

# “Multilevel modeling of direct effect and interaction of perceived organization justice on subordinates' OCBs”

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## SECTION 3. General issues in management

Yenhui Ouyang (Taiwan)

### Multilevel modeling of direct effect and interaction of perceived organization justice on subordinates' OCBs

#### Abstract

This study aims to propose and test a OCBs (organizational citizenship behaviors) model of insurance employees. Multilevel modeling was used to investigate how LMX, supervisor-subordinate personal guanxi and perceived organization justice directly influenced and interacted together to influence subordinates' OCBO and OCBI. Participants completed a survey with scales assessing LMX, supervisor-subordinate personal guanxi, perceived organization justice (POJ), and OCBs. Using hierarchical liner modeling (HLM), the hypotheses were partly confirmed. Furthermore, the paper finds that the relationship between LMX and OCBs was affected by procedural justice and the relationship between supervisor-subordinate personal guanxi and OCBs was affected by interactional justice. Then the article discusses implications for research and practice.

**Keywords:** LMX, supervisor-subordinate personal guanxi, POJ, OCBO, OCBI.

**JEL Classification:** C12, J53, M54.

#### Introduction

Under the influence of financial environmental rapid change and extreme competition, the financial services industry eagerly gets rid of the shadow of financial tsunami. Some financial institutions that create outstanding performance this year depends largely on employees' efforts that extend beyond formal role contracts. Thus, the leadership firmly believed that "employees" is the most important asset within an enterprise. Considerable scholarly research pays attention to understand the implications of the Western leader-member exchange (LMX) theory. However, Cheung et al. (2009) pointed out there are very strong obligations and favors in return in the Chinese guanxi, so it is necessary to discuss and clarify the guanxi networks of obligation and resource facets. In addition to the Western LMX theory, this paper also takes the Eastern interpersonal relationship (guanxi) between supervisor and subordinates into consideration as a part of the structure of the research. The study aims to establish the research on multi-level models of LMX and supervisor-subordinates personal guanxi, integrating individual and group levels of analysis by examining cross-level direct and interaction effects. Since the insurance industry is a very competitive industry, the employees must pay more efforts and show their ability to improve their performance, no matter for their individual or their teams. If the supervisors can reward their subordinates through the organizational fair systems which they can perceived, the employees will voluntarily toward the organization's goal to further display their organizational citizenship behavior beyond the bounds of the employment requirement (Cohen-Charash & Spector, 2001; Colquitt et al., 2001; Olffen & Cre-

mer, 2007; Camerman et al., 2007) and carry out non-obligatory tasks without expecting formal rewards in return and gratitude (Organ, 1988). Although perceived organizational justice has been studied for many years in organizational settings, however, most studies take the single-level analysis, little attention has been directed toward the role of perceived organizational justice as a group-level construct. The paper especially conceptualizes perceived organizational justice (POJ) as a group-level construct and examines its cross-level direct and interaction effects on individual-level construct on employees' organizational citizenship behavior. Using multi-level analysis is theoretically crucial because it provides a more comprehensive structure between supervisors and their subordinates (Tse et al., 2008).

This study discusses the extant literature and attempts to explore the relationships among LMX, supervisor-subordinate guanxi, organizational justice, and organizational citizenship behaviors (OCBs). Specifically, this paper expects different dimensions of perceived organizational justice (i.e., distributive justice, procedural justice, and interactional justice) will be direct effect and interact with LMX and personal guanxi on subordinates' OCBs.

The structure of this study depicts a multilevel model in which organizational commitment is a mediator linking the relationship LMX & personal guanxi and employees' OCBs at the individual level, and perceived organizational justice serves as a group-level moderator to buffer the relationship between LMX & personal guanxi and employees' OCBs at the individual level by investigating cross-level interaction effects. In this section, this study provides the rationale and develops theoretical arguments supporting the hypothesized relationships.

## 1. Theoretical background and hypotheses development

**1.1. Linking LMX and subordinates' OCBs.** Graen and his colleagues proposed the LMX model to explain that the relationship between supervisor and subordinates develops direct and interpersonal exchange within their workplace interactions (Graen and Scandura, 1987; Graen and Uhl-Bien, 1995). With its roots in role theory (Kahn et al., 1964) and social exchange theory (Cropanzano and Mitchell, 2005), the LMX model suggests that supervisors form differential relationships with their subordinates, describing the quality of the supervisor-subordinate relationship, with qualities varying from low to high (Liden et al., 2006). The supervisors will distinguish from their subordinates and build up either high quality or low quality exchange relationships. In summary, the supervisor-subordinate in the high quality will proceed closer and expedient communications (Elicker, Leby, and Hall, 2006). Higher quality exchanges relationships look like partnerships which are based on trust, respect, mutual positive affection, obligation and proficiency in their work, while lower quality exchange relationships are mainly recognized by the limits of the contractual contents (Liden and Maslyn, 1998). Subordinates will have superior interaction with their supervisors resulting in getting more empowerment, receiving more preferential treatment, increasing job-related communication, differential allocation of formal and informal rewards, and easy access to supervisors than lower-LMX subordinates. (Farh, Zhong, and Organ, 2004; Porter, 2005; Elicker et al., 2006). Kanika (2007) regarded the nature of exchanges or the quality of interaction of a supervisor varied of interaction across different subordinates in the workplace, which influences the subordinates' behaviors and outcomes. Previous research shows positive relationships of leadership to subordinates' work-related attitudes and in turn will increase subordinates' willingness to invest efforts and their enthusiasm for the task, engaging in more positive behaviors (Dae-Seok Kang et al., 2006). Therefore, the quality of the supervisor-subordinate relationship plays an important role to decide whether subordinates willing to take the extra-role responsibility (Mulki et al., 2006). These concepts contribute to Hypothesis 1:

