables measured by the subordinates, such as satisfaction with supervision, overall satisfaction, and organizational commitment, than with supervisor-rated criteria (Gerstner & Day, 1997). Previous research also showed that LMX is more strongly related to subjective performance ratings \( r = .40 \) than to objective ratings \( r = .10 \), such as productivity or turnover (Jensen, Olberding, & Rodgers, 1997). This issue of same-source bias was explored in the current research by gathering data from the point of view of both the supervisor and the subordinate.

Overall, prior research has suggested that having a high LMX relationship with one’s leader can contribute to the subordinate’s work experience in a desired manner (e.g., Erdogan & Liden, 2002; Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Schriesheim, Castro, & Cogliser, 1999; Yukl, 2006). Among the desirable outcomes, organizational citizenship behavior, OCB, was of special interest in the present study. Research has shown that composite measures of LMX are related to composite measures of OCB (e.g.,
Deluga, 1998; Hui, Law, & Chen, 1999; Settoon, Bennett, & Liden, 1996; Wayne, Shore, & Liden, 1997). The current study further examined the correlations among specific sub-factors of LMX and OCB. The following section provides the theoretical background of OCB and the association between LMX and OCB.

**Organizational Citizenship Behavior**

**Theoretical Background.** Katz and Kahn (1966) first noted that the members of successful organizations have to be willing to do work above and beyond their formal job descriptions. A three-fold behavioral requirement for individual members was proposed: 1) joining and staying in the system, 2) performing dependable in-role behavior, and 3) engaging in innovative and spontaneous out-of-role or extra-role behavior. In-role performance refers to individual behaviors that are specified in a formal job description; extra-role performance refers to discretionary behaviors that go above and beyond the formal job roles. Bateman and Organ (1983) coined the term “organizational citizenship behavior” to describe the extra-role behaviors that are important to a functional organization, but fall outside the formal job descriptions. Organ (1988) defined OCB as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization.” (p. 4). In other words, OCB is an employee’s beneficial behavior that managers want, but cannot require (Motowidlo, 2000). Behaviors with the essence of going above and beyond the formal job descriptions include cooperation with co-workers or other members of the organization, participation in activities for additional organizational responsibility, creating a favorable climate for the improvement of the organization, and other similar activities (Katz & Kahn, 1966).
Association between OCB and LMX. It is widely believed that OCB contributes to the effectiveness and efficiency of a functional organization (Organ, Podsakoff, & MacKenzie, 2006). Similarly, one way in which high-quality LMX contributes to organizational effectiveness is through the relational influence, which can motivate the subordinates to engage in behaviors beyond their formal roles at job (Ilies, Nahrgang, & Morgeson, 2007). Therefore, discretionary OCB provides an avenue for subordinates in high-quality LMX relationships to return the benefits offered from the leaders (Settoon, Bennett, & Liden, 1996). This belief was supported by the meta-analytic mean correlation of .32 between LMX and overall OCB (Lapiere & Hackett, 2007). Since OCB is mainly discretionary, the motivational base and predictors of OCB are important issues (Wayne, Shore, Bommer, & Tetrick, 2002). One of the primary endeavors of previous research has been to identify and validate predictors of OCB, including various job satisfaction factors, employee attitudes, and personality factors (Van Dyne & LePine, 1998). Empirical research about the LMX-OCB relationship has attracted extensive attention in the past two decades (Wang, Law, Hackett, Wang, & Chen, 2005; Wayne, Shore, Bommer, & Tetrick, 2002).

The main theoretical rationale for the association between LMX and OCB is based on social exchange theory (Settoon, Bennett, & Liden, 1996). That is to say, employees are predicted to engage in OCB as an exchange to reciprocate the support and mutual benefits from supervisors. Employees’ feeling of indebtedness for the extra trust and support from their leader can be paid back by performing behaviors that are above and beyond formal work requirements (Hui, Law, & Chen, 1999). Deluga (1998) pointed out that the non-rewarded OCB may be informally reciprocated by a leader’s extra
support or resource allocations to the subordinate. Bolino (1999) noted that employees can engage in extra-role behaviors to distinguish themselves from others. In addition, Organ (1988) implied that employees participating in citizenship behaviors are more likely to be perceived favorably by their superior.

However, the association between LMX and OCB has only been tested with composite scores for each of these two constructs. Even though OCB has been defined as a multi-dimensional construct, no previous studies have tried to interpret the association of LMX with different OCB sub-factors (LePine, Erez, & Johnson, 2002; Organ & Ryan, 1995; Podsakoff, MacKenzie, & Bommer, 1996). Composite scores do little to illuminate the role that more specific sub-factors play in the correlational relationship among variables (Tabachnick & Fidell, 2006). Finally, Ilies, Nahrgang, and Morgeson (2007) suggested that it is possible to explain the variability in empirical estimates of the LMX-OCB correlation by accounting for differential effects of the various sub-dimensions of the two constructs. Therefore, the present study aimed to re-examine the association between LMX and OCB from a multidimensional viewpoint by assessing both the sub-dimensions of LMX and sub-dimensions of OCB.

**Dimensionality of OCB and LMX**

**Sub-dimensions of OCB.** There have been many specific types of OCB proposed in the literature (Podsakoff, MacKenzie, Paine, & Bachrach, 2000). The most frequently cited taxonomy of OCB is the five dimensional model developed by Organ (1988) and operationalized by the scales developed by Podsakoff and his colleagues (Podsakoff, MacKenzie, Moorman, & Fetter, 1990). The five-dimensional taxonomy included altruism, courtesy, conscientiousness, sportsmanship, and civic virtue.
Altruism is discretionary behavior directly intended to help a specific person with an organizationally relevant task problem or unusual circumstance, such as voluntarily helping a co-worker who is absent because of sickness. Courtesy is discretionary behavior taken to consult with others in order to prevent or lessen potential future work-related problems with other colleagues. Sportsmanship is discretionary behavior associated with one’s willingness to tolerate irritating matters in the workplace without complaining. Conscientiousness is discretionary behavior that goes above and beyond the minimum requirement of work norms, indicating that an individual is obeying rules and regulations in the organization. Civic virtue is discretionary behavior taken to responsibly participate in matters that are concerned with the life of the organization, indicating an individual’s support for the administration of the company.

Williams and Anderson (1991) first identified a more parsimonious distinction between individual (OCBI) and organizational (OCBO) OCB sub-factors. The category of OCBI refers to an employee’s discretionary behaviors that are directly beneficial to specific individuals, such as co-workers or superiors, and indirectly benefit the organizational; on the other hand, the category of OCBO refers to an employee’s discretionary behaviors that are directly beneficial to the organization (Williams & Anderson, 1991). Coleman and Borman (2000) later suggested that Organ’s (1988) altruism and courtesy dimensions should be viewed as belonging to the interpersonal citizenship performance category, which is similar to OCBI, and that sportsmanship, conscientiousness, and civic virtue dimensions should be regarded as belonging to the organizational citizenship performance category, which is similar to OCBO. The altruism and courtesy dimensions refer to discretionary behaviors that are more related to
individual members in the organization. The sportsmanship, conscientiousness, and civic virtue dimensions refer to discretionary behaviors that are more related to job/task-specific factors in the organization (Coleman & Borman, 2000).

Recently, Organ et al. (2006) advanced a seven-dimensional taxonomy of OCB, including helping, sportsmanship, organizational loyalty, organizational compliance, individual initiative, and self-development. However, the five dimensions suggested by Organ (1988) and the scales developed by Podsakoff et al. (1990) have served as the major basis for OCB empirical studies (LePine, Erez, & Johnson, 2002). Items of the five scales are presented in Table 2.1.

Multidimensionality of LMX. Recent researchers have argued that a multidimensional perspective on LMX may further enhance the predictive value of LMX for outcome variables (Maslyn & Uhl-Bien, 2001). Greguras and Ford (2006) and Liden and Maslyn (1998) further argued that different outcome variables might be attributed to different currencies of exchange within the dyad and different currencies of exchange might have different weights in predicting different outcome variables.

Graen and Uhl-Bien (1995) proposed that LMX is a three-dimensional construct comprised of respect, trust, and social exchange components: respect for the capabilities of the other party; trust in anticipation of deepening reciprocity within the dyad; and social exchange with the expectation of growth of the interacting obligation. The relationship between the leader and the subordinate is built on mutual respect for the other party, reciprocal trust in the other, and a growing obligation to the partnership (Graen, Novak, & Sommerkamp, 1982). However, Graen and Uhl-Bien (1995) also posited that the respect, trust, and social exchange sub-factors are highly correlated and
Table 2.1

**OCB Sub-dimensions and Associated Survey Questions**

<table>
<thead>
<tr>
<th>OCB Sub-dimensions</th>
<th>Survey Question</th>
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| Altruism           | Helps others who have been absent.  
|                    | Helps others who have heavy work loads.  
|                    | Helps orient new people even though it is not required.  
|                    | Willingly helps others who have work related problems.  
|                    | Is always ready to lend a helping hand to those around him/her.  
| Courtesy           | Takes steps to try to prevent problems with other workers.  
|                    | Is mindful of how his/her behavior affects other people’s jobs  
|                    | Does not abuse the rights of others.  
|                    | Tries to avoid creating problems for coworkers.  
|                    | Considers the impact of his/her actions on coworkers.  
| Sportsmanship       | Consumes a lot of time complaining about trivial matters (R).  
|                    | Always focuses on what’s wrong, rather than the positive side (R).  
|                    | Tends to make “mountains out of molehills” (R).  
|                    | Always finds fault with what the organization is doing (R).  
|                    | Is the classic “squeaky wheel” that always needs greasing (R).  
| Conscientiousness  | Attendance at work is above the norm.  
|                    | Does not take extra breaks.  
|                    | Obeys company rules and regulations even when no one is watching.  
|                    | Is one of my most conscientious employees.  
|                    | Believes in giving an honest day’s work for an honest day’s pay.  
| Civic Virtue        | Attends meetings that are not mandatory, but are considered important.  
|                    | Attends functions that are not required, but help the company image.  
|                    | Keeps abreast of changes in the organization.  
|                    | Reads and keeps up with organization announcements, memos, and so on.  

13
can be measured with a unidimensional scale. Therefore, there has been, and continues to be, an inconsistency between the multidimensional theoretical construct of LMX and the unidimensional operationalization of it (Schriesheim, Castro, & Cogliser, 1999).

Dienesch and Liden (1986) strongly argued that both the theoretical model of LMX and the measure of this concept should be multidimensional and proposed a three-factor model that included contribution, loyalty and affect. The proposed three sub-factors of LMX were drawn from a list of factors from previous literature and were grounded in the concept of mutuality, implying a kind of exchange valued between dyadic members, which both parties can bring to the relationship. Contribution involves work- or task-related behaviors contributing to mutual goals of the leader and subordinate; loyalty includes public support between the leader and the subordinate; affect describes the liking or interpersonal attraction in the dyadic relationship. Following Dienesch and Liden’s multidimensional model, Liden and Maslyn (1998) developed a multidimensional scale of LMX (LMX-MDM), where MDM stands for Multi-Dimensional Measure. Later, based on prior theory (Dienesch & Liden, 1986) and critical incident interviews they conducted, Liden and Maslyn (1998) added a fourth dimension of LMX, professional respect, to form a four dimensional version of LMX-MDM. Professional respect refers to the perception of the other party’s reputation within and/or outside the organization owing to their ability to achieve mastery of their work.

The development and validation of the LMX-MDM scale began with a sample of 302 working students (sample 1) and 251 organizational employees (sample 2). The prototype LMX-MDM scale included 120 items and was reduced into an 11-item scale after a series of psychometric tests. Each sub-dimension had three items except the
contribution sub-dimension, which only has two items. For the four sub-dimensions (affect, loyalty, contribution, and professional respect), the test-retest correlations were .83, .66, .56, and .79, respectively; the coefficient alphas were .90, .78, .60, and .92 for sample 1 and .90, .74, .57, and .89 for sample 2. All coefficients were acceptable except for the contribution scale, which was lower than the .70 recommended value. The validity of LMX-MDM was tested for response bias susceptibility, convergent validity, discriminant validity and criterion-related validity. Two common response bias scales, acquiescence and social desirability, were used to test the susceptibility of the scales to response bias. None of the LMX-MDM scales were found to be susceptible to those two response biases because no correlations were found between LMX-MDM items and the response scales. Exploratory factor analysis (EFA) was conducted and the resulting four-factor model accounted for 79.4% of the variance. Confirmatory factor analysis (CFA) was also performed, and supported the hypothesized four-factor model. The authors also demonstrated convergent validity by correlating the new scale with the existing unidimensional LMX-7 measure. The correlations between LMX-7 and LMX-MDM were 64, .53, .33, and .42 in sample 1 and .71, .71, .55, and .70 in sample 2 for sub-scales of affect, loyalty, contribution, and professional respect. Discriminant validity was assessed by correlating LMX-MDM with satisfaction with co-workers, which should not be significantly correlated with LMX-MDM (the correlations were r = .12, .25, .00, and .00 for affect, loyalty, contribution, and professional respect). Finally, criterion-related validity was tested with six outcome variables (organizational commitment, autonomy, satisfaction with work, satisfaction with supervision, turnover intentions, and performance) separately regressed on the four scales with simultaneous entry. The four
sub-scales were differentially related to the six outcomes according to related theory or prior research. A third item for the contribution sub-dimension of the LMX-MDM scale was later proposed by Liden and Maslyn (1998) so that each sub-scale would have a consistent number of items. The 12-item LMX-MDM scale has shown factorial validity and internal consistency in later research (e.g., Bernerth, Armenakis, Feild, Giles, & Walker, 2007; Greguras & Ford, 2006; Sparrowe, Soetjipto, & Kraimer, 2006). The 12 items of the LMX-MDM scale are presented in Table 2.2.

From the above discussions about the dimensionality of OCB and LMX, the researcher argued that both constructs should be assessed with multidimensional scales. However, no previous research has examined the associations between LMX and OCB from a multidimensional perspective. One reason is that the traditional unidimensional measures of LMX as well as the more recent multidimensional measure are not psychometrically adequate (Bernerth, Armenakis, Feild, Giles, & Walker, 2007). The next section critically evaluates current existing LMX scales. A later section in Chapter 2 will describe a process for developing an improved set of multidimensional scales to be used in the current research.

