

This article was downloaded by: [National Chengchi University]

On: 21 February 2014, At: 01:04

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



The International Journal of Human Resource Management

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rjih20>

High-performance HR practices and OCB: a cross-level investigation of a causal path

Yu-Chen Wei ^a, Tzu-Shian Han ^b & I-Chieh Hsu ^c

^a Department of Educational Management, National Taipei University of Education, Taipei City, Taiwan

^b Department of Business Administration, National Chengchi University, Taipei City, Taiwan

^c Department of Business Administration, National Changhua University of Education, Changhua City, Taiwan

Published online: 08 Sep 2010.

To cite this article: Yu-Chen Wei, Tzu-Shian Han & I-Chieh Hsu (2010) High-performance HR practices and OCB: a cross-level investigation of a causal path, *The International Journal of Human Resource Management*, 21:10, 1631-1648, DOI: [10.1080/09585192.2010.500487](https://doi.org/10.1080/09585192.2010.500487)

To link to this article: <http://dx.doi.org/10.1080/09585192.2010.500487>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms &

Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

High-performance HR practices and OCB: a cross-level investigation of a causal path

Yu-Chen Wei^{a*}, Tzu-Shian Han^b and I-Chieh Hsu^c

^a*Department of Educational Management, National Taipei University of Education, Taipei City, Taiwan;* ^b*Department of Business Administration, National Chengchi University, Taipei City, Taiwan;* ^c*Department of Business Administration, National Changhua University of Education, Changhua City, Taiwan*

This study investigates the relationships between high-performance human resource (HR) practices and individual outcome variables from a cross-level perspective. It also identifies the mediating role of job satisfaction in the relationship between psychological climate and organizational citizenship behavior (OCB). Drawing on a sample of 576 employees from 11 manufacturing plants in Taiwan, our results show that psychological climate perceptions are positively and significantly associated with job satisfaction and OCB, and job satisfaction mediates the relationship between psychological climate perceptions and OCB at the individual level. At the plant level, high-performance HR practices have a positive and significant relationship only with job satisfaction. The theoretical and managerial implications and contributions of these findings are discussed.

Keywords: hierarchical linear model (HLM); high-performance HR practices; job satisfaction; organizational citizenship behavior (OCB); psychological climate

Introduction

Over the last two decades, a robust body of research examining human resource (HR) practices and organizational effectiveness from the strategic perspective has been accumulated (Arthur 1994; Bae and Lawler 2000; Becker and Huselid 1998; Delaney and Huselid 1996; Delery and Doty 1996; Dyer and Reeves 1995; Huselid 1995; Ichniowski, Shaw and Prenzushi 1997; MacDuffie 1995; Orlitzky and Frenkel 2005; Sun, Aryee and Law 2007; Youndt, Dean and Lepak 1996). Many researchers have found positive relationships. From the perspective of human capital, these HR practices can lead to desirable organizational outcomes by increasing employee competencies. Thus, these practices are termed ‘high-performance HR practices’. Prior research focuses primarily on the direct linkage between high-performance HR practices and indicators related to organizational effectiveness (such as turnover rate, productivity, and return on assets) at the same level. However, not only is the HR practice–effectiveness relationship lacking investigation in existing studies (Bowen and Ostroff 2004), but a cross-level model combining HR practices and individual behavioral outcomes has rarely been proposed (e.g., Sun et al. 2007; Whitener 2001).

In response to Becker and Gerhart’s (1996) call for future research to put more effort into identifying factors that further explain the relationships between HR practices and

*Corresponding author. Email: wei@tea.ntue.edu.tw

organizational effectiveness, or even individual outcome variables, a cross-level model combining multiple theories was addressed in this study. Indeed, while we believe that organizational effectiveness is composed of individual representation, careful examination of the mediating factors at the individual level will make meaningful contributions to further understand the black box of the HR practices – effectiveness linkage.