*Hypothesis 1: LMX is positively related to OCBs in the individual level.*

**1.2. Linking superior-subordinate guanxi and subordinates' OCBs.** The native Chinese concept of "guanxi" does not have the equivalent meaning to the "relationship" of the Western. However, relationship cannot capture its critical element of guanxi

and that is, the set of interpersonal connections that facilitate exchange of favors and influence communication, mutual liking, and trust between two parties (Tsui and Farh, 1997; Xin and Pearce, 1996; Yeung and Tung, 1996; Zhang and Zhang, 2006). Supervisor-subordinate guanxi is a personal tie that subordinates develop with their supervisors from social interactions both inside and outside working hours, particularly in the Chinese context (Cheung et al., 2009). The social ties are formed when there is certain guanxi between two sides, facilitating the interpersonal interaction and reducing intangible distance between them. Nancy and Dean (2007) have mentioned that personal guanxi is like a private channel through which people communicate and exchange developed through social activities, such as lunches, dinners, and gift-exchanging (Chen and Chen, 2004). Personal guanxi is used to exchange promises for doing favors for each other and is viewed as a useful social capital that provides access to distribution channels (Bian and Ang, 1997; Nee, 1992). Besides, firms in Chinese society tend to be owned by founders and families resulting in bureaucratic control and centralized decision making by fewer supervisors (Peter Lok et al., 2004). Thus, promotion of employees is often highly associated with families and guanxi networks (Chen, 2001; El Kahal, 2002). However, most western firms tend to be owned by shareholder and run by professional managers, so promotion is often related to subordinate's competencies and merits (El Kahal, 2002). As a result, subordinates display a higher degree of OCBs to facilitate effective functionality in the organization. Consistent with the prior literature and results, we predicted that supervisor-subordinate guanxi would be positively associated with OCBs in the Chinese society. Based on these studies, the following proposition can be suggested.

*Hypothesis 2: Personal guanxi is positively related to OCBs in the individual level.*

**1.3. OC mediates the LMX & personal guanxi – OCBs relationship.** Organizational commitment is defined as an individual's attitudes toward an organization that involve a strong belief in and acceptance of its goals and values (Steers, 1977). In the present study, organizational commitment has been defined as the relative strength of an individual's identification with and involvement in a particular organization (Mowday, Steers and Porter, 1982). Moreover, organizational commitment reflects an individual's fondness for a job and emotional attachment to that organization (Mitchell et al., 2001). There are three characteristics of organizational commitment: (1) a strong belief in and acceptance of the organization's goals and values; (2) a willingness

to exert a considerable effort on behalf of the organization; and (3) a strong intent or desire to remain with the organization. Subordinates who are committed to their organizations are more likely not only to remain with the organization, but are also likely to exert more efforts on behalf of the organization and voluntarily work beyond the formal role requirements, and therefore conduct more OCBs than uncommitted employees (Konovsky and Cropanzano, 1991). Therefore, this paper proposes the Hypothesis 3:

*H3: OC will mediate the LMX & personal guanxi – OCBs relationship in the individual level.*

**1.4. The moderating role of POJ and the linking with subordinates' OCBs.** Organizational justice examines employees' perceived equality in the place of work and the nurturing of justice is an important prerequisite for the effective productivity of sales (Kashyap et al., 2007). Chen (2010) has proposed that fairness is an important element affecting employees' behaviors and reactions within organizations. Past studies of organizational justice have examined it as three constructs consisting of: (1) distributive justice, which refers to fairness perception of outcomes they receive from the organization; (2) procedural justice, which identified procedural justice examines the process by which rewards are allocated; and (3) interactional justice, which is concerned with subordinates' perception of interpersonal treatment (Elicker, Levy, and Hall, 2006).

Organ and Konovsky (1989) proposed an explanation that justice perceptions play a key determinant role in boosting subordinates' OCBs because subordinates' attitude might create a positive change owing to the fair treatment. Organ (1988) found that subordinates perform OCBs to reciprocate the fair treatment if supervisors can offer the fair treatment. Thereafter, Organ and Ryan (1995) also found that justice perception is the important antecedent of subordinates' OCBs. While justice in organizational behavior literature has been conceptualized in different ways (Colquitt et al., 2001), it was viewed as procedural and interactional justice (Tyler and Lind, 1992; Mossholder et al., 1998). Based on Bies and Moag's (1986) explanation, the concept of interactional justice focuses on the interpersonal treatment subordinates receiving from their supervisors and organizations regarding the degree of respect and honesty toward subordinates. Distributive justice relates to the perceived equality of benefit allocation and has been mentioned as the foundation of organizational justice (Byrne and Cropanzano, 2001). Adams (1965) introduced the concept of distributive justice evolved from equity theory and viewed as

social exchange relationships between employees and their organization. Subordinates contribute their energy, time and efforts to their organization and expect to receive reasonable compensation, rewards, and promotion from their organizations based on a social comparison with a reference person or group to determine treatment of equity or inequity.