Criticisms of Existing Measures of LMX

Dimensionality and Psychometric Issues. Gerstner and Day (1997) noted that the soundness of LMX-7 was only justified by Cronbach’s alphas consistently in the 80-90% range from past research. Liden and Maslyn (1998) further pointed out three measurement and theoretical weaknesses of the unidimensional LMX-7 scale: 1) the narrow data base of previous research validating the LMX-7 scale was largely confined to public sector organizations; 2) there is need for more differentiation among LMX and
Table 2.2
*Leader-member Exchange (LMX) Sub-constructs and Survey Questions*

<table>
<thead>
<tr>
<th>LMX Sub-Construct</th>
<th>Survey Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Affect</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I like my supervisor very much as a person.</td>
</tr>
<tr>
<td></td>
<td>My supervisor is the kind of person one would like to have as a friend.</td>
</tr>
<tr>
<td></td>
<td>My supervisor is a lot of fun to work with.</td>
</tr>
<tr>
<td><strong>Loyalty</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>My supervisor defends my work actions to a superior, even without complete knowledge of the issue in question.</td>
</tr>
<tr>
<td></td>
<td>My supervisor would come to my defense if I were “attacked” by others.</td>
</tr>
<tr>
<td></td>
<td>My supervisor would defend me to others in the organization if I made an honest mistake.</td>
</tr>
<tr>
<td><strong>Contribution</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I do work for my supervisor that goes beyond what is specified in my job description.</td>
</tr>
<tr>
<td></td>
<td>I am willing to apply extra efforts, beyond those normally required, to meet my supervisor’s work goals.</td>
</tr>
<tr>
<td></td>
<td>I do not mind working my hardest for my supervisor.</td>
</tr>
<tr>
<td><strong>Professional Respect</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I am impressed with my supervisor’s knowledge of his/her job.</td>
</tr>
<tr>
<td></td>
<td>I respect my supervisor’s knowledge of and competence on the job.</td>
</tr>
<tr>
<td></td>
<td>I admire my supervisor’s professional skills.</td>
</tr>
</tbody>
</table>

Outcome variables (Outcome variables sometimes seem to be alternative measures of LMX. For example, leadership support, treated as a dependent variable, appeared to be related to items in the LMX independent measure.); and 3) the unidimensional conceptualization of LMX was too simple. Specifically, the unidimensional scale omits indexes of the role-making process implied in the LMX theory and does not provide a clear conceptual explanation or empirical justification for the development of a unidimensional scale. A multidimensional conceptualization of LMX can allow more
specific identification of what components of LMX are correlated with specific organizational criteria (Maslyn & Uhl-Bien, 2001).

Although there is no doubt that the LMX theoretical construct has multiple dimensions, as supported by work by Graen himself (Graen & Uhl-Bien, 1995), there are still some weaknesses of Liden and Maslyn’s (1998) recent LMX-MDM multidimensional measure. Problems include the small sample size of the interviews used for item generation, sample bias created by using only for-profit/private organizations to develop and validate the instrument, and lack of independent objective data validation collected outside the dyad. Most important, the contribution sub-dimension of the LMX-MDM scale in previous studies all yielded poor internal consistency with Cronbach’s alphas less than .70 (e.g., Bernerth, Armenakis, Feild, Giles, & Walker, 2007; Liden & Maslyn, 1998; Maslyn & Uhl-Bien, 2001).

**Social Exchange Issue.** Another criticism of the LMX-MDM scale is that it does not directly assess the social exchange process theorized to underlie leader-member exchange (Bernerth, Armenakis, Feild, Giles, & Walker, 2007). Sparrowe and Liden (1997) noted that social exchange theory should not be overlooked by LMX theorists as “exchange” is implied in leader-member exchange. One perspective of Blau’s (1964) explanation of social exchange is that the interpersonal relationship between leaders and subordinates is the product of a history of numerous material and non-material exchanges, referred to as “voluntary actions of individuals that are motivated by the returns they are expected to bring [to and from] others” (p. 91). In addition, Graen and Uhl-Bien (1995) noted that the central idea of LMX is the concept of social exchange, which emphasizes the working relationship beyond the material exchange. That kind of social exchange
forces the recipient in a dyad to act in return to compensate feelings of indebtedness to the donor (Settoon, Bennett, & Liden, 1996). Uhl-Bien and Maslyn (2003) also argued that high reciprocal quality in a dyad comes from the expectation and belief of the donor that the recipient will act equivalently with a future return.

Liden and Maslyn (1998) adopted the notion of social exchange to justify their multidimensional model of LMX; nevertheless, they did not include items assessing the exchange concept in their LMX-MDM scale. Moreover, current unidimensional measures of LMX have, in general, not described this kind of exchange process between a leader and a subordinate (Schriesheim, Castro, & Cogliser, 1999; Sparrowe & Liden, 1997). Although Liden and Maslyn (1998) suggested that “[a] social exchange measure, when combined with …LMX-MDM, would provide a more complete assessment of LMX” (pp. 67-68), such a measure has not been developed until recently.

Bernerth et al. (2007) constructed and validated an eight-item leader-member social exchange scale, LMSX, to capture the exchange concept of LMX. Item generation of the LMSX scale was based on two perspectives from Blau’s (1964) social exchange theory: each party’s need to stay out of debt to the other party and the need to take voluntary actions to make returns to the other party (Bernerth, Armenakis, Feild, Giles, & Walker, 2007). Complete items of the LMSX scale are presented in Table 2.3. In addition, Bernerth and colleagues (2007) also conducted hierarchical regression usefulness analyses comparing the LMSX, LMX-7 and LMX-MDM scales. Statistically significant incremental variances of LMSX in predicting four outcome criteria (intention to quit, organizational commitment, task performance, and contextual performance) were found above and beyond LMX-7 and LMX-MDM. However, LMX-MDM also showed
additional variance over that explained by LMSX. That is to say, neither scale alone can uniquely predict criteria and the LMX-MDM and LMSX scales are not interchangeable.

Table 2.3
Survey Questions of LMSX

<table>
<thead>
<tr>
<th>Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>My supervisor and I have a two-way exchange relationship.</td>
</tr>
<tr>
<td>I do not have to specify the exact conditions to know my supervisor will return a favor.</td>
</tr>
<tr>
<td>If I do something for my supervisor, he/she will eventually repay me.</td>
</tr>
<tr>
<td>I have a balance of inputs and outputs with my supervisor.</td>
</tr>
<tr>
<td>My efforts are reciprocated by my supervisor.</td>
</tr>
<tr>
<td>My relationship with my supervisor is composed of comparable exchanges of giving and taking.</td>
</tr>
<tr>
<td>When I give effort at work, my supervisor will return it.</td>
</tr>
<tr>
<td>Voluntary actions on my part will be returned in some way by my supervisor.</td>
</tr>
</tbody>
</table>

Inconsistent Wording/Version Issue. Maslyn and Uhl-Bien (2001) noted that the member-rated LMX scale should describe what the supervisor does for the subordinate. However, extant LMX scales do not do that. For example, the sixth item of the LMX-7 scale in Liden, Wayne, and Stillwell (1993) reads “My supervisor has enough confidence in me that he/she would defend and justify my decisions if I were not present to do so”; while the sixth item of the LMX-7 scale in Paglis and Green (2002) reads “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.” The former item asked the subordinate about a characteristic of the leader and the latter item asked the subordinate about a characteristic of the subordinate. Neither item describes what the supervisor does for the subordinate.

The multidimensional LMX-MDM scale has the same problem. For example, the three items of the loyalty sub-dimension in the LMX-MDM scale (see Table 2.2) ask the
subordinate to rate the leader’s public support of the subordinate. However, the items of the affect, contribution and professional respect sub-dimensions in the LMX-MDM scale ask the subordinate to rate their own liking of, contribution to and respect for the leader, instead of rating their own feelings about the leader’s liking of, contribution to and professional respect for them. Therefore, it is questionable if the previous research has measured what it proposed to measure.

As noted in Erdogan and Liden’s (2002) recent review article, the quality of the LMX relationship should be described as the focal person’s assessment of the other party within the dyad. Therefore, the current study argues that the LMX scale for subordinates should uniformly ask the subordinate to describe his/her feeling or perspective about the leader’s efforts to make the quality of dyadic relationship better.

**Summary of Criticisms about LMX Measures.** There have been many different measures developed to assess LMX in the 1980s without clear rationales presented for the scale development process (Gerstner & Day, 1997). The unidimensional LMX-7 scale has been the most commonly adopted one (Yukl, 2006). LMX in the 1990s was measured by various versions and modifications of previous scales (Schriesheim, Castro, & Cogliser, 1999). Only the LMX-6 developed by Schriesheim et al. (1992) and the LMX-MDM developed by Liden and Maslyn (1998) have provided psychometric scale testing with promising reliability and validity evidence (Bernerth, Armenakis, Feild, Giles, & Walker, 2007). The LMX construct still is being operationalized with various revisions of measures, which makes comparisons of results across empirical studies difficult (Erdogan & Liden, 2002) and challenges the conclusions drawn from previous studies (Yukl, 2006).
In conclusion, it is necessary to develop an appropriate multidimensional scale of LMX for future research. The present research modifies the existing LMX-MDM scale developed by Liden and Maslyn (1998) in order to assess the leader’s efforts from the subordinate’s perspective. In addition, the social exchange scale developed by Bernerth et al. (2007) is incorporated as well to create an integrated multidimensional scale, called LMX-M, for use in the current research. The researcher proposed that the modified and integrated LMX-M scale can span a broader content domain and have better predictive ability than the previously existing multidimensional measure, LMX-MDM.

**Hypotheses**

**Relationship between LMX and OCB.** The first part of the present study examines the associations among the five sub-dimensions of LMX (including the four sub-factors of LMX-MDM (affect, loyalty, contribution, and respect) plus the exchange sub-factor from LMSX) and the five sub-dimensions of OCB (altruism, courtesy, sportsmanship, conscientiousness, and civic virtue). The researcher argues that the leader’s efforts delivered into the dyadic relationship (assessed from the subordinate’s perspective) will be positively related to the citizenship behaviors enacted by the subordinate (assessed from the leader’s perspective).

According to Liden and Maslyn (1998), the affect and loyalty LMX dimensions are classified as people-related LMX scales and the contribution and professional respect LMX dimensions are classified as work-related LMX scales. Liden and Maslyn (1998) posited that the affect and loyalty dimensions of LMX describe the subordinate’s feelings of personal liking and support within the dyadic. Therefore, the two dimensions are expected to be better predictors of criteria more relevant to the specific leader him/herself,
such as employees’ satisfaction with the leader. The contribution and respect dimensions of LMX describe the individual perception of work-oriented efforts and professional reputation within or outside the overall line of work, which are evaluated from the larger organization, rather than the specific leader. Contribution and respect, therefore, are expected to be better predictors of criteria more relevant to the organization, such as employees’ organizational commitment.

Likewise, OCBI includes discretionary behaviors oriented toward specific others, such as the leader or the co-workers; OCBO includes discretionary behaviors oriented toward the larger organization. Therefore, the present study proposes that subordinates who perceive more high-quality people-related exchange (affect and loyalty) from their leader will reciprocate with discretionary citizenship behaviors more relevant to individuals, namely, altruism and courtesy. Similarly, subordinates who perceive more high-quality work-related exchange (contribution and respect) from their leader will reciprocate with discretionary citizenship behaviors more relevant to their job and task, namely, sportsmanship, conscientiousness, and civic virtue. The following two hypotheses were tested.

**Hypothesis 1:** Leaders will give higher ratings on the OCB sub-dimensions of altruism and courtesy to those subordinates who rate the leader with a higher score on the LMX sub-dimensions of affect and loyalty.

**Hypothesis 2:** Leaders will give higher ratings on the OCB sub-dimensions of sportsmanship, conscientiousness, and civic virtue of OCB to those subordinates who rate the leader with a higher score on the LMX sub-dimensions of contribution and professional respect.
Deluga (1994) posited that LMX is based on a reciprocal process of exchange in which both parties bring different resources into the relationship. Similarly, a reciprocal social exchange process also plays an important role in OCB (Hackett & Lapierre, 2004). Wayne, Shore, Bommer, and Tetrick (2002) proposed that “a high-quality exchange may create a sense of obligation on the part of the subordinate to reciprocate in terms of behaviors valued by the supervisor” (p. 593). In addition, Wang et al. (2005) noted that engaging in OCB helps the subordinate to demonstrate the exchange currencies of LMX (e.g., trust, affect, and respect) and fulfill the reciprocal obligations of the dyad. Thus, it is hypothesized that expressions of OCB by one party in the social exchange relationship should be related to ratings of equity by the other party. For the purpose of hypothesis testing, the present study uses the definition proposed by Bernerth et al. (2007) to define the exchange sub-factor of LMX as a feeling of equity or balance of indebtedness of one party with the other party within the dyad. The following hypothesis concerning exchange was tested.

**Hypothesis 3:** Leaders will give higher ratings on all five OCB sub-dimensions to those subordinates who rate the leader higher on the LMX sub-dimension of exchange.

The three hypothesized relationships between LMX and OCB dimensions are shown in Figure 2.1.

**Developing Alternative Measures of LMX.** The second part of the present study involves developing and validating a member-rated (subordinate) version of LMX, called LMX-M. The LMX-M designation indicates that the scale will measure the Member’s perspective of the leader’s efforts delivered into the dyadic relationship. Items for the
Figure 2.1

_Hypothesized Associations between Subordinates’ LMX and Leader’s Ratings of OCB._

Subordinate’s LMX scores | Leader’s assessment of subordinate’s OCB
---|---
| | altruism
affect | | courtesy
loyalty | | conscientiousness
contribution | | sportsmanship
respect | | civic virtue
exchange

LMX-M scale were taken from the LMX-MDM and LMSX scales. In the present study, each of the four sub-factors of the LMX-MDM scale (i.e., contribution, loyalty, affect, and professional respect) was assessed by three items. The exchange sub-factor was assessed by selecting three items from the LMSX scale (the third, fifth, and the seventh items in Table 2.3). However, all items were re-worded to consistently assess the subordinate’s feeling about his/her leader’s efforts delivered into the dyadic relationship. That is to say, each item specifically asked the subordinate about a characteristic of the leader perceived by the subordinate. In addition, all items followed the seven-point “strongly agree” to “strongly disagree” options recommended by Liden et al. (1993) to avoid the problem of previous scales which used different response anchors. Because the modified and integrated scale has a broader domain range than the LMX-MDM and LMX-7 scales and the wording of the modified scale will more consistently assess the
efforts delivered from the individual party in the dyad, as LMX theory implied, the following hypothesis was proposed for the modified and integrated LMX-M scale.

**Hypothesis 4a:** *The LMX-M scale will have significant incremental variance above and beyond the LMX-MDM scale in predicting criteria.*

**Hypothesis 4b:** *The LMX-M scale will have significant incremental variance above and beyond the LMX-7 scale in predicting criteria.*

To test the proposed hypotheses, a field survey study was conducted in one department of a power company in Taiwan. The LMX data (LMX-7, LMX-MDM, and LMX-M) were collected from the employees in the target department. Ratings of subordinates’ OCB were collected from the supervisors. In addition, the current research also collected self-rated OCB data from the subordinates as past research has shown that the relationships between LMX and OCB are stronger when both constructs were rated by the same source (Ilies, Nahrgang, & Morgeson, 2007). Chapter 3 recounts and details the methodology used for the study, including a description of the research design, the instrumentation, and the data collection procedures that were used. Chapter 4 presents the results of the study, followed by a discussion of the major findings in Chapter 5.
CHAPTER 3. METHODS

The present research used the traditional LMX-MDM and the modified and integrated alternative LMX scale, LMX-M, to test the proposed LMX-OCB hypotheses. The OCB data were collected from two rating perspectives (supervisor ratings and subordinate ratings). In addition, the unidimensional LMX-7 scale was also included in the current study for comparison purposes. LMX-7 is still one of the most frequently used measures in the literature; therefore, being able to show how the new method compares to the standard method will have additional value.