This study primarily aims to illustrate the relationships between high-performance HR practices and individual outcome variables, using a framework that bridges macro-micro models. Specifically, we are interested in the effect of high-performance HR practices on the psychological climate, job satisfaction, and organizational citizenship behavior (OCB) derived from perception-attitude-behavior model (Bagozzi 1992). Some studies have indicated that HR practices can facilitate employee development of beneficial attitudes toward their work (Griffin and McMahan 1994; Macky and Boxall 2007) and organization (Arthur 1994) by arousing positive psychological perceptions. Based on the previous research, we argue that HR practices may indirectly affect organizational effectiveness by shaping desirable employee attitudes (job satisfaction) and behaviors (OCB).

Over the years OCB has become one of the most extensively studied constructs in organizational behavior literature. It has been found to result in diversified individual-level outcomes (Allen and Rush 1998; Mossholder, Settoon and Henagan 2005; Podsakoff and MacKenzie 1994). OCB is widely considered both critical and beneficial to organizations. Thus, academic efforts that explore how to encourage and motivate employees to more fully participate in OCB may provide substantial implications for management practitioners.

The OCB literature has also tried to address important antecedents of OCB (Organ and Ryan 1995; Podsakoff, MacKenzie and Bommer 1996; Podsakoff, MacKenzie, Paine and Bachrach 2000). However, it is necessary to improve our understanding of causal relationships among the differing antecedents and OCB (Podsakoff et al. 2000). In the current study, we attempt to include a psychological perception variable that has received less attention in previous research to explain the constant evolution of the psychological process of employee engagement in OCB. For a more comprehensive perspective, job satisfaction was also used as the connective variable between the relationship of psychological climate and OCB.

Furthermore, as we noted above, high-performance HR practices can shape positive psychological climate perceptions of employees since such HR practices would send a signal of long-term investment in employee competence, helping create shared employee perceptions of a supportive organizational context that encourages OCB (Sun et al. 2007). Thus, a study of the casual paths from high-performance HR practices to our individual outcome variables not only explores the determinants of OCB but also offers the potential to unravel the black box mediating the HR practices–firm effectiveness relationship. Consequently, the purpose of the current work is to develop a model that illuminates the relationships between high-performance HR practices, psychological climate, job satisfaction, and OCB, and to empirically investigate these relationships in the model using a cross-level approach.

Theoretical framework and hypotheses developments

OCB can be defined as behaviors that are discretionary, not explicitly recognized by a formal job analysis and reward system, and capable of promoting the effective functioning of the organization (Podsakoff, MacKenzie, Moorman and Fetter 1990). Over the last two decades, OCB has been extensively studied by organizational behavior scholars (e.g.,

Niehoff and Moorman 1993; Organ 1988; Organ and Konovsky 1989; Podsakoff et al. 1990). Several employee attitudes have been proved to be critical predictors of OCB, such as job satisfaction and organizational commitment (Podsakoff et al. 2000). Nevertheless, less attention has been paid to the psychological climate perception that is believed to be a precursor of job satisfaction (Parker et al. 2003). Furthermore, in a theoretical endeavor aimed at uncovering the intermediate processes in the HR practices–effectiveness linkages, Bowen and Ostroff (2004) suggested that the psychological climate should be an individual-level mediator of the HR practices–effectiveness relationship. In view of Bowen and Ostroff's (2004) suggestion, we constructed a cross-level model to bridge organizational level practices and individual-level effectiveness. Thus, not only is the mediating effect of job satisfaction on the relationship between psychological climate and OCB explored, but the main effects of high-performance HR practices and individual outcome variables were examined in this study.