Although much research relates these three types of justice perceptions to organizational commitment (Cohen-Charash and Spector, 2001; Colquitt, Conlon, Wesson, Porter, and Ng, 2001), seldom studies have explored the cross-level effects of perceived organizational justice on subordinates' OCBs. In assessing the cross-level effects, organizational justice perception will predict subordinates' OCBs beyond that explained by leader-member exchange and personal guanxi. Organizations considered to be fair are attractive to employees and motivate them to stay committed. In fact, past research (Alex and Ruderman, 1987; McFarlin and Sweeney, 1992; Moorman, 1991) has shown quite consistent and favourable effects of perceived fairness on attitudinal and behavioral variables such as OCBs and affective commitment (AC). Comparing with those who are unfairly treated, fairly treated subordinates are inclined to conduct more OCBs (Cohen-Charash and Spector, 2001; Colquitt, Conlon, Wesson, Porter, and Ng, 2001). Most supervisors have the power to evaluate their subordinates' performance, such as pay bonus, raise salaries, or even promotional opportunities. Cobb, Vest, and Hills (1997) pointed out that subordinates' perceptions of performance appraisal justice were influenced by both the organization's formal contract as well as the interpersonal treatment received from their supervisors. Social exchange theory specifies that fair transactions between subordinates and their supervisors cause closer social exchange relationships (Konovsky and Pugh, 1994; Masterson, 2001), as well as between employees and their employing organizations (Masterson et al., 2000).

According to Moorman (1991), specifying a positive and significant relationship between a subordinate's perception of his or her supervisor's interactional behaviors and the dimensions of OCBs. Moorman suggest that when supervisors behave in ways that employees perceive to be equal, considerate and kind, and when supervisors accurately identify the needs and feelings of their subordinates, subordinates naturally feedback with increased extra-role behaviors without any formal rewards from the organization, developing a feeling that he (she) wishes to pay the favor back to the supervisor. This is further supported by Lo (2006), where the positive reciprocity is influenced by subordinates when sub-

ordinates obtain favors from their supervisors, this will cause the subordinates to feel obliged to return the special treatment of their supervisors by performing OCBs. Consistent with the prior literature and results, this paper predicted that POJ of group level has significant influence on OCBs in the cross level. Moreover, POJ will moderate the relationship between LMX & personal guanxi and OCBs.

*Hypothesis 4: POJ will be positively related to OCBs in the cross level.*

*Hypothesis 5: The relationship between LMX & Personal guanxi and OCBs in the individual level will be moderated by POJ in the group level,*

*namely, the relationship between LMX & personal guanxi and OCBs will be stronger when POJ is strong.*

## 2. Methodology

**2.1. Measures.** In addition to this rigorous and carefully developmental process, exemplifying the validity of this questionnaire, this questionnaire also was empirically validated using both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). All these constructs of measurement were assessed on a seven-point Likert scale, ranging from 1 (very disagree) to 7 (very agree).

**2.2. Research model.** The research model is presented in Figure 1 below.

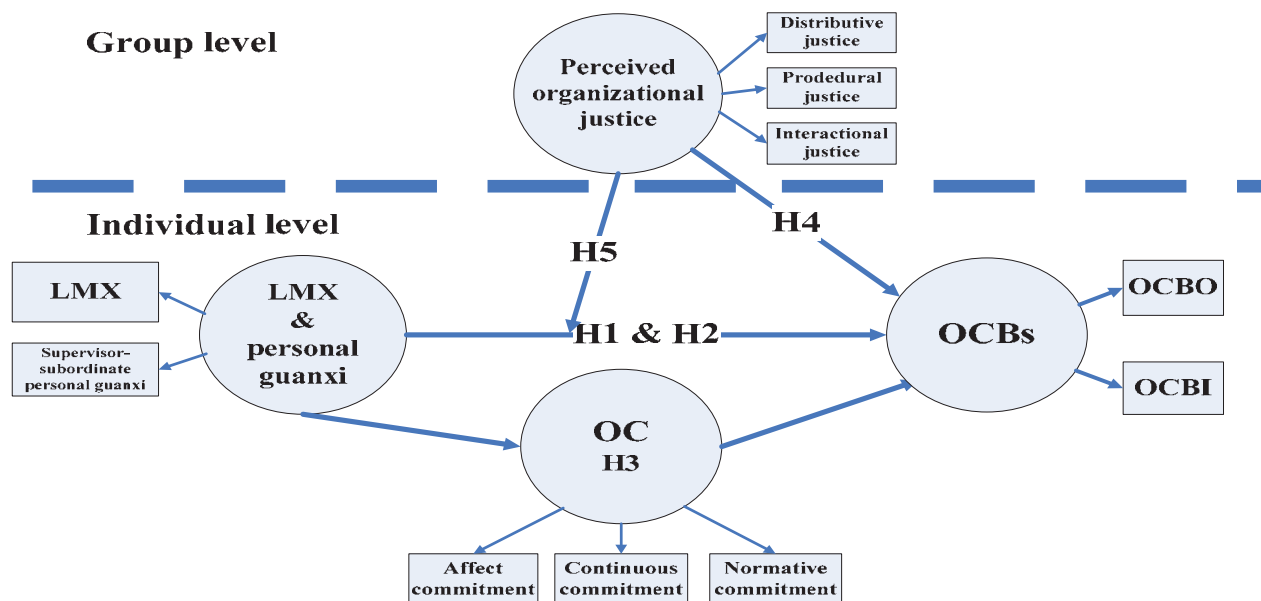


Fig. 1. Research model

**2.3. Individual-level variables.** **2.3.1. Leader-member exchange.** This LMX scales developed by Graen and Uhl-Bien (1995) and Liden and Maslyn (1998) measure individual perceptions of exchange relationships between branch supervisors and their subordinates. It consists of four sub-constructs which are affect, loyalty, professional respect and contribution. These factor loadings are between 0.75 and 0.94. The chi-square and fit indices were  $X^2/DF = 2.837$ ,  $GFI = .946$ ,  $AGFI = .886$ ,  $CFI = .979$ ,  $RMSEA = .094$ , and  $RMR = .04$  which fit the goodness and reach an acceptable range. The alpha reliability for this scale was 0.937.