Procedures

All questionnaires were translated from English to Mandarin because the target department was located in Taiwan, where the native language is Mandarin. The translation process used in this study was a method of iterative back-translation (Brislin, 1970). Recommended by most cross-cultural researchers, back translation involves asking independent bilinguals to translate the original instrument from the source language to target language, and then having different bilinguals translate it back to the source language. The steps in the translation included the following:

1. A bilingual Taiwanese translated the questionnaire from English to Mandarin.
2. Another bilingual Taiwanese translated the Mandarin version of the questionnaire back to English.
3. The researcher then compared the last back-translated English version of the questionnaire with the original version of the questionnaire.
4. The differences between the two versions were resolved by discussions among bilingual Taiwanese and native English speakers to complete the final version.
After obtaining the consent to participate from the director of the target department (see Appendix C), questionnaires were mailed to the subordinates and the leaders respectively. All subjects in the target department received the questionnaire with an implied consent cover letter (see Appendix D and E). Subordinate’s organizational citizenship behavior was evaluated by the leader. Subordinates filled out the modified LMX-M, the traditional LMX-MDM and LMX-7 scales as well as the OCB items.

Participation in this research was voluntary. The survey process was confidential and the questionnaires were coded by the researcher for subsequent matching of the dyads. A six-digit code for matching purpose was printed on the upper-right portion of each questionnaire: a two-digit number assigned to each division, a two-digit serial number for the leader within the division and the last two-digit number for the specific subordinate under each leader. There were 86 divisions with 134 sections in the target department (there is one middle manager in each division and one supervisor in each section). Therefore, the coding number for the 3rd subordinate of the 2nd leader in the 34th division was 340203 (i.e., division 34, leader 02, subordinate 03). Finally, the researcher had a single list matching the six-digit ID codes to respondents’ names so that demographic information from the personnel division could be matched with individual questionnaires. Once the data had been matched, the name/ID list was destroyed and all data were essentially anonymous.

The LMX and the leader-rated OCB questionnaires (the first survey) were first delivered to all subordinates and the leaders, respectively, in care of the personnel division of the target department. A postage-paid return envelope was enclosed with the questionnaire. All returned mail was sent to the researcher directly. One follow-up
reminder postal card (see Appendix F) was sent out to all participants two weeks after the issue of the questionnaire. The subordinate-rated OCB questionnaires (the second survey) were sent out to the LMX-responding subordinates six weeks later than the first survey (The researcher could identify the responding subordinates via the six-digit code on the questionnaires). The self-rated OCB data were collected after a time delay following the LMX data collection to avoid the common method bias problem (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Sample

The site of this field study was a large department with a variety of divisions in a state-owned power company (Taipower) in Taiwan. At the time of study, Taipower had about 25,000 employees with 114 departments, in charge of the generation, transmission, distribution, and sales of the power utility in Taiwan. The selected department was the Department of Transmission Line and Substation Projects, which was in charge of the building and construction of the entire power transmission network. This department had over 1000 employees, which is a large one compared to other departments in Taipower. In this department, approximately 60% employees served in the engineering divisions, in charge of the design and construction of the substations, power cables, and transmission lines. In addition, this department had a variety of divisions in charge of engineering progress management, land rights acquisition and communication with the public for the power towers and substations, and engineering construction and equipment inspection. There were also common organizational divisions in this department, such as the human resource, general affairs, accounting and information technology divisions.
At the time of data collection, the target department had 1,107 employees. However, there were six construction teams in this department with 359 employees who worked on site without a regular office, which made the sending of the questionnaire difficult. Therefore, these 359 employees were excluded from the present study. In addition, 21 senior managers, who did not have specific corresponding subordinates, and the author himself were also excluded from the final sample.

Of the 726 questionnaires that were distributed to the subordinates, 432 were returned for a response rate of 59.5%. The self-rated OCB survey was then mailed to the responding 432 employees, of whom 423 continued to participate. Of the respondents, 74% were male; average time with the current job was 18.9 years; average time with the current supervisor was 3.1 years; average age was 32.2 years. This sample comprised a variety of types of job: 25.5% from power lines engineering divisions, 22.1% from substation engineering divisions, 14.3% from civil construction engineering divisions, 12.1% from land rights and communication divisions, 10% from general affairs divisions, 6.1% from management divisions, 3.9% from engineering quality divisions, 2.2% from human resources divisions, 2.2% from accounting divisions and 1.7% from internal inspection divisions.

A total of 220 leaders were recruited from the target department of whom 126 participated in the study for a response rate of 57.3% (36% of the responding leaders were middle managers; 64% were supervisors). Of the responding leaders, 90% were male. The average age for leaders was 45.8 years and the leaders had a mean tenure of 22.6 years with an average span of control of 3.3 subordinates. The 126 leaders produced usable ratings of 323 subordinates (some leaders did not rate all his/her subordinates),
yielding a sample of 231 matched leader-member dyads (a matched leader-member dyad means the leader and the corresponding subordinate both responded to the survey).

**Measures**

**Instrumentation for Leaders.** The subordinates’ OCB data were evaluated by the leaders. The 24 OCB items developed by Podsakoff et al. (1990) were used to operationalize the five dimensions of OCB proposed by Organ (1988). A five-point rating scale was adopted (1 = Not at all, 2 = To a limited extent, 3 = To a moderate extent, 4 = To a considerable extent, and 5 = To a great extent). Cronbach’s alpha estimates of internal consistency for the five leader-rated OCB dimensions are reported in Table 4.1.

**Instrumentation for Subordinates.** The wordings of the modified and integrated LMX-M scale items are shown in Appendix B. Although the items shown in Appendix B are organized by the original scales, items were randomly presented in the questionnaires offered to the subjects. All subordinates were asked to respond to the LMX-M scale developed in the present study and the traditional LMX-MDM scale developed by Liden and Maslyn (1998) as well as the LMX-7 scale developed by Paglis and Green (2002). The Paglis and Green version of the LMX-7 scale was adapted from Graen and Uhl-Bien (1995) by providing identical response anchors for all items. The objective of collecting traditional LMX-7 data was that it permits the efficacy of the modified and incorporated LMX-M scale to be compared to that of the traditional measure that has been the standard in the field for many years.

In addition, the subordinates also filled out the same 24-item OCB scale as used by the leaders to rate the subordinates after a time delay of six weeks. Gathering self-reported OCB data allowed two tests of the three hypotheses: one using supervisor
ratings and one using self ratings. Previous research has shown that self-rated OCB and supervisor-rated OCB have not correlated strongly (approximately $r = .20$) (Podsakoff et al., 2000); thus, supervisor ratings and subordinate ratings are not substitutes for one another. Self-rated OCB has been shown to have higher correlations with antecedent or outcome variables than the superior-rated OCB (Organ, Podsakoff, & MacKenzie, 2006). Cronbach’s alpha estimates of internal consistency for the five self-rated OCB dimensions are reported in Table 4.3.

**Data Analysis Overview**

Prior to the analyses, the accuracy of data entry was verified by checking a random sampling of survey items against the database in the statistical software. No errors in encoding were found. Data analysis was conducted in three phases.

First, confirmatory factor analyses were conducted to evaluate the extent to which the LMX and OCB instruments conformed to their a priori theoretical structure. Next, to test Hypotheses 1 to 3, multiple regressions were used to analyze the data. The predictor variables were the five sub-dimensions of LMX-M (affect, loyalty, contribution, respect, and exchange). The dependent variables were the five dimensions of OCB identified by Organ (1988): altruism, courtesy, sportsmanship, conscientiousness, and civic virtue (both self-rated and supervisor-rated).

Second, to test Hypotheses 4a and 4b, a series of hierarchical regression analyses were conducted to investigate whether the LMX-M scale accounts for incremental variance in OCB criteria above the variance explained by the LMX-MDM and LMX-7 scales. In addition, another set of analyses was conducted with the order entry of the independent variables reversed to examine whether the existing LMX-MDM and LMX-7
scales account for unique variance beyond that explained by the LMX-M scale. This method followed the suggestions of previous studies (e.g., Bernerth, Armenakis, Feild, Giles, & Walker, 2007; Greguras & Ford, 2006) to show incremental variance of one scale over another.

Finally, the present study further analyzed the psychometric properties of the LMX-M scale. A confirmatory factor analysis (CFA) was conducted to estimate how well the LMX-M scale fit the five-factor theoretical structure the researcher proposed in order to show the factorial validity of the LMX-M scale. The modified and integrated LMX-M scale and the traditional LMX scales are intended to measure different aspects of LMX because LMX-M was proposed to have a broader domain than the traditional LMX scales. Nevertheless, significant correlations between LMX-M and the traditional LMX scales are expected, which was suggested by Bernerth et al. (2007) as a proof of convergent validity. Discriminant validity can be empirically demonstrated, following the method used by Chen et al. (2001), if a new scale is distinct from previous scales using CFA to compare their structure. Specifically, a series of CFAs were conducted to demonstrate the discriminant validity of LMX-M. The first CFA included the 7 LMX-7 items and the 15 LMX-M items as the measurement variables to see if the 22 items loaded on one global LMX factor or six distinct latent variables (one for the LMX-7 and five for the LMX-M sub-dimensions). As for the comparison of LMX-M and LMX-MDM, three separate CFAs were conducted to see if the modified LMX-M-affect, LMX-M-contribution, and LMX-M-respect sub-scales were distinct from the traditional LMX-MDM-affect, LMX-MDM-contribution, and LMX-MDM-respect sub-scales (the loyalty dimensions are the same in the two scales).
In addition, the present study used the multi-trait multi-method (MTMM) framework suggested by Campbell and Fiske (1959) to assess the convergent and discriminant validity of LMX-M. However, rather than the traditional comparison among correlation coefficients to estimate the construct validity of a scale, the researcher conducted MTMM analysis using structural equation modeling (SEM), as recommended by Halbesleben and Demerouti (2005). Specifically, trait, method, and MTMM models comparing LMX-M and LMX-MDM were tested using confirmatory factor analyses to assess the construct validity of the LMX-M scale following guidelines in the SEM literature (Bagozzi & Edwards, 1998). The trait model tests the correlated traits; each item should only load onto a trait, not on a method. The method model tests the correlated methods; each item should only load onto a method, not on a trait. The MTMM model allows both the traits and the methods to correlate; each item should load both onto a specific trait and a specific method at the same time. The MTMM model would offer the best fit if the scales show convergence with the traits and are independent of the measures.
CHAPTER 4. RESULTS

This chapter presents the results of the tests of the hypotheses and possible interpretation for the proposed theoretical model. The present study proposed that the leader’s ratings of the subordinate’s OCB will be related to the subordinate’s perspective on the quality of the relationship between the dyad.

Results of Testing Hypotheses 1, 2, and 3

Matched Dyadic Sample. The means, standard deviations, and correlations among all study variables for the matched dyadic sample (N = 231) are presented in Table 4.1 (The OCB-overall is the average score of the five sub-dimensions of OCB; the LMX-M-overall is the average score of the five sub-dimensions of LMX-M; the LMX-MDM-overall is the average score of the four sub-dimensions of LMX-MDM). Five multiple regressions were used to analyze the data in order to test the three association hypotheses. The predictor variables were the five sub-factors of LMX (affect, loyalty, contribution, respect, and exchange) rated by the subordinate. The dependent variables were the five sub-factors of OCB (altruism, courtesy, sportsmanship, conscientiousness, and civic virtue) rated by the leader. Presented in Table 4.2 are the results of five regression analyses using the LMX-M measure.

Cronbach’s alpha estimates of internal consistency for the five leader-rated OCB dimensions were .90, .86, .80, .90, and .83 for altruism, courtesy, sportsmanship, conscientiousness, and civic virtue, respectively. Cronbach’s alpha estimates for the five subordinate-rated LMX-M sub-factors were .92, .90, .92, .91, and .93 for affect, loyalty, contribution, respect, and exchange, respectively. Examination of the regression analyses indicates that only two of the five sub-factors of the leader-rated OCB (altruism and civic
Table 4.1
Means, Standard Deviations, and Correlations of Matched Dyadic Sample (N=231)

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</table>

Note: Coefficient alpha reliability estimates are reported on the diagonal. * Completed by subordinate. ** Completed by leader.

*p < .05  ** p < .01
Table 4.2  
*Multiple Correlations and Standardized Beta Weights Predicting Leader-rated OCB from Subordinate-rated LMX-M*

<table>
<thead>
<tr>
<th>LMX-M</th>
<th>Altruism</th>
<th>Courtesy</th>
<th>Sportsmanship</th>
<th>Conscientiousness</th>
<th>Civic Virtue</th>
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<td>Affect</td>
<td>.10</td>
<td>.11</td>
<td>- .10</td>
<td>-.16</td>
<td>.00</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.03</td>
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<td>- .02</td>
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<td>-.01</td>
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<tr>
<td>Contribution</td>
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<td>.01</td>
<td>.14</td>
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<tr>
<td>Respect</td>
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<td>.02</td>
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<tr>
<td>Exchange</td>
<td>-.14</td>
<td>.08</td>
<td>.13</td>
<td>-.10</td>
<td>-.06</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
R^2 & = .06^* \\
F (5, 225) & = 2.68^* \quad 1.01 \quad .55 \quad 2.12 \quad 2.63^*
\end{align*}
\]

\*p<.05

Virtue) can be accounted for by the five LMX-M sub-factors as a whole (both R² = .06, p < .05). However, no significant regression coefficients were found among individual sub-factors of LMX-M and OCB. Possible explanations of the non-significant beta weights include the “criterion problem” (Austin & Crespin, 2000) and the small sample size of the matched dyadic sample. The term “criterion problem” refers to the question of how to
define and measure a criterion. Austin and Crespin (2000) posited that there is no one ultimate criterion because a criterion has multiple aspects in different contexts. Research findings would be different depending on the way the criterion variable was measured. Generally speaking, it is common that organizational behavior research fails to find associations between variables collected from different sources (Austin & Villanova, 1992). The meta-analysis examining the relationship between LMX and OCB conducted by Ilies, Nahrgang, and Morgeson (2007) also found that the magnitude of the correlation between the two constructs was stronger when the ratings were provided by the same source. Therefore, it is reasonable to expect that the employees’ perception of the quality of the LMX relationship would correlate more strongly with self-rated OCB than with another party’s ratings of OCB. Therefore, the present study re-examined the association hypotheses using the subordinates’ ratings of both LMX-M and OCB. Because the following analyses were based on data collected from subordinates, rather than from supervisors, subsequent analyses were exploratory.