Psychological climate perceptions, job satisfaction, and OCB

Psychological climate perceptions refer to the experiential-based perceptions employees possess concerning the policies, procedures, and structure of their organization (James, James and Ashe 1990; Schneider 1990). These perceptions are usually multi-dimensional in content. For instance, Jones and James (1979) identified five situational characteristics as referents for specific psychological climate dimensions. However, there appears to be little agreement on the dimensions and measurements of psychological climate. In this study, our operational definition of psychological climate perceptions is based on James et al. (1990) and incorporates hybrid dimensions of psychological climate perceptions that are conceptually similar to those of Koys and DeCotiis (1991), including perceptions of organizational *support*, *recognition*, and *innovation*. *Support* represents employee perceptions that their superiors will be tolerant and allow them to learn from their mistakes (Koys and DeCotiis 1991; Swift and Campbell 1998). *Recognition* refers to the perception that employee contributions to the organization are acknowledged. *Innovation* is the employee perceptions that changes and creativity are encouraged. Employees are given greater opportunity to improve established work procedures and to affect their own performance outcomes in organizational settings characterized by high levels of innovation (Strutton, Pelton and Lumpkin 1993). It is important to study psychological climate because it is employee perceptions and valuations of organizational environments that may lead to expected attitudinal and behavioral responses (James, Hater, Gent and Bruni 1978; James and Jones 1974). Psychological climate perceptions enable an individual to interpret events, predict possible outcomes, and gauge the appropriateness of their subsequent actions (Jones and James 1979).

Employees expect their superiors to give them leeway in their actions and yet provide them with assistance when needed. When employees receive support from superiors, they tend to feel more content with their jobs (Eisenberger, Cummings, Armeli and Lynch 1997; Swift and Campbell 1998). If employees are rewarded and recognized for their efforts and contributions, they will feel more appreciated and fulfilled (Swift and Campbell 1998). When employees perceive that changes and originality are encouraged and valued within the organization, they are willing to take risks and will be less threatened (Sgro, Worchel, Pence and Orben 1980). Evidence from a variety of research has consistently demonstrated that job satisfaction is the consequence of psychological climate perceptions (Baltes, Bauer, Bajdo and Parker 2002; Parker et al. 2003; Swift and Campbell 1998). Thus, we predict that:

Hypothesis 1: Psychological climate perceptions will be positively related to job satisfaction.

Psychological climate perceptions not only affect employee attitudes, but they also shape the behaviors of the employees. James et al. (1990) argued that the psychological climate is associated with the evaluation of organizational environments on the part of employees. When employees evaluate their work environments in a positive way, they tend to enhance their identification with their jobs and organizations, and thus are more likely to display extra-role behaviors that are beneficial for their employers. Recently, Bowen and Ostroff (2004), echoing this perspective, argued that psychological climate perceptions may be strongly related to OCB since strong climate perceptions may lead to obvious behavioral responses. Thus, we propose the following hypotheses:

Hypothesis 2: Psychological climate perceptions will be positively related to OCB.

The attitude–intention–behavior relation model (Bagozzi 1992) says that behaviors are caused by an individual's appraisal of a situation and a subsequent emotional response. This model can be applied to explain the relationships between psychological climate perceptions and OCB. If psychological climate perceptions lead to greater employee engagement in OCB, it may be due to the fact that their perceptions predispose employees to form a certain cognitive and emotional state, which in this case, is job satisfaction. Positive psychological climate perceptions enhance the job satisfaction of employees. The construct job satisfaction is important as it has been found to be an important antecedent of employee OCB (e.g. Podsakoff et al. 2000). In our investigation of the relationship between psychological climate perceptions and OCB, we should not exclude the job satisfaction that follows the formation of psychological climate perceptions. Job satisfaction should mediate the relationship between psychological climate perceptions and OCB. With the inclusion of job satisfaction in the model, the relationship between psychological climate perceptions and OCB should be diminished. Since employees behave according to their feelings about the work environment, they are more likely to go beyond formal job requirements and perform extra-role behaviors if they are satisfied with their jobs and organizations (Organ 1988; Podsakoff et al. 2000). Thus, we hypothesize that:

Hypothesis 3: Job satisfaction will mediate the relationship between psychological climate perceptions and OCB.

Cross-level model

In the current study, high-performance HR practices are expected to be predictors of psychological climate, job satisfaction, and OCB. This argument is based on several prior studies investigating the role of high-performance HR practices in predicting employee commitment, job satisfaction, and intent to leave (Allen, Shore and Griffeth 2003; Macky and Boxall 2007; Whitener 2001). High-performance HR practices are distinct from traditional HR practices in that the former encourages employees to identify with the goals of the organization and work hard to accomplish these goals (Arthur 1994; Wood and de Menezes 1998). High-performance HR practices consist of a set of policies and practices, including employment security, selective staffing, employee participation in decision-making, incentive compensation systems, extensive training, and career developmental activities (Ichniowski et al. 1997; MacDuffie 1995; Snell and Dean 1992; Youndt et al. 1996).