**2.3.2. Supervisor-subordinate guanxi.** The second measure of guanxi was the 6-item scale measurement of guanxi developed by Wong et al. (2003) and Bian (2005) were based on the social class and reciprocal values of the Confucian philosophy. This scale was mainly used to measure the guanxi networks of social activities, financial assistance, highly intimates, giving favors to each other, and long-term emotional

attachment between supervisor and his (her) subordinates. These factor loadings are between 0.63 and 0.92. The chi-square and fit indices were  $X^2/DF = 0.166$ ,  $GFI = .999$ ,  $AGFI = .996$ ,  $CFI = 1.000$ ,  $RMSEA = .000$ , and  $RMR = .016$  which fit the goodness and reach an acceptable range. The coefficient alpha of the scale is  $\alpha = 0.857$ .

**2.3.3. Organizational commitment.** Organizational commitment was measured using the three components of organizational commitment – affective, normative, and continuance, that were assessed using the Meyer and Allen (1997). The chi-square and fit indices were  $X^2/DF = 2.59$ ,  $GFI = .927$ ,  $AGFI = .875$ ,  $CFI = 0.966$ ,  $RMSEA = .083$ , and  $RMR = .046$  which fit the goodness and reach an acceptable range. The coefficient alpha of the scale is  $\alpha = 0.928$ .

**2.3.4. Organizational citizenship behavior.** This scale adapted from Allen (2006), Ilies et al. (2007), Chen and Francesco (2003), Hoffman et al. (2007), and Williams and Anderson (1991) to measure the organ-

izational citizenship behaviors of individual subordinates. According to Williams & Anderson (1991), specifying organizational citizenship behavior is divided into OCBO and OCBI. These factor loadings of OCBO are between 0.73 and 0.85. The chi-square and fit indices were  $X^2/DF = 0.452$ ,  $GFI = .998$ ,  $AGFI = .960$ ,  $CFI = 1.000$ ,  $RMSEA = .000$ , and  $RMR = .009$ . These factor loadings of OCBI are between 0.70 and 0.85. The chi-square and fit indices were  $X^2/DF = 0.166$ ,  $GFI = .980$ ,  $AGFI = .940$ ,  $CFI = 0.980$ ,  $RMSEA = .081$ , and  $RMR = .019$ . All fit indices fit the goodness and reach an acceptable range. The alpha ( $\alpha$ ) reliabilities for OCBO and OCBI scale were 0.880 and 0.898, respectively, displaying a good reliability in this study.

**2.4. Measures: group-level variable.** Using multi-level analysis is theoretically crucial because it provides a more comprehensive structure between supervisors and their subordinates (Tse et al., 2008). This scale was measured using the three components of perceived organizational justice – distributive justice, procedural justice, and interactional justice – adapting from the standpoints of Adams (1963), Moorman (1991), and Colquitt et al. (2001). The chi-square and fit indices were  $X^2/DF = 1.71$ ,  $GFI = .952$ ,  $AGFI = .917$ ,  $CFI = 0.989$ ,  $RMSEA = .058$ , and  $RMR = .033$  which fit the goodness and reach an acceptable range. The coefficient alpha of the three scales are 0.951, 0.916, and 0.963, respectively, displaying a good reliability in this study.

**3. Analytical approach**

We have a nested data structure where encounter data is nested in POJ data. One strategy for dealing with this nested design would be to aggregate level 1 data to level 2. Hierarchical liner modeling (HLM; Raudenbush and Bryk, 2002) was used to consider the variation of LMX and personal guanxi (level 1) on OCBs of subordinates while also evaluating the influence of POJ (level 2), thereby creating a more complete

model. The advantages of HLM are that it is a flexible method for modeling because it is not necessary an equal sampling number of observations and accounts for the fact that, in hierarchically nested data designs.

**3.1. Participants.** In order to test the proposed model empirically, of the 500 questionnaires administered, 211 usable responses were returned yielding a response rate of 42.2 percent. The utilizable data was collected from 211 insurance employees of 20 different insurance branch offices in the southern of Taiwan. The sample consisted of 24.2% males and 75.8% females (see Table 1 for sample demographics).

Table 1. Sample demographics

Measure	Items	Frequency	%	Accum. %
Gender	Male	51	24.2	24.2
	Female	160	75.8	100.0
Age	< 25	13	6.2	6.2
	26-35	77	36.5	42.7
	36-45	86	40.8	83.4
	>46	35	16.6	100.0
Tenure	<1 year	27	12.8	12.8
	1-5	70	33.2	46.0
	>5 year	114	54.0	100.0
Income annually	<370,000	51	24.2	24.2
	370,000-990,000	112	53.1	77.3
	990,000-1,980,000	41	19.4	96.7
	>1,980,000	7	3.3	100.0
Education	High school or below	82	38.9	38.9
	College degree	123	58.3	97.2
	Graduate degree	6	2.8	100.0

**3.2. Reliabilities and confirmatory factor analysis.** Means, standard deviations, reliabilities, and intercorrelations among all scales used in the analyses are presented in Table 2. The means and standard deviations are within the expected ranges. For the sample, a preliminary examination of the correlations indicates that LMX and personal guanxi are strongly correlated with OC, OCBs and POJs.