**Subordinate-only Sample.** The means, standard deviations, and correlations among all study variables for the subordinate-only sample (N = 432) are presented in Table 4.3 (The OCB-overall is the average score of the five sub-dimensions of OCB; the LMX-M-overall is the average score of the five sub-dimensions of LMX-M; the LMX-MDM-overall is the average score of the four sub-dimensions of LMX-MDM). Presented in Table 4.4 are the results of the five regression analyses using subordinate-rated LMX-M measure to predict self-rated OCB.
Table 4.3
Means, Standard Deviations, and Correlations of Subordinate-only Sample (N=432)†

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<tr>
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<td>1.34</td>
<td>.72</td>
<td>.72</td>
<td>.81</td>
<td>.59</td>
<td>.61</td>
<td>.09</td>
<td>.06</td>
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<tr>
<td>12. LMX-MDM-loyalty</td>
<td>4.76</td>
<td>1.13</td>
<td>.66</td>
<td>.10</td>
<td>.82</td>
<td>.60</td>
<td>.65</td>
<td>.15</td>
<td>.11</td>
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<td>.05</td>
<td>.23</td>
<td>.72</td>
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</tr>
<tr>
<td>13. LMX-MDM-contribution</td>
<td>5.15</td>
<td>1.12</td>
<td>.54</td>
<td>.59</td>
<td>.62</td>
<td>.59</td>
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<td>14. LMX-MDM-respect</td>
<td>5.34</td>
<td>1.27</td>
<td>.54</td>
<td>.65</td>
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<tr>
<td>15. OCB-overall</td>
<td>3.95</td>
<td>.44</td>
<td>.28</td>
<td>.18</td>
<td>.36</td>
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<td>.15</td>
<td>.88</td>
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<tr>
<td>16. LMX-M-overall</td>
<td>4.70</td>
<td>.96</td>
<td>.84</td>
<td>.89</td>
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<td>.67</td>
<td>.24</td>
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<tr>
<td>17. LMX-MDM-overall</td>
<td>5.00</td>
<td>1.05</td>
<td>.71</td>
<td>.85</td>
<td>.63</td>
<td>.86</td>
<td>.63</td>
<td>.18</td>
<td>.12</td>
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<td>.06</td>
<td>.26</td>
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<td>.85</td>
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<td>.88</td>
<td>.22</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. LMX-7</td>
<td>5.03</td>
<td>1.09</td>
<td>.73</td>
<td>.79</td>
<td>.69</td>
<td>.82</td>
<td>.59</td>
<td>.14</td>
<td>.16</td>
<td>.17</td>
<td>.05</td>
<td>.23</td>
<td>.77</td>
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<td>.63</td>
<td>.70</td>
<td>.22</td>
<td>.86</td>
<td>.83</td>
<td></td>
</tr>
</tbody>
</table>

Note: All variables were completed by subordinates. Coefficient alpha reliability estimates are reported on the diagonal. † Statistics for OCB are based on N=423; 9 OCB non-returning employees were excluded from further analysis.

* p < .05  ** p < .01
Table 4.4

*Multiple Correlations and Standardized Beta Weights Predicting self-rated OCB from LMX-M*

<table>
<thead>
<tr>
<th>OCB</th>
<th>Altruism</th>
<th>Courtesy</th>
<th>Sportsmanship</th>
<th>Conscientiousness</th>
<th>Civic Virtue</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMX-M</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
</tr>
<tr>
<td>Affect</td>
<td>.16*</td>
<td>.17*</td>
<td>.09</td>
<td>.12</td>
<td>.11</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.06</td>
<td>.06</td>
<td>.13</td>
<td>.06</td>
<td>.10</td>
</tr>
<tr>
<td>Contribution</td>
<td>.30**</td>
<td>.27**</td>
<td>.38**</td>
<td>.37**</td>
<td>.35**</td>
</tr>
<tr>
<td>Respect</td>
<td>-.16</td>
<td>-.24*</td>
<td>-.25**</td>
<td>-.22*</td>
<td>-.12</td>
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<tr>
<td>Exchange</td>
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<td>-.13</td>
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<td>-.08</td>
<td>-.09</td>
</tr>
<tr>
<td>R²</td>
<td>.11</td>
<td>.09</td>
<td>.12</td>
<td>.12</td>
<td>.15</td>
</tr>
<tr>
<td>F (5, 417)</td>
<td>9.77**</td>
<td>7.97**</td>
<td>11.71**</td>
<td>11.82**</td>
<td>14.56**</td>
</tr>
</tbody>
</table>

*p<.05 **p<.01

Cronbach’s alpha estimates of internal consistency for the five subordinate-rated OCB dimensions were .84, .79, .82, .88, and .76 for altruism, courtesy, sportsmanship, conscientiousness, and civic virtue, respectively. Cronbach’s alpha estimates for the five subordinate-rated LMX-M sub-factors were .92, .90, .91, .91, and .94 for affect, loyalty, contribution, respect, and exchange, respectively. Examination of the regression analyses
indicates that the five LMX-M sub-factors as a set did significantly relate to the subordinates’ self-rated OCB ($R^2 = .11, .09, .12, .12, .15$ for altruism, courtesy, sportsmanship, conscientiousness, and civic virtue, respectively; all $p < .01$). The associations between LMX-M and OCB were stronger using subordinate-only ratings of both constructs, which is very similar to the findings in the meta-analysis conducted by Ilies, Nahrgang, and Morgeson (2007). The present study posited that each sub-factor of OCB is significantly related to only a subset of LMX dimensions. Hypothesis 1 proposed that LMX-M-affect and LMX-M-loyalty significantly predict the two OCBI dimensions (altruism and courtesy). Results partially supported Hypothesis 1. The affect sub-factor did significantly relate to the altruism ($\beta = .16, p < .05$) and courtesy ($\beta = .17, p < .05$) dimensions of OCB. This finding coincides with Spector and Fox’s notion (2002) that positive affect leads to interpersonal helping behaviors in the workplace.

Contrary to Hypothesis 1, the loyalty sub-factor did not significantly relate to the OCBI dimensions. The possible reason is that an employee may be loyal to the leader, but not a good citizen in the workplace (Podsakoff, MacKenzie, Moorman, & Fetter, 1990). That is to say, an employee might receive support from the leader, but this kind of support would not motivate him/her to engage in discretionary behaviors to help others in the workplace. Re-examining the definition of loyalty presented by Dienesch and Liden (1986) indicated that the loyalty sub-factor was originally developed to measure the extent to which the subordinate receives expressions of the public support from the leader. A leader’s support includes “a variety of behaviors by which a leader shows consideration, acceptance, respect, and concern for the needs and feelings of others” (Yukl & Lepsinger, 2004, p. 155), which does not include the feeling of trust. However,
Wat and Shaffer (2005) found that a subordinate is more likely to perform OCB if they have a trusting relationship with the leader. In contrast, the trusting relationship defined by Wat and Shaffer (2005) was the leader counting on the employee to carry out the task assigned, rather than the employee receiving public support from the leader.

On the other hand, the item generation process of the LMX-MDM scale originally included both the loyalty and trust sub-scales developed by Liden and Maslyn (1998). However, they ultimately modified the loyalty dimension to include notions of trust and dropped trust as a separate dimension. The result of the present study suggested that the loyalty dimension of LMX-MDM might not adequately describe the trust aspect within the LMX relationship to show significant correlations with OCBI as in the proposed hypothesis. Therefore, if LMX-M-loyalty could be re-defined from LMX-MDM-loyalty to better capture feeling of trust rather than simply public support from the leader, a stronger correlation between OCBI and the loyalty dimension of LMX-M might be anticipated.

Hypothesis 2 posited that the LMX-M-contribution scale and the LMX-M-respect scale significantly predict the OCBO dimensions (sportsmanship, conscientiousness, and civic virtue). The hypothesis was derived from the notion that subordinates in high LMX relationships are expected to engage in more task-oriented citizenship behaviors (LePine, Erez, & Johnson, 2002). Again, results only partially supported Hypothesis 2. The contribution sub-factor did significantly predict the three OCBO dimensions (sportsmanship: $\beta = .38, p < .01$; conscientiousness: $\beta = .37, p < .01$; civic virtue: $\beta = .35, p < .01$). But, in addition, the contribution sub-factor also significantly related to the altruism ($\beta = .30, p < .01$) and courtesy ($\beta = .27, p < .01$) dimensions of OCB. It is
possible that contribution might be a factor that correlated with all OCB dimensions because the contribution sub-factor measured the amount of effort the subordinate is willing to engage in working toward mutual goals. Such willingness reflects a motive very similar to the willingness to engage in citizenship behaviors (Ilies, Nahrgang, & Morgeson, 2007). Contrary to expectation, the LMX-M-respect sub-factor had a significant negative relationship with three OCB sub-factors (courtesy: \( \beta = -0.24, p < .05 \); sportsmanship: \( \beta = -0.25, p < .01 \); conscientiousness: \( \beta = -0.22, p < .05 \)). One possible explanation is that the respect sub-factor measured subordinates’ admiration of their leaders’ professional skill in the job, which might increase the quality of relationship within the dyad, but not necessarily subordinates’ helping behaviors per se. After reviewing the high correlations among the five LMX-M sub-factors and the zero-order correlations between LMX-M-respect and all OCB sub-factors in Table 4.3, another more likely explanation is that the negative coefficient is a statistical artifact (a suppressor effect) as correlated independent variables, when included in a regression equation, might result in a change of direction of beta weight (McDonald, 1999).

Finally, Hypothesis 3 posited that LMX-M-exchange significantly predicts all OCB dimensions. However, the results did not support this hypothesis. Table 4.4 shows that the exchange sub-factor was not significantly related to any OCB dimensions. The reason might be that the exchange items retrieved from the LMSX scale (Bernerth, Armenakis, Feild, Giles, & Walker, 2007) did not measure the exchange concept implied in LMX theory, although the LMSX may have captured a kind of social exchange not previously assessed. Graen and Uhl-Bien (1995) noted that the social exchange implied in LMX theory is expected to result in feelings of increased trust, gratitude and obligation
between dyadic members. Liden and colleagues (Liden & Maslyn, 1998; Liden, Wayne, & Stilwell, 1993; Sparrowe & Liden, 1997) also identified potential exchange currencies such as advice, friendship, and social support. However, the LMSX scale focused on “a more global exchange level in that exact commodities do not have to be specified” (Bernerth, Armenakis, Feild, Giles, & Walker, 2007, p. 983), which is different from the original description of exchange in LMX theory. On the other hand, the LMSX scale emphasized the feeling of indebtedness between dyadic members, which might not be an important issue in the target sample since the leaders in a state-owned enterprise cannot provide too many additional rewards or benefits to the subordinates.

Results of Testing Hypotheses 4a and 4b

Comparison of LMX-M with Existing LMX-MDM Scale. In order to test Hypothesis 4a, the present study used the LMX-MDM scale and repeated the prior zero-order correlation and multiple regression analyses, which had used the LMX-M scale. The means, standard deviations, and correlations among variables for the matched dyadic sample (N = 231) are also presented in Table 4.1. Cronbach’s alpha estimates of internal consistency for the four subordinate-rated LMX-MDM sub-factors were .95, .90, .88, and .95 for affect, loyalty, contribution, and respect, respectively. Presented in Table 4.5 are the results of the five regression analyses of the subordinate-rated LMX-MDM to predict leader-rated OCB. Only the conscientious sub-factor of the leader-rated OCB can be accounted for by the four LMX-MDM sub-factors as a whole ($R^2 = .05$, p < .05). Again, no significant regression coefficients were found in the matched dyadic sample.
Table 4.5

*Multiple Correlations and Standardized Beta Weights Predicting Leader-rated OCB from Subordinate-rated LMX-MDM*

<table>
<thead>
<tr>
<th>OCB</th>
<th>Altruism</th>
<th>Courtesy</th>
<th>Sportsmanship</th>
<th>Conscientiousness</th>
<th>Civic Virtue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LMX-MDM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affect</td>
<td>.11</td>
<td>.08</td>
<td>-.01</td>
<td>-.04</td>
<td>.10</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.14</td>
<td>.17</td>
<td>.07</td>
<td>.15</td>
<td>.18</td>
</tr>
<tr>
<td>Contribution</td>
<td>.00</td>
<td>.04</td>
<td>.01</td>
<td>.18</td>
<td>.20</td>
</tr>
<tr>
<td>Respect</td>
<td>-.08</td>
<td>.08</td>
<td>-.10</td>
<td>.20</td>
<td>.08</td>
</tr>
<tr>
<td><strong>R^2</strong></td>
<td>.03</td>
<td>.02</td>
<td>.01</td>
<td>.05</td>
<td>.04</td>
</tr>
<tr>
<td><strong>F (4, 226)</strong></td>
<td>2.12</td>
<td>1.26</td>
<td>.33</td>
<td>3.06*</td>
<td>2.78</td>
</tr>
</tbody>
</table>

*p<.05

The means, standard deviations, and correlations among variables for the subordinate-only sample (N = 432) are presented in Table 4.3 as well. Cronbach’s alpha estimates of internal consistency for the four subordinate-rated LMX-MDM sub-factors were .95, .90, .76, and .86 for affect, loyalty, contribution, and respect, respectively. Presented in Table 4.6 are the results of the five regression analyses of the subordinate-rated LMX-MDM to predict self-rated OCB.
Examination of the regression analyses indicates that only the altruism and civic virtue dimensions of OCB were significantly related to the four LMX-MDM sub-factors as a set (altruism: $R^2 = .09$, $p < .05$; civic virtue: $R^2 = .13$, $p < .01$). Further examination of the beta weights of the regression analyses shows that the contribution sub-factor of
the LMX-MDM again was the most significant predictor of all OCB dimensions as in the
LMX-M scale although the wordings of the LMX-MDM and LMX-M contribution sub-
scales were assessed from two different perspectives. The affect and respect sub-factors
of the LMX-MDM scale significantly predicted the altruism and civic virtue dimensions
of OCB, respectively, but in a negative direction.

Overall, comparing Table 4.6 and Table 4.4 shows that in each case the LMX-
MDM scale explained less variance than did the LMX-M scale. The lesser significant
predictive power of the LMX-MDM scale in relation to the LMX-M scale is consistent
with Hypothesis 4a. The researcher argued that the wording of the items for the affect,
contribution, and respect sub-factors of the LMX-MDM scale did not actually measure
the subordinate’s perspective of the leader’s efforts delivered to the dyadic relationship.
Instead, the wording of the LMX-MDM scale asks about subordinates’ feelings of their
efforts delivered toward the leader, which, the researcher argued, would have less power
to predict relevant LMX criteria.

Comparison of LMX-M with the Existing LMX-7 Scale. Following the method
used by Bernerth et al. (2007), the present study used the composite score approach (the
zero-order correlations in Table 4.1 and Table 4.3) to compare a unidimensional scale
and a multidimensional scale. LMX-M-overall is the average score of the five sub-scales
of LMX-M-affect, LMX-M-loyalty, LMX-M-contribution, LMX-M-respect, and LMX-
M-exchange. OCB-overall is the average score of the five sub-scales of OCB-altruism,
OCB-courtesy, OCB-sportsmanship, OCB-conscientiousness, and OCB-civic virtue. In
the matched dyadic sample, the zero-order correlations between the LMX-7 and LMX-M
scales and the leader-rated OCB were .19 and .17, respectively (both p < .01). In the
subordinate-only sample, the zero-order correlations between the LMX-7 and LMX-M scales and the self-rated OCB were .22 and .24, respectively (both p < .01). The LMX-7 scale had a higher correlation with the leader-rated OCB than the LMX-M scale, but a lower correlation than the LMX-M scale with the self-rated OCB.