Although existing studies focus primarily on the relationships between high-performance HR practices and effectiveness, psychological processes at the individual level require investigation and elucidation. In this respect, our model (see Figure 1) suggests that high-performance HR practices will affect employee perceptions of their work environments (i.e., psychological climate), attitudes (i.e., job satisfaction) and behaviors (i.e., OCB).

In order to have a solid theoretical ground for our model, we employ social exchange theory and the norm of reciprocity (Blau 1964; Homans 1961) to explain the relationships between high-performance HR practices, psychological climate perceptions, job satisfaction, and OCB. According to social exchange theory, individuals generally will try to pay back those who have helped them, done them a favor, or treated them nicely. This is referred to as the norm of reciprocity. The seminal work of Eisenberger, Huntington, Hutchison and Sowa (1986) applied social exchange theory to organizational settings by arguing that employees establish their perceptions about the wills and attitudes of their organization toward them based on the policies and practices implemented by the organization. In general, employees form perceptions about the intentions of their organization from its HR policies and practices (Levinson 1965). Rousseau (1995) also indicated that HR policies and practices serve as the mechanism that employees use to make sense of and to define the psychological meaning of their work situation. High-performance HR practices convey messages from the organization to its employees that the organization values their skills and knowledge and is willing to commit itself to their welfare in the organization (Guzzo and Noonan 1994; Tsui, Pearce, Porter and Tripoli 1997). As a consequence, employees develop positive psychological climate perceptions of their organizational environments. Empirical research has shown that some HR practices (e.g., promotion, development, fair rewards, participation, etc.) have positive relationships on employee perceived organizational support (Eisenberger et al. 1986; Fasolo 1995; Rhoades, Eisenberger and Armeli 2001; Wayne, Shore and Liden 1997). In addition to these perceptions, employees may also display positive work-related attitudes in accordance with the norm of reciprocity. Allen et al. (2003) found that supportive HR practices lead to job satisfaction and subsequently reduce employee turnover behaviors. Thus, we propose the following hypotheses:

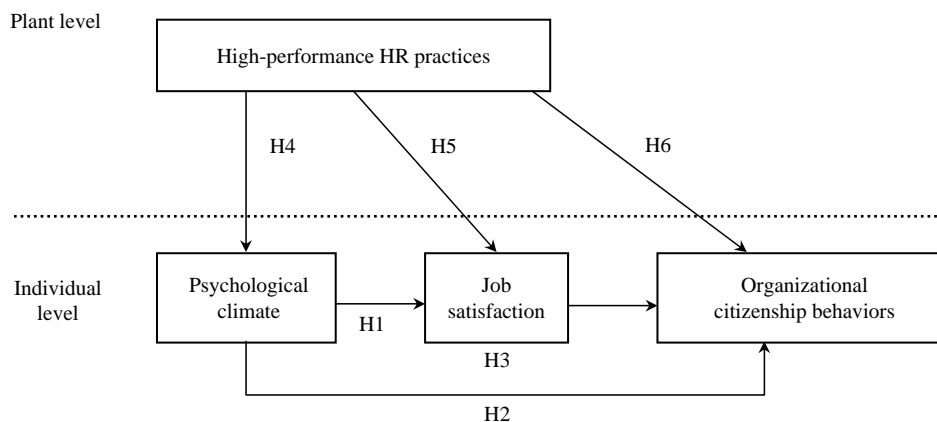


Figure 1. A cross-level model of high-performance HR practices and OCB.

Hypothesis 4: High-performance HR practices will be positively related to psychological climate perceptions.

Hypothesis 5: High-performance HR practices will be positively related to job satisfaction after controlling for psychological climate perceptions.