Table 2. Standard deviations, and correlations of the study variables

Variables	Mean	SD	LMX	Personal guanxi	OC	OCBO	OCBI	POJ1	POJ2	POJ3
LMX	5.1378	1.0169	1							
Personal guanxi	4.1185	1.3155	.718(**)	1						
OC	4.8874	.9232	.644(**)	.425(**)	1					
OCBO	5.4336	.8816	.528(**)	.284(**)	.640(**)	1				
OCBI	5.2768	.7667	.473(**)	.350(**)	.488(**)	.648(**)	1			
POJ1	4.7930	.9903	.648(**)	.430(**)	.712(**)	.594(**)	.489(**)	1		
POJ2	4.8910	1.1138	.644(**)	.450(**)	.648(**)	.549(**)	.413(**)	.700(**)	1	
POJ3	4.7583	1.1205	.669(**)	.480(**)	.649(**)	.508(**)	.411(**)	.734(**)	.834(**)	1

Notes: \*\*  $p < 0.01$ , POJ1 is a procedural justice; POJ2 is an interactional justice, POJ3 is a distributive justice.

**3.3. The results of the structural model.** Structural relationships in the conceptual model were tested with AMOS 7.0. The maximum likelihood fitting function was used to estimate parameters and test hypotheses. Therefore, SEM is the most suitable analysis to estimate the strength of the causal relationships among these constructs. Bagozzi and Yi (1988) suggested a similar set of fit indices to examine the structural model. Overall, the model fits the data reasonably well. The results of the model indicate that the fit is acceptable for samples ( $X^2/DF = 2.05$ ,  $RMSEA = 0.071$ ,  $CFI = 0.956$ ,  $GFI = 0.901$ ,  $AGFI = 0.859$ ,  $NFI = 0.919$ , and  $IFI = 0.957$ ). Thus, we could proceed to examine the path coefficients of the structural model.

**3.4. Path coefficients and predictive ability.** Properties of the causal paths (standardized path coefficients) and t-values are shown in Figure 2. The effect of OC on OCBs was significant ( $\beta = 0.715$ ,  $p < 0.001$ ), identifying subordinates' commitment to organization is a significant factor in determining their organization citizenship behaviors. As expected, LMX & personal guanxi had a strong positive and highly significant influence on OC ( $\gamma = 0.702$ ,  $p < 0.001$ ). Altogether, LMX, supervisor-subordinate personal guanxi, and OC accounted for 62.4% of the variance in OCBs of subordinates. About 50% of the variance in OC was explained by LMX and supervisor-subordinate personal guanxi.

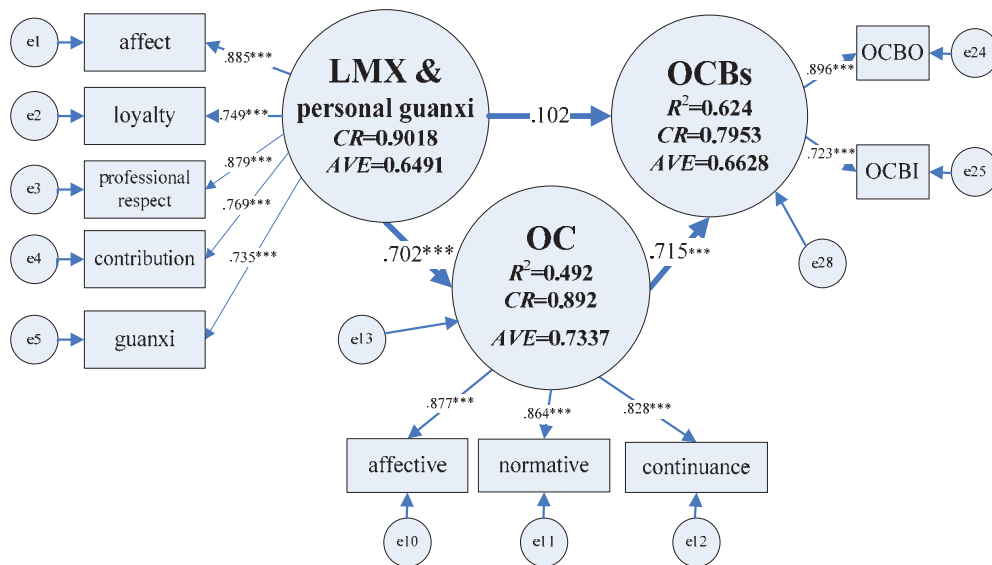


Fig. 2. The relationship between LMX & personal guanxi, OC, and OCB

This paper tested direct and indirect (via OC) relationships between LMX & supervisor-subordinate guanxi and OCBs. The direct and total effects of LMX & supervisor-subordinate guanxi on OCBs were 0.102 and 0.502, respectively. Baron and Kenny's (1986) logic states that a variable functioning as a mediator tests the mediating effect of organizational commitment, showing that the direct path of LMX & personal guanxi was significant at  $p < 0.001$ . After introducing OC as a mediator of the path between LMX & personal guanxi and OCBs relationships, the direct path from LMX & personal guanxi to OCBs became insignificant, indicating a full mediating effect of OC on the LMX & personal guanxi and subordinates' OCBs relationships. Therefore, Hypotheses 3 was supported.

This paper took the intercepts and slopes from the Level 1 analysis as dependent variables to analyze the two-level regression models. This paper testifies the hypotheses using four hierarchical linear models: the null model, random-coefficient regression, intercepts-as-outcomes, and slopes-as-outcomes models. To reduce potential problems with multicollinearity, in particular with respect to the interaction effects, all variable have been grand mean centered. The average rwg value was 0.97 which was well above the conventionally acceptable value of 0.7 (Mathieu, 2006; Lance, Butts, and Michels, 2006), indicating the higher rwg value, the stronger within-group agreement of the construct (James, Demaree, and Wolf, 1984).