On the other hand, further examining the zero-order correlations between LMX-7 and the five OCB dimensions in Table 4.1 and Table 4.3 indicated that the seven-item unidimensional LMX-7 scale correlated significantly with a subset of the five OCB dimensions, not with all five dimensions. In the matched dyadic sample, LMX-7 was only significantly correlated with OCB-altruism, OCB-courtesy, and OCB-civic virtue (correlation r = .23, .18 and .20, p < .01). In the subordinate-only sample, LMX-7 was only significantly correlated with OCB-altruism, OCB-courtesy, OCB-sportsmanship, and OCB-civic virtue (correlation r = .14, .16, .17 and .23, p < .01). Therefore, if we have a significant correlation between the composite scores of LMX (e.g., LMX-7) and OCB, we cannot jump to the conclusion that LMX is related to all the five sub-dimensions of OCB. To further compare the incremental variance in OCB explained by the three LMX scales, the following usefulness analyses were conducted.

Estimating the Incremental Variance in OCB Accounted for by the LMX-M Scale. Hypotheses 4a and 4b proposed that the LMX-M will explain significant incremental variance over and above the existing LMX-MDM and LMX-7 scales in predicting OCB criteria. To test the hypotheses, usefulness analyses were carried out according to the method proposed by Greguras and Ford (2006) and Bernerth et al. (2007). Two sets of hierarchical regression analyses were conducted. The first set of analyses investigated if the LMX-M explained unique variance in predicting OCB above
and beyond the variance explained by LMX-MDM and LMX-7. Presented in Table 4.7 and Table 4.8 are the results of the first sets of hierarchical regression analyses. The second set of analyses reversed the order entry of independent variables and investigated if LMX-MDM or LMX-7 incrementally explained unique variance in predicting OCB above and beyond the variance explained by LMX-X. Presented in Table 4.9 and Table 4.10 are the results of the second sets of hierarchical regression analyses.

Both Hypotheses 4a and 4b were supported by the usefulness analyses. LMX-M incrementally explained variance in OCB beyond the variance accounted for by LMX-MDM. Examination of Table 4.7 showed that 12% of the variance in OCB was accounted for by LMX-MDM in the first step ($F = 13.92$, $p < .01$). Entering the LMX-M in step two explained an additional 10% of the variance in OCB. When reversing the order of entry, results in Table 4.9 indicated that LMX-MDM also incrementally predicted variance in OCB beyond that accounted for by LMX-M. This analysis showed that 17% of the variance in OCB was accounted for by LMX-M in the first step ($F = 17.01$, $p < .01$). Entering LMX-MDM in step two explained an additional 5% of the variance in OCB.

Next, the variance explained by the LMX-M scale was compared to that explained by the LMX-7 scale. Examination of Table 4.8 shows that the LMX-M scale explained variance in OCB beyond the variance accounted for by LMX-7. LMX-7 accounted for 5% of the variance in OCB in the first step ($F = 21.30$, $p < .01$). Entering the LMX-M scale in step two explained an additional 12% of the variance in OCB. When reversing the order of entry, results in Table 4.10 indicated that 17% of the variance in OCB was accounted for by LMX-M in the first step ($F = 17.01$, $p < .01$). After entering LMX-7 in step two, no additional variance in OCB could be explained by LMX-7.
Table 4.7

Results of Hierarchical Regression Estimating the Incremental Variance in OCB Accounted for by LMX-M above LMX-MDM

<table>
<thead>
<tr>
<th>Variables Added</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
</tr>
<tr>
<td>LMX-MDM</td>
<td></td>
</tr>
<tr>
<td>Affect</td>
<td>-.17*</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.10</td>
</tr>
<tr>
<td>Contribution</td>
<td>.40**</td>
</tr>
<tr>
<td>Respect</td>
<td>-.05</td>
</tr>
<tr>
<td>R²</td>
<td>.12</td>
</tr>
<tr>
<td>F (4, 418)</td>
<td>13.92**</td>
</tr>
</tbody>
</table>

| Model 2         |    |
| LMX-MDM         |    |
| Affect          | -.27** |
| Loyalty         | .07 |
| Contribution    | .28** |
| Respect         | .07 |
| LMX-M           |    |
| Affect          | .24** |
| Contribution    | .31** |
| Respect         | -.18 |
| Exchange        | -.14* |
| R²              | .22 |
| F (8, 414)      | 14.59** |
| Δ R²            | .10 |
| Δ F             | 12.15** |

*p<.05  **p<.01
Table 4.8

*Results of Hierarchical Regression Estimating the Incremental Variance in OCB Accounted for by LMX-M above LMX-7*

<table>
<thead>
<tr>
<th>Variables Added</th>
<th>β</th>
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</thead>
<tbody>
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<td>Model 1</td>
<td></td>
</tr>
<tr>
<td>LMX-7</td>
<td>.22**</td>
</tr>
<tr>
<td>R²</td>
<td>.05</td>
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<tr>
<td>F (1, 421)</td>
<td>21.30**</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
</tr>
<tr>
<td>LMX-7</td>
<td>.05.</td>
</tr>
<tr>
<td>LMX-M</td>
<td></td>
</tr>
<tr>
<td>Affect</td>
<td>.19**</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.11</td>
</tr>
<tr>
<td>Contribution</td>
<td>.38**</td>
</tr>
<tr>
<td>Respect</td>
<td>-.22*</td>
</tr>
<tr>
<td>Exchange</td>
<td>-.15*</td>
</tr>
<tr>
<td>R²</td>
<td>.17</td>
</tr>
<tr>
<td>F (6, 416)</td>
<td>14.14**</td>
</tr>
<tr>
<td>Δ R²</td>
<td>.12</td>
</tr>
<tr>
<td>Δ F</td>
<td>12.15*</td>
</tr>
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*p<.05 **p<.01
Table 4.9

Results of Hierarchical Regression Estimating the Incremental Variance in OCB Accounted for by LMX-MDM above LMX-M

<table>
<thead>
<tr>
<th>Variables Added</th>
<th>β</th>
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<td><strong>LMX-M</strong></td>
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<tr>
<td>Affect</td>
<td>.19**</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.11</td>
</tr>
<tr>
<td>Contribution</td>
<td>.38**</td>
</tr>
<tr>
<td>Respect</td>
<td>-.22*</td>
</tr>
<tr>
<td>Exchange</td>
<td>-.15*</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>.17</td>
</tr>
<tr>
<td><strong>F (5, 417)</strong></td>
<td>17.01**</td>
</tr>
</tbody>
</table>

Model 2

<table>
<thead>
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<th>Variables Added</th>
<th>β</th>
</tr>
</thead>
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<tr>
<td><strong>LMX-M</strong></td>
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</tr>
<tr>
<td>Affect</td>
<td>.24**</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.07</td>
</tr>
<tr>
<td>Contribution</td>
<td>.31**</td>
</tr>
<tr>
<td>Respect</td>
<td>-.18</td>
</tr>
<tr>
<td>Exchange</td>
<td>-.14*</td>
</tr>
<tr>
<td><strong>LMX-MDM</strong></td>
<td></td>
</tr>
<tr>
<td>Affect</td>
<td>-.27**</td>
</tr>
<tr>
<td>Contribution</td>
<td>.28**</td>
</tr>
<tr>
<td>Respect</td>
<td>.07</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>.22</td>
</tr>
<tr>
<td><strong>F (8, 414)</strong></td>
<td>14.59**</td>
</tr>
<tr>
<td>Δ R²</td>
<td>.05</td>
</tr>
<tr>
<td>Δ F</td>
<td>8.92**</td>
</tr>
</tbody>
</table>

*p<.05  **p<.01
Table 4.10

Results of Hierarchical Regression Estimating the Incremental Variance in OCB

Accounted for by LMX-7 above LMX-M

<table>
<thead>
<tr>
<th>Variables Added</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
</tr>
<tr>
<td>LMX-M</td>
<td></td>
</tr>
<tr>
<td>Affect</td>
<td>.19**</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.11</td>
</tr>
<tr>
<td>Contribution</td>
<td>.38**</td>
</tr>
<tr>
<td>Respect</td>
<td>-.22*</td>
</tr>
<tr>
<td>Exchange</td>
<td>-.15*</td>
</tr>
<tr>
<td>R²</td>
<td>.17</td>
</tr>
<tr>
<td>F (5, 417)</td>
<td>17.01**</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
</tr>
<tr>
<td>LMX-M</td>
<td></td>
</tr>
<tr>
<td>Affect</td>
<td>.19**</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.11</td>
</tr>
<tr>
<td>Contribution</td>
<td>.38**</td>
</tr>
<tr>
<td>Respect</td>
<td>-.22**</td>
</tr>
<tr>
<td>Exchange</td>
<td>-.15**</td>
</tr>
<tr>
<td>LMX-7</td>
<td>.01</td>
</tr>
<tr>
<td>R²</td>
<td>.17</td>
</tr>
<tr>
<td>F (6, 416)</td>
<td>14.14**</td>
</tr>
<tr>
<td>Δ R²</td>
<td>.00</td>
</tr>
<tr>
<td>Δ F</td>
<td>.00</td>
</tr>
</tbody>
</table>

*p<.05 **p<.01
Results indicated that LMX-M did explain substantial additional incremental variance over that explained by the LMX-MDM and LMX-7 scales. In addition, the findings showed that LMX-M had an incremental variance over LMX-MDM (10%), but LMX-MDM also showed a modest incremental prediction than LMX-M (5%), indicating that both LMX-M and LMX-MDM uniquely predicted some parts of the OCB criteria. On the other hand, LMX-7 did not explain any additional incremental variance after the effects of LMX-M were removed, suggesting the superiority of the multidimensional measure (LMX-M) over the unidimensional measure (LMX-7).

**Results of Analyzing Psychometric Properties of the LMX-M Scale**

**Dimensionality of LMX-M.** Another objective of the present study was to analyze the psychometric properties of the LMX-M scale. A series of confirmatory factor analyses (CFA) were conducted to test the factorial validity of the LMX-M scale. The proposed five sub-factors of LMX (affect, loyalty, contribution, respect, and exchange) were measured with three items each. Specifically, the purpose of the CFA was to determine whether the 15 modified and integrated items represent the 5 theoretical sub-dimensions of LMX-M. The CFA was carried out using the M-plus software (Muthen & Muthen, 1998) with maximum likelihood estimation in order to compare the fit of the following five measurement models. Model 1 proposed that the 15 LMX-M items would form a single factor. Model 2 proposed that the 3 LMSX items (Bernerth et al., 2007) would form one factor and the other 12 modified LMX-MDM items would form a second factor. Model 3 proposed that the 15 items would form 3 factors: objective work-related scales (contribution and respect) and affective scales (affect and loyalty) forming the first two factors as in Liden and Maslyn (1998), and the LMSX sub-scale forming the third
factor. Model 4 proposed 4 factors, with the LMSX sub-scale forming one factor, the two work-related scales (contribution and respect) in LMX-MDM forming the second factor and the two affective scales in LMX-MDM forming the other two separate factors: affect (Factor 3) and loyalty (Factor 4). Model 5 proposed that each of the five theoretical sub-scales would form a separate factor. The results of the CFA validation are presented in Table 4.11.

Table 4.11

<table>
<thead>
<tr>
<th>Model</th>
<th>CFI</th>
<th>TLI</th>
<th>$\chi^2$</th>
<th>df</th>
<th>Difference</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-factor</td>
<td>.70</td>
<td>.65</td>
<td>1959.88**</td>
<td>90</td>
<td></td>
<td>.219</td>
</tr>
<tr>
<td>Two-factor</td>
<td>.81</td>
<td>.78</td>
<td>1260.11**</td>
<td>89</td>
<td>699.77</td>
<td>.175</td>
</tr>
<tr>
<td>Three-factor</td>
<td>.83</td>
<td>.79</td>
<td>1177.19**</td>
<td>87</td>
<td>82.92</td>
<td>.170</td>
</tr>
<tr>
<td>Four-factor</td>
<td>.90</td>
<td>.87</td>
<td>714.41**</td>
<td>84</td>
<td>462.78</td>
<td>.132</td>
</tr>
<tr>
<td>Five-factor</td>
<td>.98</td>
<td>.97</td>
<td>217.71**</td>
<td>80</td>
<td>496.70</td>
<td>.029</td>
</tr>
</tbody>
</table>

Note: $N = 432$. CFI = comparative fit index; TLI = Tucker-Lewis index; Difference = difference in chi-square from the next model; RMSEA = root-mean-square error of approximation.

** $p < .01$.

Considering the model fit statistics, only the five-factor model showed good fit to the data. The five-factor model showed better comparative fit index (CFI) and Tucker-Lewis index (TLI) values in comparison to the other models. The fit indices were above their recommended cutoffs of .90 for the five-factor model, while the values of the other models were lower than the threshold value. Even though the five-factor model had a
significant chi-square, this is often the case because this index is very sensitive to moderate to large sample size (Lance & Vanderberg, 2002). The root-mean-square-errors-of-approximation (RMSEA) values were reported to be much farther from zero in the first four models, while it was reported to be .029 for the five-factor model. A RMSEA of 0.08 indicates a reasonable fit and 0.05 or less for a close fit to the sampling population are recommended in literature (Hu & Bentler, 1999). Finally, all items in the five-factor model loaded reliably on their predicted factors, with the lowest loading being .80 (see Table 4.12). The results of the CFA indicated that the constructs in the five-factor model were distinct from each other.

**Reliability and Validity of LMX-M.** The LMX-M scale consisted of five sub-constructs. Each construct was measured with three items and the responses to the three items associated with each LMX-M construct were averaged to form scale scores. The Cronbach’s reliability coefficients for affect, loyalty, contribution, respect, and exchange sub-factors were .92, .90, .91, .91, and .94, respectively (see Table 4.3). The composite LMX-M-overall scale had a Cronbach’s alpha estimate of .95.