In essence, high-performance HR practices can shape and potentially change organizational culture by shaping and changing employee behaviors (Wright, McMahan and McWilliams 1994). High-performance HR practices emphasize providing employees with skills, information, latitude, commitment, and motivation (Guthrie 2001; Huselid 1995). These practices result in broadly defined job responsibilities and support a workforce capable of functioning in teams. Employees are expected to act in the interest of the firm. Thus, high-performance HR practices set the stage for employee OCB. Further, based on social exchange theory, high-performance HR practices send signals to employees that they are highly valued by the organization through wide ranging practices that aim at skill development, self-management, and work motivations, among others. Employee commitment to organizational goals can be strengthened (Whitener 2001). In the interest of the firm, employees are willing to act beyond their job descriptions following the norm of reciprocity. Thus, we can hypothesize:

Hypothesis 6: High-performance HR practices will be positively related to OCB after controlling for psychological climate perceptions and job satisfaction.

Methods

Sample and data

Eleven manufacturing plants were drawn from electronic appliances manufacturing industry in Taiwan. The single-industry approach was used to rule out between industry differences. Prior studies have argued that HR practices across plants and business units would be specific to those sites because of the diverse functions and demands of the different locations and units (Arthur 1994; MacDuffie 1995; Youndt et al. 1996). Hence, the advantage of using plants as the units of data collection is that they would allow the relationships between HR practices and the outcome variables to be more clearly observed, thus increasing the accuracy of observation (Delery and Doty 1996; Youndt et al. 1996).

We instructed the general manager of each plant which was willing to participate in this study to ask the senior HR manager or the plant director to complete the questionnaire concerning HRM practices of their plants and to organize the distribution, collection, and return of employee surveys in a way that would preserve the anonymity of participants. The HR respondents or plant directors returned all surveys unopened to the authors. The HRM survey asked the HR managers or plant directors to describe their plant's staffing, training, compensation, and communication practices. A random sample of 700 employees, selected by the HR managers, was asked about their perceptions of psychological climate, job satisfaction, and OCB. Among the 579 returned questionnaires, three were invalid, leaving 576 valid questionnaires, for an 82.3% valid return rate.

The average number of respondents in each plant was 52. Sixty per cent of our sample population was male, reflecting the greater presence of males in the manufacturing industry. A majority of the respondents fell into the 26–35 age-group, and were non-supervisory employees. Finally, 44% of our respondents had one to five years of work experience, and around 27% of the respondents were educated at the college level or above.

Measures

This study obtained a wide variety of measures collected from two different data sources. Measures of the various HRM practices were provided by the HR manager in each plant. Individual-level variables, such as psychological climate, job satisfaction, and OCB, were collected from the employees of the 11 plants.

We consulted established scales to develop the scales for the focal constructs. All scales were originally written in English. For the survey in Taiwan, we translated the items from English to Chinese and we also modified the statements for better reading and understanding in light of the Chinese setting. In addition, three academic experts in the area of human resource management were asked to check if each of the items fits the definition of each of our constructs. Comments and advice from these experts were solicited and minor changes made to improve face and content validity of our scales. Scales for the focal constructs as well as their corresponding literature sources are described below.

Psychological climate

Six Likert-type statements adapted from Koys and DeCotiis (1991) and James et al. (1978) were used to measure psychological climate in this study. Sample items include 'my boss encourages subordinates to be creative', 'subordinates have effective channels to express their opinions' and 'superiors accept subordinates' suggestions and implement them.' The respondents were asked to evaluate the extent to which each item appropriately characterized their organizations and/or relationships with their superiors using a five-point scale ranging from '1, strongly disagree' to '5, strongly agree.' In this study, Cronbach's α of psychological climate measure is .82.

Job satisfaction

Janssen (2001) stated that satisfaction with work and the immediate supervisor should be assessed as features of job satisfaction. Following Janssen (2001), five questions were designed to evaluate employee job satisfaction. Sample items include 'how satisfied are you with pay and benefits of your organization?' 'how satisfied are you with your working environments?' 'how satisfied are you with your job contents?' A five-point scale was used, ranging from '1, very dissatisfied' to '5, very satisfied.' In this study, the reliability of job satisfaction scale is .77.