**3.5. HLM analysis.** Although SEM (structural equation model) is a useful statistical analytical tool of multiple regression models, it only can be used in a single level analysis. However, HLM can be made in the analysis of cross-level to estimate the relationships of within-group and the relationships of between-group variables (Bryk and Raudenbush, 1982).

$$r_{wg} = \frac{j \left[ 1 - \left( \frac{ms_{xj}^2}{\sigma_{eu}^2} \right) \right]}{j \left[ 1 - \left( \frac{ms_{xj}^2}{\sigma_{eu}^2} \right) \right] + \frac{ms_{xj}^2}{\sigma_{eu}^2}}$$

$$ICC(1) = (MSB - MSW) / [MSB + (N - 1)MSW] = \frac{\tau_{00}}{(\tau_{00} + \sigma^2)}; ICC(2) = (MSB - MSW) / MSB.$$

3.5.1. *The null model (ANOVA model).* This research hypothesized that OCBO and OCBI would be associated with individual-level variables (LMX & personal guanxi and OC) and group-level variables (perceived organizational justice). Within reference to the current investigation, OCBO and OCBI were specified as the outcomes variables and no predictors were included in the two models. As such, they can be described in HLM equations as follows:

**Model 1: The null model**

Level 1:  $OCBO_{ij} (OCBI_{ij}) = \beta_{0j} + r_{ij}$ ,  $r_{ij} \sim N(0, \sigma^2)$ ,  
 Level 2:  $\beta_{0j} = \gamma_{00} + u_{0j}$ .

A significant chi-square values for the OCBO ( $\tau_{00} = 0.13869$ ,  $p < 0.001$ ) and OCBI ( $\tau_{00} = 0.11794$ ,  $p < 0.001$ ) were obtained. The intraclass correlation coefficient (ICC(1)) and the reliability of the mean (ICC(2)) represent the percentage of the total between-group variance in the dependent variables (Bryk & Raudenbush, 1992). ICC(1) reflects the percentage of variance that resides between groups, dividing the between-group variance by the total variance. The ICCs(1) of OCBO and OCBI are 0.20 and 0.13, indicating 20% and 13% of the variances that could potentially be explained by the Level 2 predictors, perceived organizational justice explained 80% and 87% of the variances resided within the organization. These values (0.20 and 0.13) are larger than 0.12 (Bliese, 2000), reflecting the percentage of the variance in OCBO and OCBI resided between groups, they were significant and, therefore, provided the basis for examining group-level predictors of them as well as individual-level predictors of the within-group variances in OCBO and OCBI, respectively. These results justified the suitability of cross-level analyses (Snijders and Bosker, 1999). In the meantime, the ICC(2) values are 0.79 and 0.76, surpassing the conventionally acceptable value of 0.7 (Schneider, White, and Paul, 1998), showing the significant level of within-group agreement and significant between-group variability for analysis, justifying the aggregation of POJ data as a group-level construct.

3.5.2. *Random coefficient regression model.* After testing the null model, this paper explored whether significant between-group variance existed in the intercepts and slopes using a random-coefficient regression model. Within the below models,  $\gamma_{10}$ ,  $\gamma_{20}$ , and  $\gamma_{30}$  parameter provide a direct test of hypotheses. Specifically, the Level 2 slope model specifies no predictors.

**Model 2: Random coefficient regression model**

Level 1:  $OCBO_{ij} (OCBI_{ij}) = \beta_{0j} + \beta_{1j} (LMX) + \beta_{2j} (guanxi) + \beta_{3j} (OC) + r_{ij}$ ,

Level 2:  $\beta_{0j} = \gamma_{00} + u_{0j}$ ;  $\beta_{1j} = \gamma_{10} + u_{1j}$ ;  
 $\beta_{2j} = \gamma_{20} + u_{2j}$ ;  $\beta_{3j} = \gamma_{30} + u_{3j}$ .

With information provided from the null and random-coefficients regression models, this paper calculated  $R^2$  for the relationships between LMX & personal guanxi and OCs (Heck & Thomas, 2009). LMX & personal guanxi variables explained 43.61% and 29.12% ( $R^2$ ) of the within-organization variance in OCBO and OCBI, respectively. Specifically, LMX and OC had significantly positive relationships with OCBO and OCBI. Therefore, Hypotheses 1 was supported. Contrary to the prediction of Hypothesis 2, personal guanxi ( $p > 0.05$ ) was not significantly related to OCBO and OCBI (see Table 3).

3.5.3. *Intercepts as outcomes models.*

**Model 3: Intercepts-as-outcomes model**

Level 1:  $OCBO_{ij} (OCBI_{ij}) = \beta_{0j} + \beta_{1j} (LMX) + \beta_{2j} (guanxi) + \beta_{3j} (OC) + r_{ij}$ ,

Level 2:  $\beta_{0j} = \gamma_{00} + \gamma_{01}(POJ1) + \gamma_{02}(POJ2) + \gamma_{03}(POJ3) + u_{0j}$ ,

$\beta_{1j} = \gamma_{10} + u_{1j}$ ;  $\beta_{2j} = \gamma_{20} + u_{2j}$ ;  $\beta_{3j} = \gamma_{30} + u_{3j}$ .