Although the LMX-M scale and the traditional LMX scales are intended to measure different aspects of LMX, significant correlations between LMX-M and the traditional LMX scales were expected, which was suggested by Bernerth et al. (2007) as a proof of convergent validity. Table 3.2 displays the zero-order intercorrelations among the LMX-M, LMX-MDM, and LMX-7 scales. The correlation between LMX-M-overall and LMX-MDM-overall was .88 (p < .01) and the correlation between LMX-M-overall and LMX-7 was .86 (p < .01). Each dimension of the LMX-M scale strongly related to the corresponding dimensions of the LMX-MDM scale; the correlations between the
Table 4.12

*Factor Loadings of the Proposed Five-factor Model of LMX-M*

<table>
<thead>
<tr>
<th>Item</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>My supervisor likes me very much as a person.</td>
<td>.87</td>
</tr>
<tr>
<td>I am the kind of person my supervisor would like to have as a friend.</td>
<td>.92</td>
</tr>
<tr>
<td>My supervisor thinks it is a lot of fun to work with me.</td>
<td>.90</td>
</tr>
<tr>
<td>My supervisor defends my work actions to a superior, even</td>
<td>.80</td>
</tr>
<tr>
<td>without complete knowledge of the issue in question.</td>
<td></td>
</tr>
<tr>
<td>My supervisor would come to my defense if I were “attacked” by others.</td>
<td>.92</td>
</tr>
<tr>
<td>My supervisor would defend me to others in the organization if I</td>
<td>.87</td>
</tr>
<tr>
<td>made an honest mistake.</td>
<td></td>
</tr>
<tr>
<td>My supervisor provides me with support and resources that go beyond</td>
<td>.87</td>
</tr>
<tr>
<td>what is specified in his/her job description.</td>
<td></td>
</tr>
<tr>
<td>My supervisor is willing to apply extra efforts, beyond those</td>
<td>.91</td>
</tr>
<tr>
<td>normally required, to help me meet my work goals.</td>
<td></td>
</tr>
<tr>
<td>My supervisor does not mind working his/her hardest for me.</td>
<td>.86</td>
</tr>
<tr>
<td>My supervisor is impressed with my knowledge of my job.</td>
<td>.87</td>
</tr>
<tr>
<td>My supervisor respects my knowledge of and competence on the job.</td>
<td>.91</td>
</tr>
<tr>
<td>My supervisor admires my professional skills.</td>
<td>.86</td>
</tr>
<tr>
<td>My supervisor will eventually repay me if I do something for him/her.</td>
<td>.84</td>
</tr>
<tr>
<td>My efforts are reciprocated by my supervisor.</td>
<td>.95</td>
</tr>
<tr>
<td>My supervisor will return it when I give effort at work.</td>
<td>.95</td>
</tr>
</tbody>
</table>

*Note: N = 432. Factor I: the affect sub-factor; Factor II: the loyalty sub-factor; Factor III: the contribution sub-factor; Factor IV: the respect sub-factor; Factor VI: the exchange sub-factor.*
three reworded sub-factors (affect, contribution, and respect) were .72, .62, and .74, respectively (the loyalty scales were identical in both the LMX-MDM and LMX-M scales). Similarly, each dimension of LMX-M strongly related to LMX-7, with correlations ranging from .59 to .82 (p < .01) and averaging .72 across dimensions.

In addition, it is necessary to collect multi-source, multi-method data to establish the construct validity (Nunnally & Bernstein, 1994). Campbell and Fiske (1959) proposed using the multi-trait multi-method (MTMM) matrix to show the convergent and discriminant validity of a scale. However, some researchers (e.g., Byrne & Goffin, 1993; Lowe & Ryan-Wenger, 1992) pointed out that the design of the MTMM matrix only used a subjective evaluation of patterns of correlation coefficients to judge the validity of a scale. Lance et al. (2002) also suggested that the most effective way to examine the construct validity is using SEM to test the fit of alternative measurement models against the patterns of observed correlations in the MTMM matrix. Figure 4.1 displays the MTMM model in the present study.

The loyalty sub-scale was omitted from the analysis since it was identical in both the LMX-M and the LMX-MDM versions. The exchange sub-scale also was omitted since it was not part of the LMX-MDM original scale. To compare the three different sub-scales (affect, contribution, and respect) of LMX-M and LMX-MDM, three types of models as suggested in previous literature were examined: trait, method, and MTMM models (Bagozzi & Edwards, 1998). The trait model was based on the three traits (affect, contribution, or respect) that both LMX instruments were designed to measure. Each individual item from the LMX-M and the LMX-MDM scales was proposed to load onto one of the three specific traits with no method factors proposed, as illustrated by the left
Figure 4.1

*LMX-M and LMX-MDM Multi-trait Multi-method Model.*

![Diagram of LMX-M and LMX-MDM Multi-trait Multi-method Model](image)

*Note:* M1-M3 = LMX-M-affect items 1-3; M6-M9 = LMX-M-contribution items 1-3; M10-M12 = LMX-M-respect items 1-3; MDM1-MDM3 = LMX-MDM-affect items 1-3; MDM6-MDM9 = LMX-MDM-contribution items 1-3; MDM10-MDM12 = LMX-MDM-respect items 1-3.

Side of the MTMM model in Figure 4.1. The method model was based on the two methods rather than the three traits assumed to be measured. That is, each individual item from the LMX-M scale was proposed to load onto one method factor and each item from the LMX-MDM scale was proposed to load onto a separate method factor, as illustrated by the right side of the MTMM model in Figure 4.1. Finally, the MTMM model assumed that an individual item was determined both by a trait and a method, which allows the traits to correlate and the methods to correlate (the full model in Figure 4.1). In addition,
Halbesleben and Demerouti (2005) proposed comparing a constrained model with the MTMM model to further test the discriminant validity of a scale. A constrained model would be one where the methods are set to correlate at 1.0. On the other hand, the full MTMM model, referred to as the unconstrained model, would be one where the methods are allowed to correlate freely, but not perfectly. The unconstrained MTMM model would offer the better fit than the constrained one if the methods were indeed independent (Bagozzi, 1993). Presented in Table 4.13 are the fit statistics for the models of the MTMM analyses.

Table 4.13

*Fit Indices for LMX-M/LMX-MDM Multi-trait Multi-method Comparisons*

<table>
<thead>
<tr>
<th>Model</th>
<th>CFI</th>
<th>TLI</th>
<th>$\chi^2$</th>
<th>df</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait</td>
<td>.78</td>
<td>.75</td>
<td>1978.10**</td>
<td>132</td>
<td>.18</td>
</tr>
<tr>
<td>Method</td>
<td>.71</td>
<td>.67</td>
<td>2570.60**</td>
<td>134</td>
<td>.21</td>
</tr>
<tr>
<td>MTMM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constrained</td>
<td>.91</td>
<td>.88</td>
<td>844.42**</td>
<td>110</td>
<td>.12</td>
</tr>
<tr>
<td>unconstrained</td>
<td>.95</td>
<td>.93</td>
<td>501.04**</td>
<td>107</td>
<td>.08</td>
</tr>
</tbody>
</table>

Note: $N = 432$. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation.

** $p < .01$.

Examination of Table 4.13 indicates that the full MTMM model (the unconstrained model) did show better fit than the trait and the method models, which warrants further investigation of the trait and the method models (Halbesleben & Demerouti, 2005). The trait model showed better fit than the method model (trait model: CFI = .78, TLI = .75, RMSEA = .18; method model: CFI = .71, TLI = .67, RMSEA = .21).
indicating that the trait factors are stronger than the method factors among the three different LMX sub-dimensions. In addition, the unconstrained MTMM model showed better fit than the constrained model (constrained model: \( \text{CFI} = .91, \text{TLI} = .88, \text{RMSEA} = .12 \); unconstrained model: \( \text{CFI} = .95, \text{TLI} = .93, \text{RMSEA} = .08 \)), providing empirical evidence for the discriminant validity of the LMX-M and LMX-MDM scales. Overall, the unconstrained MTMM model offered the best fit among the four models, suggesting that there is convergence in the measurement of the three traits (affect, contribution, and respect) of LMX and that the two scales (LMX-M and LMX-MDM) offer divergence in the measurement of LMX.

Discriminant validity can also be empirically demonstrated following the method used by Chen et al. (2001) if a new scale is distinct from previous scales when using CFA to compare their structures. Specifically, four additional sets of CFA were conducted to test whether LMX-M and LMX-7, and the three reworded sub-scales in the LMX-M and LMX-MDM were empirically distinct. The first CFA compared the LMX-M scale and the LMX-7 scale. Specifically, the 7 LMX-7 items and the 15 LMX-M items were included as the measurement variables to see if the 22 items loaded on one global LMX factor or six distinct latent variables (one for the LMX-7 and five for the LMX-M sub-dimensions). The results of the confirmatory factor analyses for the comparison of LMX-M and LMX-7 are summarized in Table 4.14.

Examination of the model fit statistics provides evidence of discriminant validity of the LMX-M scale and the LMX-7 scale. The first set of confirmatory factor analyses analyzed the 15 items of LMX-M together with the 7 items of LMX-7 to test three models. Model 3 hypothesized a six-factor model, in which the LMX-7 scale formed one
factor and the LMX-M scale comprised five factors. The six-factor model was compared with two alternative models: the LMX-7 scale and the LMX-M scale were constrained to load on a global LMX scale for one-factor model (Model 1) and the LMX-7 scale and the LMX-M scale were constrained to form two separate latent factors for a two-factor model (Model 2). Model 1 proposed that all the LMX-7 and LMX-M items did not show any discriminant variation and could be included in one global scale. Model 2 proposed that the LMX-7 and the LMX-M were two different scales, but the five sub-factors of the LMX-M scale did not show any discriminant variation. Table 4.14 shows, as expected, that the six-factor model was the only one showing a good fit to the data (CFI = .94, TLI = .93, RMSEA = .08), which reflects the discriminant validity between the LMX-7 and the LMX-M scales and reinforces the previous five-factor model CFA test for the LMX-M scale.

The next three analyses compared the hypothesized model where each of the three reworded sub-scales in LMX-M (for affect, contribution, and respect sub-factors) and the

<table>
<thead>
<tr>
<th>Model</th>
<th>CFI</th>
<th>TLI</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-factor</td>
<td>.73</td>
<td>.71</td>
<td>2684.92**</td>
<td>209</td>
<td>.17</td>
</tr>
<tr>
<td>Two-factor</td>
<td>.75</td>
<td>.72</td>
<td>2534.52**</td>
<td>208</td>
<td>.16</td>
</tr>
<tr>
<td>Six-factor</td>
<td>.94</td>
<td>.93</td>
<td>754.35**</td>
<td>194</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Note: N = 432. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation. ** p < .01
corresponding original sub-scales in LMX-MDM were two separate latent factors with an alternative model where the reworded sub-scale and the corresponding original sub-scales loaded on one global factor (again, the loyalty and exchange sub-scales of LMX-M were omitted). Specifically, in each analysis, the one-factor model proposed the two corresponding sub-scales did not show any discriminant variation and could be included in one global scale; while the two-factor model proposed that the two corresponding sub-scales were two different scales. The results of the confirmatory factor analyses for the comparison of the sub-scales of LMX-M and LMX-MDM are summarized in Table 4.15.

Examination of the results suggested that all the three two-factor models, which indicated that the two sub-scales were two separate latent factors, were more appropriate (Affect: CFI = .99, TLI = .98, RMSEA = .06; Contribution: CFI = .97, TLI = .94, RMSEA = .03; Respect: CFI = .99, TLI = .97, RMSEA = .02). That is to say, all the three reworded sub-scales and the corresponding original sub-scales were empirically distinct. This finding is consistent with the usefulness analyses that showed that LMX-M and LMX-MDM each accounted for some unique variance in the OCB.

In a nutshell, the results of the present study showed partial support for the hypothesized correlation model for the sub-factors between LMX and OCB in Figure 2.1 (Hypotheses 1-3). In addition, the results of the present study also indicated that the proposed integrated and modified LMX-M scale is distinct from the traditional LMX-MDM and LMX-7 scales and that the LMX-M scale has significant incremental variance above and beyond the LMX-MDM scale in predicting OCB criteria (Hypotheses 4a and 4b). The next chapter recaps the summary of the major findings of the present study, followed by a discussion of the implications and importance of the current research.
Table 4.15

*Summary of Confirmatory Factor Analyses for the Comparisons of the Sub-scales of LMX-M and LMX-MDM*

<table>
<thead>
<tr>
<th>Model</th>
<th>CFI</th>
<th>TLI</th>
<th>χ²</th>
<th>df</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparison of Affect Dimension in LMX-M and LMX-MDM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-factor</td>
<td>.82</td>
<td>.70</td>
<td>482.88**</td>
<td>9</td>
<td>.35</td>
</tr>
<tr>
<td>Two-factor</td>
<td>.99</td>
<td>.98</td>
<td>33.45**</td>
<td>8</td>
<td>.06</td>
</tr>
<tr>
<td>Comparison of Contribution Dimension in LMX-M and LMX-MDM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-factor</td>
<td>.76</td>
<td>.61</td>
<td>445.19**</td>
<td>9</td>
<td>.34</td>
</tr>
<tr>
<td>Two-factor</td>
<td>.97</td>
<td>.94</td>
<td>33.45**</td>
<td>8</td>
<td>.03</td>
</tr>
<tr>
<td>Comparison of Respect Dimension in LMX-M and LMX-MDM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-factor</td>
<td>.69</td>
<td>.48</td>
<td>788.56**</td>
<td>9</td>
<td>.45</td>
</tr>
<tr>
<td>Two-factor</td>
<td>.99</td>
<td>.97</td>
<td>44.03**</td>
<td>8</td>
<td>.02</td>
</tr>
</tbody>
</table>

*Note: N = 432. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation.*

** p < .01
CHAPTER 5. DISCUSSION

Summaries of Research Findings

The purpose of the present research was to: (a) build upon previous research by re-examining the association between LMX and OCB via a multidimensional analysis, (b) develop and validate an alternative multidimensional measure, LMX-M, for leader-member exchange, and (c) compare the utility of the modified and integrated LMX-M scale and the existing LMX scales.

Association between LMX and OCB. The results of this study add to the leadership literature by providing additional evidence that the relationship between LMX and OCB should be viewed from a multidimensional perspective. The differential associations between LMX and OCB sub-dimensions demonstrated in the present study corroborate the importance of the distinction among dimensions of LMX and OCB.

Previous literature has offered empirical evidence that the quality of the relationship developed between leaders and subordinates is related to subordinates’ performing citizenship behaviors in the workplace (Deluga, 1994; Podsakoff, MacKenzie, Paine, & Bachrach, 2000; Settoon, Bennett, & Liden, 1996). The meta-analytic mean correlation between LMX and OCB was .32 (Lapierre & Hackett, 2007). However, the correlations between LMX and OCB in prior studies were only based on the composite score approach. This study posited that different citizenship behaviors may be related to different currencies conveyed within the dyadic relationship and provided empirical evidence for those hypotheses.

Specifically, Hypothesis 1 proposed that the subordinate’s perceived people-related LMX currencies, affect and loyalty, will be related to the leader’s ratings of the
subordinate’s individual OCB (altruism and courtesy); Hypothesis 2 proposed that the subordinate’s perceived work-related LMX currencies, contribution and respect, will be related to the leader’s ratings of the subordinate’s organizational OCB (sportsmanship, conscientiousness and civic virtue); Hypothesis 3 proposed that the subordinate’s perceived LMX exchange currency will be related to the leader’s ratings of all five subordinate’s OCB. The multiple regression analyses using the dyadic sample did not provide significant support for the proposed hypotheses. No significant beta regression coefficients were found among the sub-factors of LMX-M and OCB (Table 4.2). The possible reasons include the criterion problem and small sample as detailed in Chapter 4.