OCB

OCB was measured by adapting the Podsakoff et al. (1990) Organizational Citizenship Behavior Scale. The three OCB factors included were sportsmanship (behaviors that entail avoiding excessive complaining or railing against mostly imagined slights), conscientiousness (behaviors that allow people to carry out their specific role requirements to a level well beyond what is normally expected), and civic virtue (behaviors which evolve around the responsible participation in the political life of the organization). Examples of these items are 'is willing to risk disapproval in order to express individual beliefs about what is best for the company' and 'turns in budgets, sales projections, expense reports, and other documents earlier than required'. A five-point scale ranging from '1, strongly disagree' to '5, strongly agree' was employed. Scores on the eight items were averaged to yield a summary score reflecting OCB. The reliability of the OCB scale was .87.

High-performance HR practices

The measurement of high-performance HR practices was adapted from several early studies (e.g., Delaney and Huselid 1996; Delery and Doty 1996; Snell and Dean 1992). Consequently, six different HR practice factors were conceptualized and measured. *Internal career opportunities* referred to the extent to which a plant had an internal career ladder or opportunities and was measured as the mean of two five-point Likert-type items (e.g., 'our organization has a well-designed development program'). Higher scores indicated the existence of a well-defined internal career and staffing system with greater opportunities. *Extensive training* included four five-point Likert-type items (e.g., 'our organization encourages employees to undertake continuous training'). Higher scores reflected more extensive and formalized training programs for employees. *Employment security* was conceptualized as the degree to which an employee could expect to stay in his or her job over an extended period of time and was measured as the mean of two items (e.g. 'our organization provides employees with job security'). Higher scores represented a greater degree of employment security. *Participation and communication* was defined as the degree to which employees were allowed to have input into their work and the degree to which the organization valued their input; it was measured as the mean of four items (e.g., 'our organization emphasizes employee participation'), with higher scores reflecting a greater amount of participation and communication. *Sensitive selection* was assessed using five Likert-type items representing the extent and complexity of selectivity in hiring (e.g., 'uses panel interviews to select new employees'). Finally, we used a five-item index of *incentive compensation* that represented respondents' perceptions of how important job performance was in determining their earnings (e.g., 'has competency-based pay system'). A higher score reflects a higher likelihood that the compensation practice would enhance employee motivation. Cronbach's α values for the scales used to measure the six practices ranged from .79 to .93, providing support for the internal consistency of the high-performance HR practices. High-performance HR practice has been treated as a system which consists of a synergistic composition of HR practices (Bae and Lawler 2000; Becker and Huselid 1998; Guthrie 2001; Sun et al. 2007). In other words, using a combined index can reflect the inner meaning of high-performance HR practice as an important strategic asset of a firm. Therefore, following previous studies, we computed the six scores into a single index for regression analysis. All items of high-performance HR practice were listed in Appendix 1.

Control variables

Two control variables were included in the analyses. We included years of work experience and educational background to control for individual variation.

Analytic strategy

To test our first three hypotheses, we analyzed the individual-level data using multiple regression analysis. For Hypothesis 3, we used a hierarchical regression model to assess the three conditions to demonstrate the following mediating effects: (1) a significant relationship between the mediator and the dependent variable, (2) a significant relationship between the independent variable and the dependent variable, and (3) the relationship between the independent variable and the dependent variable decreasing or losing significance when the mediator is added to the Equation (Baron and Kenny 1986).

Hypotheses 4, 5, and 6 are cross-level hypotheses in that they involve relationships between high-performance HR practices at the plant level and employee attitudes and behaviors at the individual level of analysis. Traditional approaches to cross-level models in organizational research have been to either disaggregate or aggregate data. Each of these approaches has potential weaknesses, including biased estimates of standard errors, feeble statistical power, and neglected individual-level variance (Bryk and Raudenbush 1992). Therefore, we used hierarchical linear modeling (HLM) to test these hypothesized relationships. HLM is the most appropriate approach because it allows the use of individual predictors at the individual level and group predictors at the group level, without the shortcomings of traditional approaches (Hofmann 1997).