As the above-mentioned, there were significant variances in the intercept term across groups, resulting from the random coefficient regression model. If the parameters estimate for  $\gamma_{01}$ ,  $\gamma_{02}$ , and  $\gamma_{03}$  are significant, supporting the contextual effect. The results for OCBO model indicated that  $\gamma_{01}$  (slope = 0.30; p-value > 0.05) and  $\gamma_{03}$  (slope = -0.23; p-value > 0.05) were un-significant. However,  $\gamma_{02}$  was significant (slope = 0.60; p-value < 0.05). On the other hand, the results for OCBI model indicated that  $\gamma_{01}$  (slope = 0.15),  $\gamma_{02}$  (slope = 0.73), and  $\gamma_{03}$  (slope = -0.35) were un-significant (p-value > 0.05). Thus, Hypothesis 4 was only partly supported.

3.5.4. *Slope as outcomes.*

**Model 4: Slope as outcomes**

Level 1:  $OCBO_{ij} (OCBI_{ij}) = \beta_{0j} + \beta_{1j} (LMX) + \beta_{2j} (guanxi) + \beta_{3j} (OC) + r_{ij}$ ,

Level 2:  $\beta_{0j} = \gamma_{00} + \gamma_{01}(POJ1) + \gamma_{02}(POJ2) + \gamma_{03}(POJ3) + u_{0j}$ ,

$\beta_{1j} = \gamma_{10} + \gamma_{11}(POJ1) + \gamma_{12}(POJ2) + \gamma_{13}(POJ3) + u_{1j}$ ,  
 $\beta_{2j} = \gamma_{20} + \gamma_{21}(POJ1) + \gamma_{22}(POJ2) + \gamma_{23}(POJ3) + u_{2j}$ ,  
 $\beta_{3j} = \gamma_{30} + u_{3j}$ .

After using random-coefficient regression model to confirm that significant group variance in the slope was existed, this paper then explored whether the vari-

ance in the slope across groups had significant relationship with the individual-level variable (OCBO & OCBI). This paper further explored whether aggregated perceived organization justice was significantly related to OCBs (OCBO & OCBI), testing a cross-level moderating effect. With OCBs as the dependent variables, LMX and personal guanxi as the individual-level variables, and aggregated POJs as the group-level variables, a HLM analysis was performed.

At the group-level, only aggregated POJ1 (perceived procedural justice) was significantly positive related to OCBO ( $\gamma_{11} = 0.74$ ;  $p$ -value  $< 0.05$ ) and OCBI ( $\gamma_{11} = 0.77$ ;  $p$ -value  $< 0.05$ ). However, personal guanxi as the Level 1 variable, and at the group-level, only aggregated POJ2 (perceived interactional justice) was significantly positive related to OCBO ( $\gamma_{22} = 0.98$ ;  $p$ -value  $< 0.01$ ) and OCBI ( $\gamma_{22} = 0.98$ ;  $p$ -value  $< 0.05$ ). Therefore, Hypothesis 5 was partly supported.

Table 3. Hierarchical linear modeling results for (1) OCBO and (2) OCBI

Variable	Null model		Random-coefficient regression model		Intercepts-as-outcomes model		Slopes-as-outcomes model	
	(1-1)	(1-2)	(2-1)	(2-2)	(3-1)	(3-2)	(4-1)	(4-2)
Fixed effect								
Intercept, $\gamma_{00}$	5.43***	5.27***	5.42***	5.26***	5.44***	5.27***	5.44***	5.27***
POJ1, $\gamma_{01}$					0.30	0.15	0.17	0.16
POJ2, $\gamma_{02}$					0.60*	0.68	0.73*	0.67
POJ3, $\gamma_{03}$					-0.23	-0.25	-0.350	-0.34
LMX slope, $\beta_1$								
Intercept, $\gamma_{10}$			0.31**	0.17*	0.32**	0.16*	0.35**	0.21*
POJ1, $\gamma_{11}$							0.74*	0.77*
POJ2, $\gamma_{12}$							-1.15	-1.00
POJ3, $\gamma_{13}$							0.30	0.24
Guanxi slope, $\beta_2$								
Intercept, $\gamma_{20}$			-0.13	-0.04	-0.14*	0.04	-0.17*	0.02
POJ1, $\gamma_{21}$							-0.63	-0.46
POJ2, $\gamma_{22}$							0.98**	0.81*
POJ3, $\gamma_{23}$							-0.12	-0.21
OC slope, $\beta_3$								
Intercept, $\gamma_{30}$			0.46***	0.23**	0.45***	0.24**	0.45***	0.21*
Variance component								
Level 2 between groups								
OCB, $\tau_{00}$	0.14***	0.12***	0.17***	0.13***	0.03*	0.07***	0.03*	0.07***
LMX slope, $\tau_{11}$			0.04	0.01	0.06	0.01	0.07	0.00
Guanxi slope, $\tau_{21}$			0.03*	0.01	0.04*	0.01	0.02	0.01
OC slope, $\tau_{31}$			0.03	0.04	0.02	0.04	0.02	0.06
Within groups, $\sigma^2$	0.65	0.48	0.37	0.34	0.36	0.34	0.35	0.33
Deviance (-2LL)	533.99	470.87	482.69	423.68	424.13	417.08	44.49	419.50

Notes: \*\*\* denotes  $p < 0.001$ , \*\* denotes  $p < 0.01$ , \* denotes  $p < 0.05$ . OCBO:  $\hat{\rho}_1 = 0.14/(0.14 + 0.65) = 0.18$ ; OCBI:  $\hat{\rho}_1 = 0.12/(0.12 + 0.48) = 0.20$ .