On the other hand, the multiple regression analyses using the subordinate-only sample (Table 4.3), where both the LMX-M scales and the OCB data were rated by the subordinates, partially supported the hypothesized model in Figure 2.1. The affect sub-factors of LMX-M did correlate with the OCBI scales, providing empirical support for prior research showing that positive affect is one precursor of interpersonal helping behaviors (Spector & Fox, 2002). The contribution sub-factor of LMX-M significantly correlated with all five OCB sub-dimensions, indicating that the subordinate’s discretionary willingness to engage in citizenship behaviors on the job is highly related to his/her perception about the leader’s contribution to help the subordinate to meet work goals. However, the causal direction could not be determined in the present study since no experimental manipulations had been imposed. That is, it is also possible that the subordinate’s performance of OCB might facilitate the development of a high quality LMX relationship with the leader.
Contrary to the proposed hypothesized associations, the loyalty and exchange sub-factors of LMX-M failed to correlate significantly with any OCB factors. That is to say, the subordinate’s perspectives about the leader’s public support (loyalty dimension) and perceptions of indebtedness to the leader (exchange dimension) might not be related to the subordinate’s willingness to engage in discretionary helping behaviors in the target sample. On the other hand, the respect sub-factor of LMX-M was significantly related to the courtesy, sportsmanship, and conscientiousness sub-dimensions of OCB, but in a negative direction. The possible reason is the suppressor effect of the other highly correlated sub-factors of LMX-M as detailed in Chapter 4.

**Developing an Alternative Measure of LMX.** The present study compared the relative efficacy of three LMX scales: the most recommended unidimensional LMX-7 scale, the most popular multidimensional LMX-MDM scale, and the modified and integrated multidimensional LMX-M scale. The two major contributions of this modified scale were (a) it is the first multidimensional LMX scale to include the exchange sub-factor, and (b) it is the first LMX scale to consistently assess the member’s perspective about the leader’s efforts delivered into the dyadic relationship. Specifically, the LMX-M scale incorporated the affect, loyalty, contribution and respect sub-factors of LMX-MDM (Liden & Maslyn, 1998) and the exchange factor of LMSX (Bernerth, Armenakis, Feild, Giles, & Walker, 2007) to form a five-factor multidimensional LMX scale. The wordings of the LMX-MDM affect, contribution and respect sub-factors were modified to assess the subordinate’s perceptions about whether the leader’s various characteristics are beneficial to a high quality dyadic relationship.
Psychometric evidence of the validity and utility of the modified and integrated five-factor multidimensional LMX-M scale were provided in this study. In summary, the LMX-M scale was supported by a consistent set of results: (1) the CFA results showed that the five-factor model was superior to other competing models; (2) the LMX-M scale correlated with other similar LMX scales (LMX-7 and LMX-MDM) and the reworded sub-scales were shown to be statistically distinct from the original corresponding LMX-MDM sub-scales; (3) regression results indicated that different LMX sub-factors were significant in the explanation of variance in different OCB dimensions; (4) the MTMM analysis showed support for the convergence and divergence of the LMX-M and LMX-MDM scales.

Comparison analyses using different LMX scales also demonstrated that the LMX-M has better utility and broader content domain than the existing LMX-7 and LMX-MDM scales. The LMX-M scale showed significant incremental variance above and beyond the LMX-7 and LMX-MDM scales in predicting OCB criteria. The differences in variance in predicting OCB, controlling by LMX-M versus LMX-MDM and LMX-7, were 10% and 12%, respectively, which provided empirical support for the superiority of LMX-M over the other two LMX scales.

On the other hand, LMX-7 did not show significant incremental variance above and beyond LMX-M in predicting OCB criteria; while LMX-MDM contributed a modest 5% incremental variance over LMX-M in predicting OCB criteria. Beyond the additional exchange sub-factor in LMX-M, the major difference between LMX-M and LMX-MDM is the wording of items. The wording of LMX-M consistently assesses the subordinate’s evaluation of the leader’s value delivered into the dyadic relationship, while the wording
of some LMX-MDM items assesses the subordinate’s evaluation of self value delivered into the dyadic relationship. The present study found that the LMX-M (measuring the leader’s values) and LMX-MDM (measuring the subordinate’s value, except the loyalty dimension) scales were not fully interchangeable; therefore, the researcher argues that it is important to collect both parties’ value delivered into the leader-member dyad to evaluate the quality of LMX relationship.

**Implications and Importance of the Research**

There are several theoretical implications of the present study to advance leadership theory and practice. The present study clarifies the nature and process of the relationship between LMX and OCB. The LMX affect sub-factor has been shown to be related to OCBI. That is, employees in high-quality affective LMX relationships are considered more likely to in turn engage in interpersonal discretionary helping behaviors. This finding offers empirical support to Ilies, Scott, and Judge’s (2006) proposition that the interpersonal citizenship behaviors are predominantly affective in nature. In other words, leaders can influence the subordinates’ interpersonal helping behaviors by doing the things that will enhance the mutual liking within the dyads. In addition, the LMX contribution sub-factor has been shown to be a strong predictor of all OCB sub-dimensions. That is, OCB can be considered to be an expression of the subordinate’s reciprocity or gratitude to the leader’s positive work-related effort. In other words, leaders can enhance a subordinate’s interpersonal and task performance behaviors by doing things that will increase the level of work-oriented activity in the dyadic relationship with the subordinate. However, the present study also raises two challenges to the domain adequacy of the existing LMX measures.
First, the present research included the social exchange sub-factor in the LMX-M scale as suggested in previous research (Bernerth, Armenakis, Feild, Giles, & Walker, 2007; Erdogan & Liden, 2002; Greguras & Ford, 2006; Liden & Maslyn, 1998; Schriesheim, Castro, & Cogliser, 1999). However, the exchange sub-factor failed to show strong correlations with any OCB sub-dimensions in the present study. This raises a challenge to the original LMSX scale. LMSX was the first scale developed to measure the social exchange implied in LMX theory. Although Bernerth et al. (2007) offered a series of psychometric tests providing evidence supporting the LMSX scale, they also acknowledged that the item generation of LMSX was on a more global exchange level, not specifying specific commodities between leader and subordinate. The social exchange was defined as “the perception held by subordinates as to whether or not voluntary actions on their part will be returned by the supervisor in some way” (Bernerth, Armenakis, Feild, Giles, & Walker, 2007, p. 985). On the other hand, Graen and Uhl-Bien (1995) posited that the social exchange implied in the LMX theory is career-oriented and will grow into a partnership. That is, the social exchange in LMSX emphasized the feeling of indebtedness to reciprocate the other party; while the exchange spirit in the original LMX theory focused on the obligation to grow into a partnership. Therefore, LMSX might not capture the social exchange concept inherent in the LMX relationship, though LMSX did measure a kind of social exchange which has never been addressed in previous LMX scales. The finding that the exchange sub-factor had non-significant correlations with any OCB sub-dimensions in the present study challenges the appropriateness of adopting the LMSX scale to assess the exchange sub-factor underlying the LMX relationship.
Second, the wording of the LMX-M scale offered a consistent perspective to accurately examine the subordinate’s perception of the leader’s contribution to the dyadic relationship as the theory implied (Erdogan & Liden, 2002). In addition to the exchange sub-factor of LMX-M, the loyalty sub-factor did not significantly relate to any OCB sub-dimensions in the regression analyses, which raises another challenge to the domain content of the LMX-M and LMX-MDM scales. Perhaps the loyalty sub-factor might not be a kind of currency exchanged in the dyadic relationship and should be re-defined or replaced with other currencies of exchange. Although Liden and Maslyn (1998) acknowledged that the trust dimension could not be distinguished from loyalty in their item generation process, they chose to keep the loyalty dimension in the LMX-MDM scale. The result of the present study challenges the domain adequacy of the loyalty dimension in LMX-MDM.

However, the positive findings with the subordinate-only sample also pointed out an interesting implication. Examination of the item descriptions of LMX-M in Appendix B shows that the contribution sub-scale could be interpreted as subordinates’ assessment of their leaders’ discretionary and extra support beyond formally required. That is, the contribution sub-scale could be treated as assessing leader’s OCB toward the subordinate. Such leader OCB was found to be correlated with subordinates’ self-rated OCB. Although there is an issue of common methods variance among the measures, this finding suggests that leaders’ discretionary citizenship behaviors might motivate the subordinates’ willingness to engage in OCB.
**Possible Limitations of the Research**

The original Hypotheses 1, 2, and 3 relating leaders’ ratings of OCB and subordinates’ rating of leaders’ LMX were rejected. The hypothesized relationships between LMX and OCB were found only with the subordinate-only sample, rather than the proposed matched dyadic sample. In addition, the hierarchical analyses showing that LMX-M explained unique variance over LMX-7 and LMX-MDM when predicting subordinates’ self-reported OCB also were exploratory. None of the instruments -- LMX-M, LMX-MDM, and LMX-7-- would have explained much variance than the other two scales in the matched dyadic sample because less than 6% of the variance of leader-rated OCB was accounted for by subordinate-rated LMX and no significant beta weight coefficients were found when regressing leader-rated OCB on subordinate-rated LMX among individual sub-factors. In other words, the leader’s ratings of the subordinate’s OCB failed to correlate with the subordinate’s perspective on the quality of the relationship between the dyad, which challenges the theoretical implication that subordinates’ discretionary citizenship behaviors would provide an avenue to return the benefits offered from their leaders in high-quality LMX relationships.

There are several limitations that should be taken into account when interpreting the results in the present research. First, the site of the present study was only one state-owned department in a power company in one Asian country (Taiwan). On the other hand, this study involved field research taking place in the naturalistic setting of the population being examined and the sample included employees from a variety of jobs and divisions in the target department, thus increasing the functional application of the findings. However, generalizability is still a major concern of the present study.
Another limitation of the current study was the non-independence of the matched dyadic sample. There was a problem created by the fact that the present research had non-independence in the data caused by having ratings of multiple subordinates coming from the same supervisor. Thus, the multiple regression analyses did not have the correct error term for use in significance testing. However, most of the findings in the present study were based on the subordinate-only sample since the matched dyadic sample did not offer significant results. Future research replicating the present study should acknowledge this issue.

A third limitation of the current study was the lack of an item generation process for developing the LMX-M scale. The LMX-M scale was a modification and integration of current scales and so was susceptible to the same limitations contained in the original LMX-MDM and LMSX scales concerning domain sampling of items. The focus of the present study was to assess the dyadic contribution to the LMX relationship between dyad members, not to expand the content domain of the LMX scale.

A fourth limitation of the present study was its reliance upon survey methodology. First, causal inferences cannot be made as the temporal precedence of LMX and OCB cannot be determined. Considering that LMX is an ongoing process between the leader and the subordinates, it is possible that LMX not only contributes to the expression of OCB, but also that engaging in OCB might also affect the quality of LMX. Second, there might be a tendency to provide a socially desirable response in survey studies, particularly the LMX measure in the present research, and this may be exacerbated by the transparency of the instrument. This can adversely affect the size of the effects, or simply misrepresent or confound the construct.
A final limitation in the present study was the accuracy of measurement. Even though the back-translation method was conducted in this study, there might still be some cross-cultural bias in the translation process of the questionnaire. Respondents might have reactivity effects to the instrument due to bad translation, in that questions might make certain things salient in different languages, altering their natural response. For example, the two bilinguals and the researcher found that the three items in the exchange sub-scale, when translated, were almost the same in Mandarin. Therefore, the respondents might not have been able to give the exact desired answers as in the English version.

**Directions for Future Research**

The proposed hypothesized model was only partially supported in the present study, which offers some potential avenues for future research. First, less than 6% of the association between LMX-M and OCB was accounted for in the matched dyadic sample and 10-15% of the association was accounted for in the subordinate-only sample. There might be other exchange variables or context factors not measured in this study that could explain additional variance between LMX and OCB. The present study also pointed out that there might be a domain adequacy problem in the multidimensional LMX scales. Future research should seek to identify other possible sub-factors and re-examine the domain adequacy of the sub-factors in LMX-M, especially the exchange and loyalty sub-factors, to more comprehensively capture LMX relationships. The underlying exchange within the dyadic relationship should be re-investigated since the exchange sub-scale in the present study and the original LMSX both had non-significant correlations with OCB. It was questionable if the original survey items truly assessed the quality of the dyadic
relationship that the theory implied. Qualitative research about what has been characterized to describe LMX in existing literature could help identify the specific dimensions of the LMX relationship. For example, focus groups or interviews could be conducted in a variety of organizations to seek potential sub-factors in the LMX relationship.

Second, correlational studies do not provide convincing evidence of causation, and further laboratory or longitudinal studies are needed to firmly establish the causal inference between LMX and OCB. For example, the same LMX and OCB data could be collected in a longitudinal study with a time interval to establish the causal frame. On the other hand, manipulation of the LMX factors could be imposed in a laboratory setting to investigate if LMX has an effect on OCB. For example, LMX could be measured in Time 1; next, scenarios strengthening the sub-factors of LMX, such as mutual liking, public support and admiration of the leader’s professional skills, could be imposed on the experimental groups; then, LMX would be measured again in Time 2.

Third, past research has suggested the importance of considering both the leader’s and the subordinate’s perceptions of LMX. Empirical evidence has demonstrated that perspectives from the leader and the subordinate are unique and not interchangeable (Greguras & Ford, 2006; Paglis & Green, 2002). The present study has shown that the leader’s perspective of the dyadic relationship (measured by LMX-M) and the subordinate’s perspective of the dyadic relationship (measured by LMX-MDM except the loyalty dimension) are interchangeable in predicting OCB criteria; however, both values were assessed from the subordinate’s perspective in the present study. Erdogan and Liden (2002) have noted that it is important to include the supervisor version of the LMX scale,
which should reflect a supervisor’s perspective of the value of exchange delivered by the subordinate, to fully capture the quality of LMX. Wayne et al. (1997) also noted that the explicit dyadic nature of LMX is to describe the interactive process as both the leader and subordinate deliver value to each other. Therefore, the development and validation of a leader’s version of the LMX-M scale (LMX-L) is needed.

Fourth, the present study used only the OCB criterion to assess the utility of the LMX-M scale in comparison to that of traditional LMX scales. That is, the criterion-related validity and the usefulness of LMX-M compared to LMX-MDM and LMX-7 were only demonstrated with one criterion, OCB, in the present study. Future research should compare the utility of the various LMX scales using a wider range of criteria. In addition, the psychometric properties of the LMX-M scale were only tested in a Mandarin-speaking sample. Additional empirical research should be conducted in English-speaking samples and other cultures.

Finally, the differentiated relationships found between different sub-factors of LMX and OCB brought up the possibility that the leader might have differing in/out group relationships with individual subordinate as a function of the specific task to be performed. That is, the leader might trust or select different subordinates for different tasks as the critical success factors for different tasks are not the same. For example, the leader might depend on an honest and upright subordinate to be in charge of the accounting task, on another subordinate with a positive affective nature to smooth out conflicts between colleagues, and on another subordinate with an engineering background to keep everybody on schedule.
In view of the fact that the present study raised issues about the domain adequacy of existing LMX measures, perhaps more basic research is needed in the future to develop new measurement instruments, rather than simply making incremental changes to current instruments. Specifically, although Bernerth et al. (2007) have developed the LMSX scale to measure the social exchange concept in LMX, no previous research has thoroughly examined the reciprocity/exchange processes implied in LMX theory and challenged the suitableness and completeness of the “currencies of exchange” involved in LMX. Future research needs to comprehensively capture the LMX construct underlying the dyadic relationship between leader and subordinate. In addition, since the current research, as well as previous empirical research in LMX literature, has failed to find large correlations between LMX variables collected from subordinates’ and leaders’ perspectives, the dyadic nature implied in LMX theory should be re-examined. That is, the perspectives of both parties about LMX might truly be different and should be treated as separate constructs.