### Conclusions

Analyzing the influence effect of each variable in SEM, this paper found LMX & personal guanxi has a positive significant impact on OCBs via subordinates' commitment to their organization. Our empirical evidence suggests that the relationships between LMX & personal guanxi and OCBs are better explained when OC is taken into account, supporting a full mediating effect of OC.

Next, analyzing the multilevel empirical results, this study found, consistent with the prediction, that higher quality LMX is beneficial to subordinates' OCBO and OCBI. Then, this paper examines the effect of the Level 1, as hypothesized, LMX and OC

have positive direct significant effects on OCBO and OCBI. The other goal of this study further investigates the cross-level effects of the POJ on subordinates' OCBs. As shown in the above model 3-1 of Table 3, only perceived interactional justice is directly related to OCBO. In addition, only perceived interactional justice has interacted effect on the relationship between personal guanxi and OCBs. However, contrary to our expectations, procedural justice and distributive justice have not interacted effect on the relationship between personal guanxi and OCBO and OCBI. At the same time, only perceived procedural justice has interacted effect on the relationship between LMX and OCBs (see model 4-1 of Table 3).

### Implications for theory and practice

In practice, the results of this study found that high-quality LMX and good supervisor-subordinates personal guanxi are critical antecedents to subordinates' organizational commitment, which in turn influence subordinates' OCBs. Based on the social exchange theory, indeed, the supervisors may provide some tangible supports (e.g., giving rewards, learning opportunities, and performance-related bonus) or intangible encouragements (e.g., building the mutual organizational objectives, values, and beliefs) on the task of subordinates. As expected, subordinates would produce feedback behaviors in return such as taking the initiative to take some extra-role duties and responsibilities. This empirical results are consistent with the findings of Wayne and Green (1993), Deluga (1994), Settoon, Bennett, and Liden (1996) and Hui and Law (1999). Besides, especially in Chinese society, if supervisors can establish extra private channels of communication with subordinates such as building the common hobbies and interests at leisure activities, the private friendship and guanxi networks will be nurtured than before.

As it is shown in Table 3 above, this paper provide support for the hypothesized relationship that only perceived interactional justice was found to be significantly related to OCBO consistent to the findings of Schnake (1991), Moorman (1991), Puffer (1987), Scholl et al. (1987), Organ and Konorsky, (1989), Lind and Earley (1991), Farh et al. (1990), and Moorman et al. (1992). However, it is unusual that the empirical results show personal guanxi has not a direct significant effect on subordinates' OCBO and OCBI, as opposed to the expectation. The possible reason is mainly from the empirical findings that the impact of supervisor-subordinate personal guanxi on organizational citizenship behaviors (OCBs) is mediated by subordinates' organizational commitment (OC). Thus, the result again proves that subordinates' OC is an inevitable important mediating factor. However, the findings also encourage follow-up research further to explore other plausible mediating variables within the organization settings context.

In addition, examining the cross-level interact hypotheses proposing that POJ could moderate the relationship between LMX & personal guanxi and OCBs which were partly supported. The empirical result found perceived procedural justice is an important moderator between LMX and OCBs, which is consistent with the standpoints of Ferrell, Fraedrich & Ferrell (2005) and Kumar, Bakhshi & Rani (2009). If the supervisors can follow the procedural justice to appraise subordinates' performance, the subordinates will easily cooperate with other coworkers to achieve the common goal of the organization. In addition, the empirical result also found that interactional justice played an important role to moderate between supervisor-subor-

dinate personal guanxi and OCBs. The supervisors may take advantage of informal occasions and activities to establish the interactional friendship such as having dinner, exchanging gifts, helping private affairs, and celebrating special events. Based on the reciprocal treatment, the supervisor and subordinates will be more intimate and united than before. Moreover, if team supervisors can follow the four rules of interpersonal treatment – truthfulness, justification, respect, and propriety (Bies & Moag, 1986) to treat their subordinates and, they will work more effectively and conduct their organizational citizenship behaviors voluntarily. Subordinates are willing to conduct more organizational citizenship behaviors which will not only increase the productivity of the organization but also further strengthen the organization's competitiveness and stabilize the organization's performance to adapt to the versatile financial environment.

Utilizing the hierarchical cross-level processing, the research divided the organization into the levels of group and individual. The overall findings are beneficial for the leadership of insurance company to explore the formative causes of organizational citizenship behaviors and substantial implication for future advanced research.

### Limitations and future research

This study helped to illuminate a number of essential relationships between LMX, supervisor-subordinates guanxi, OC, POJ and OCB. There are several limitations and future suggestions in this study.

First, it has relied primarily on samples drawn from 20 financial branch institutions in southern Taiwan, owing to the smaller size, thus the findings may lead to some problems with estimation of HLM models with respect to hypotheses testing (Hofmann et al., 2003). The paper suggests that the same research could be duplicated with a larger sample for different regions within the same industry or across different industries/culture.

Second, future research may want to explore this study by using qualitative method and perhaps use evaluation performance rather than a self-report study which is focused on perception. Additionally, future research could put more effort into exploring other plausible moderators which have moderating effects between LMX-OCBs and personal guanxi-OCBs.

Third, future studies should incorporate more longitudinal design, so that the influence of both LMX and supervisor-subordinates guanxi on OCBs can be accurately examined. Longitudinal studies should be expanded to understand the development of LMX and supervisor-subordinate guanxi more thoroughly and provide more conclusive findings on the direction of causality between LMX-OCBs, and supervisor-subordinate guanxi-OCBs in different contexts.

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