**Conclusion**

Subordinates’ citizenship behaviors are potential avenues for reciprocation to leaders as OCB reflects individual discretionary behaviors that are not specified by job descriptions and not recognized in formal reward systems (Organ, 1988). Therefore, employees in high quality LMX relationships can reciprocate by engaging in citizenship behaviors beneficial to the leader or others in the workplace (Settoon, Bennett, & Liden, 1996). The present study contributed to the literature by demonstrating that using a single composite score to examine the association between LMX and OCB is limited. Each sub-factor of the LMX-M scale emerged as a significant predictor for specific dimensions of
OCB, supporting the researcher’s notion that meaningful information about the association between LMX and OCB is lost in only using unidimensional global measures.

On the other hand, the development of the modified and integrated LMX-M scale in this study will certainly not end the “healthy controversy” (Graen & Uhl-Bien, 1995, p. 236) about the dimensionality and measurement issues of LMX. Nonetheless, this study pointed out the major dimensionality, social exchange, and inconsistent wording issues of the existing versatile LMX scales and suggested a potential alternative scale of LMX to solve the controversies in this field.
REFERENCES


Appendix A: The LMX-7 Scale Recommended by Graen and Uhl-Bien (1995)

1. Do you know where you stand with your leader… do you usually know how satisfied your leader is satisfied with what you do?
   - Rarely
   - Occasionally
   - Sometimes
   - Fairly Often
   - Very Often

2. How well does your leader understand your job problems and needs?
   - Not a Bit
   - A Little
   - A Fair Amount
   - Quite a Bit
   - A Great Deal

3. How well does your leader recognize your potential?
   - Not at All
   - A Little
   - Moderately
   - Mostly
   - Fully

4. Regardless of how much formal authority he/she has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work?
   - None
   - Small
   - Moderate
   - High
   - Very High

5. Again, regardless of the amount of formal authority your leader has, what are the chances that he/she would “bail you out” at his/her own expense?
   - None
   - Small
   - Moderate
   - High
   - Very High

6. I have enough confidence in my leader that I would defend and justify his/her decisions if he/she were not present to do so.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

7. How would you characterize your working relationship with your leader?
   - Extremely Ineffective
   - Worse Than Average
   - Average
   - Better Than Average
   - Extremely Effective
Appendix B: Proposed Wording of the LMX-M Scale

The following questions concern your relationship with your supervisor. Please indicate how much you agree or disagree with each statement.

How strongly do you agree or disagree that the statement describe your feelings

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Moderately disagree</th>
<th>Slightly disagree</th>
<th>Neither disagree or agree</th>
<th>Slightly agree</th>
<th>Moderately agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Affect

___ 1. My supervisor likes me very much as a person.

___ 2. I am the kind of person my supervisor would like to have as a friend.

___ 3. My supervisor thinks it is a lot of fun to work with me.

Loyalty

___ 4. My supervisor defends my work actions to a superior, even without complete knowledge of the issue in question.

___ 5. My supervisor would come to my defense if I were “attacked” by others.

___ 6. My supervisor would defend me to others in the organization if I made an honest mistake.

Contribution

___ 7. My supervisor provides me with support and resources that go beyond what is specified in his/her job description.

___ 8. My supervisor is willing to apply extra efforts, beyond those normally required, to help me meet my work goals.
9. My supervisor does not mind working his/her hardest for me.

Respect

10. My supervisor is impressed with my knowledge of my job.

11. My supervisor respects my knowledge of and competence on the job.

12. My supervisor admires my professional skills.

Exchange

13. My supervisor will eventually repay me if I do something for him/her.

14. My efforts are reciprocated by my supervisor.

15. My supervisor will return it when I give effort at work.
Appendix C: Content Letter to IRB Protocol

To whom it may concern,

This is to verify that Mr. Wu, Yann-Jang has been chosen by our company to complete a doctoral study in the University of Albany, SUNY in the US. Our company requires Mr. Wu to conduct a field study beneficial to my department. Mr. Wu is allowed to conduct any surveys to or retrieve archival records of the employees in my department as long as they are relevant to his academic research. If you have any question about Mr. Wu’s study, please feel free to contact me.

Sincerely,

Ming-Jian Chuang, Director
Department of Transmission Line and Substation Projects
Taiwan Power Company
d65300@taipower.com.tw
Appendix D: Implied Consent Cover Letter (Leader)

Dear Supervisor,

You have been invited to participate in research conducted by Yann-Jang Wu, a Ph.D. student in the School of Business at the University at Albany, SUNY, USA.

The purpose of this research is to assess your subordinate’s relationship with you and his/her behaviors helping others. During the study, you will complete a questionnaire asking you about your evaluation of a subordinate’s helping behaviors in the company.

The time required to complete the survey will be approximately 10 minutes per subordinate.

Participation in this research is voluntary; refusal to participate will involve no penalty or loss of benefits to you. If you do choose to participate, you are free to withdraw at any time without any effect on your record in the company. You also may omit any questions that you feel uncomfortable answering.

There are no foreseeable risks to you. All questionnaires have an identification number on the upper-right corner of the questionnaire assigned by me that will be used when entering the data. All data will be treated as confidential and kept in a secure location. Your name will not be linked to the survey. So please do not reveal any of your identity (e.g., name or identification number) in the survey. Attached also is a note for you to
identify the questionnaires with the specific employees assigned to you. There are two columns in this note. The first column stands for the serial number on the upper-right corner of the questionnaire and the second column shows the name of the specific employee. Please remember to destroy this note after you have made your ratings.

Questions regarding this research should be directed to Yann-Jang Wu, primary investigator, Organizational Studies, School of Business, University at Albany, SUNY, 1400 Washington Avenue, Albany, New York, 12222 (phone: 886-2-22186802, email: yw599667@albany.edu). If you have any questions concerning your rights as a research participant that have not been answered by the investigator or if you wish to report any concerns about the study, you may contact the University at Albany Office of Research Compliance at 518-437-4569 (toll free 800-365-9139) or orc@uamail.albany.edu.

Yann-Jang Wu
Ph.D. Program in Organizational Studies
University at Albany, State University of New York
Appendix E: Implied Consent Cover Letter (Subordinate)

Dear Employee,

You have been invited to participate in research conducted by Yann-Jang Wu, a Ph.D. student in the School of Business at the University at Albany, SUNY, USA.

The purpose of this research is to assess your relationship with your supervisor and your behaviors helping others. During the study, you will complete a questionnaire. There are two parts in this questionnaire. The first part will ask you about your relationship with your supervisor. The second part (which will be sent to you six weeks later) will ask you about your helping behaviors in the company.

The time required to complete the survey will be approximately 20 minutes.

Participation in this research is voluntary; refusal to participate will involve no penalty or loss of benefits to you. If you do choose to participate, you are free to withdraw at any time without any effect on your record in the company. You also may omit any questions that you feel uncomfortable answering.

There are no foreseeable risks to you. All questionnaires have an identification number assigned by me that will be used when entering the data and all data will be treated as confidential and kept in a secure location. Your name will not be linked to the survey. So
please do not reveal any of your identity (e.g., name or identification number) in the survey.

Questions regarding this research should be directed to Yann-Jang Wu, primary investigator, Organizational Studies, School of Business, University at Albany, SUNY, 1400 Washington Avenue, Albany, New York, 12222 (phone: 886-2-22186802, email: yw599667@albany.edu). If you have any questions concerning your rights as a research participant that have not been answered by the investigator or if you wish to report any concerns about the study, you may contact the University at Albany Office of Research Compliance at 518-437-4569 (toll free 800-365-9139) or orc@uamail.albany.edu.

Yann-Jang Wu

Ph.D. Program in Organizational Studies

University at Albany, State University of New York
Appendix F: Follow-up Postal Card

Dear employee,

You have been chosen to participate in a survey. A questionnaire enclosed with a postage-included return envelope was sent to you in care of the personnel division two weeks ago.

If you already have sent back the questionnaire, thank you. You can neglect this notification. If not, I would appreciate it if you would participate in this study by filling out the questionnaire. You are not obligated to participate. Your decision regarding participation and your answers to this questionnaire will have no effect on your rewards in your company. If you choose to participate, please send back the questionnaire with the return envelope as soon as possible. Your enthusiastic participation will make the study more trustworthy and valuable.

Thank you again for your kind assistance

Yann-Jang Wu

Ph.D. Program in Organizational Studies

University at Albany, State University of New York
默許同意信

各位主管好，

您受邀參加由紐約州立大學艾爾巴尼分校商學院博士生吳彥璋主導的學術研究。

本研究是為了要了解您與部屬間的關係及部屬在組織中幫助他人之行為。您將會填寫一份問卷。該問卷包括三個部分：第一部分將讓您評估部屬在公司中幫助他人的行為；第二部分將讓您評估您與部屬的信任及授權關係及您對該部屬的整體績效評量。

問卷填答時間大約十分鐘 (每位部屬各一份問卷)。

您可自由選擇是否參加本次學術研究，拒絕參加不會對您有任何處罰或利益損失。如您決定參加本研究後，您也可以隨時退出，您在公司並不會留下任何紀錄，您也可以略過任何會令您感到不舒服的問題。此外，您個人可能不會因參與本次研究而直接獲致好處，但他人或公司或許最終可因本研究之成果而受益。

本研究對您並無可預見的風險。所有的問卷都會有一個識別碼，該識別碼是供未來資料輸入建檔使用，所有的資料將會保密，並會安置在安全的處所。本問卷為匿名調查，請不要在問卷上透露您的身份 (如姓名或員工代號)。隨卷附有一個回郵信封，問卷完成後請以該信封直接寄回給本人，如此將可確保沒有人可得知是否您有參與本次學術研究。

本研究的指導教授為紐約州立大學艾爾巴尼分校管理系湯姆士泰伯教授 (電話：519-442-4937；電子郵件：ttaber@albany.edu)。有關本研究之疑問由主研究者吳彥璋負責 (地址：1400 Washington Avenue, Albany, New York, 12222；電話：886-2-22186802；電子郵件：yw599667@albany.edu)。如您對做為本研究受訪者有任何權益上的問題無法經由主研者獲得滿意答覆，或您要提報任何有關本研究之疑慮，您可與紐約州立大學艾爾巴尼分校學術研究法規遵守辦公室連絡 (電話：518-442-9050；免付費專線：800-365-9139；電子郵件：orrc@uamail.albany.edu)。

紐約州立大學艾爾巴尼分校
組織研究博士班
吳彥璋 謹上
問卷內容

以下是您的部屬可能會從事的行為，但並不是每個人都會實際去做，請在各項陳述前方格內依下列數字填入你/妳的同意程度，並請儘可能客觀評估該名員工從事的程度。

<table>
<thead>
<tr>
<th>從未做過</th>
<th>次數非常有限</th>
<th>偶而如此</th>
<th>經常如此</th>
<th>總是如此</th>
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<tr>
<td>1</td>
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</tbody>
</table>

非常感謝您參與本次問卷調查
Appendix H: Mandarin Version of Subordinate Questionnaire

默許同意信

各位同仁好，

您受邀參加一項由紐約州立大學艾爾巴尼分校商學院博士生吳彥璋主導的學術研究。

本研究是為了要了解您與上司間的關係及您在組織中幫助他人之行為。您將會填寫一份問卷。該問卷包括三個部分：第一部分將詢問您與您上司間的關係；第二部分將詢問您在公司中幫助他人的行為。

問卷填答時間大約二十分鐘。

您可自由選擇是否參加本次學術研究，拒絕參加不會對您有任何處罰或利益損失。如您決定參加本研究後，您也可以隨時退出，您在公司並不會留下任何紀錄，您也可以略過任何會令您感到不舒服的問題。此外，您個人可能不會因參與本次研究而直接獲致好處，但他人或公司或許最終可因本研究之成果而受益。

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紐約州立大學艾爾巴尼分校
組織研究博士班
吳彥璋 謹上
問卷內容 (從屬關係)

以下的問題係有關你/妳與上司間的關係，請回答你/妳對各項陳述的同意程度，並請在各項陳述前方空格內依下列數字填入你/妳的同意程度

<table>
<thead>
<tr>
<th>非常不同意</th>
<th>不同意</th>
<th>有點不同意</th>
<th>中立/無意見</th>
<th>有點同意</th>
<th>同意</th>
<th>非常同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

我了解主管的想法...我通常知道主管對我的工作有多滿意
主管知道我的困難跟需求
主管認同我的潛能
不論他/她有多少職位權限 主管個人願意利用他/她的職權來協助解決我工作上的困難
當我有需要時 我相信主管會在工作上無條件全力支持我
主管對我有信心 當我不在場時 他/她會辯護我的決定與想法
在工作上我跟主管間是相當有效率的
主管非常喜歡我的人
主管認為我是可當朋友的人
主管覺得跟我共事很有趣
即便不完全了解問題點所在 主管仍會向他/她的上司辯護我的工作行爲
當我遭受攻擊時 主管會爲我辯護
當我犯下無心的過失時 主管會爲我辯護
主管會提供我他/她職責外的支持跟協助
主管願意付出額外努力來幫助我達成工作目標
主管會在工作上全力幫助我
主管對我在工作上的專業知識印象深刻
主管尊重我在工作上的知識跟能力
主管欣賞我的專業技能
如果我幫主管做了一件事 他/她將來一定會酬報我
我的努力會被主管回報
主管會報答我工作上的努力
我非常喜歡主管的为人
主管是我願意把他/她當作朋友那類型的人
跟主管共事很有趣
我會替主管完成我職務範圍外的工作
我願意付出額外的努力 來達成主管的工作目標
我願意全力以赴爲主管工作
我對主管工作上的知識印象深刻
我對主管工作上的知識及能力很尊敬

我欣賞主管的專業技能

問卷內容 (組織公民行為)

以下是一個員工可能會從事的行為，但並不是每個人都會實際去做，請在各項陳述前方空白格內依下列數字填入你/妳的同意程度，並請試著盡可能客觀評估你/妳從事的程度

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幫助請假的同事

幫助工作量大的同事

主動協助新進同仁適應熟悉

願意幫助工作有困難的同事

總是願意幫助同事

儘量不請假

不會偷懶及做額外的休息

沒人監督下仍遵守公司規定

是最正直的員工之一

工作表現符合獲得的薪水

花很多時間在抱怨小事

總是專注在做錯的事而不思考光明面

容易小題大做

總是挑公司的毛病

是需要被特別關照的員工

會試著避免與同事發生糾紛

會注意自己的行爲會不會影響到同事

不會傷害同事的權利

會試著避免給同事製造問題

會思考自己行為對同事的影響

會參加重要但不是硬性規定的會議

會從事對公司形象有益但不是必須的行爲

會跟隨組織變革的步調

會閱讀並遵守組織的公告/備忘錄等等

非常感謝您參與本次問卷調查