In HLM procedure, a level-one (individual-level) analysis estimates parameters describing the relationships between independent and dependent variables within each plant, that is, at the individual level. The parameters depicting the relationships (the intercept and slope estimates) become the dependent variables for the level-two (plant-level) analysis that assesses the role of the plant-level variables (Bryk and Raudenbush 1992). Significant coefficients on predictors of the intercepts and slopes provide evidence of the cross-level relationships.

Results

Table 1 displays the descriptive statistics and correlations among all variables across two levels. In the individual-level data, the independent and dependent variables were measured by employee self-reporting; thus, we conducted a confirmatory factor analysis (CFA) to estimate the discriminant validity of these constructs before the data analysis. Results showed that the constructs were distinct, as the measurement model specifying three separate factors provided acceptable goodness of fit ($\chi^2 = 620.01$, $p < .001$, RMSEA = 0.075, GFI = .90, AGFI = .87). The results also indicated that the standardized loadings of all measurement items onto their respective constructs are significant at the 0.001 level, with the lowest t -value being 8.00. Detailed information is available in Appendix 2.

To test Hypothesis 1, we analyzed the individual-level data using regression analysis. As we predicted, Hypothesis 1, which states that psychological climate is positively related to job satisfaction, was supported ($t = 12.29$, $\beta = 0.458$, $p < .001$, Model 1 in Table 2). Hypothesis 2 was also supported, showing that psychological climate is positively related to OCB ($t = 8.42$, $\beta = 0.331$, $p < .001$, Model 2).

Hypothesis 3 proposes that job satisfaction is a mediator of the relationship between psychological climate and OCB. To test this hypothesis, we followed the procedure outlined in Baron and Kenny (1986) and found that the results provide support for a partially mediating influence of job satisfaction on the relationship between psychological climate and OCB. As shown in Table 2, psychological climate is a significant predictor of OCB (Hypothesis 2), and job satisfaction is also a significant predictor of OCB ($t = 6.26$, $\beta = 0.251$, $p < .001$, Model 3). However, when psychological climate and job satisfaction were both entered, in Model 4, the effect size of psychological climate on OCB was reduced (from $\beta = 0.331$ to 0.279), though its effect remains significant. In other words, the significant relationship between psychological climate and OCB declines slightly when job satisfaction is added to the equation. Thus, job satisfaction partially mediated the relationship between psychological climate and OCB. Table 2 displays the results of hierarchical regression analysis.

Table 1. Descriptive statistics.^{a,b}

Variables	Mean	s.d.	1	2	3	4	5	6
1. Psychological climate	2.93	.64	(.82)					
2. Job satisfaction	2.92	.55	.45***	(.77)				
3. OCB	3.84	.48	.33***	.27***	(.87)			
4. Education	1.98	.82	-.11**	.11*	.10*	-		
5. Tenure	3.26	1.41	.18**	.10*	.14*	-.30***	-	
6. High-performance HR	3.28	.52	-.09*	.11*	-.09*	.30***	-.19***	(.96)

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ ^a $n = 576$, level 1; $n = 11$, level 2. To compute correlations, we assigned a plant-level variable (i.e. high-performance HR practices) to each individual in that plant.^b Coefficient alphas for those measures that could be computed are located on the diagonal.

Table 2. OCB as a function of psychological climate and job satisfaction.

Variables	Model 1 ^a (H1)	Model 2 (H2)	Model 3 (H3)	Model 4 (H3)
<i>Control variables</i>				
Education	.180***	.181***	.123**	.161***
Tenure	.077*	.140**	.155***	.131**
<i>Independent variables</i>				
Psychological climate	.458***	.331***	–	.279***
Job satisfaction	–	–	.251***	.113**
<i>F</i>	58.05***	33.38***	23.24***	26.94***
<i>R</i> ²	.233	.149	.108	.159
Adjusted <i>R</i> ²	.229	.145	.103	.153
ΔR^2	–	–	–	.010
ΔF	–	–	–	6.63**

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$.

^aIn model 1, the dependent variable is job satisfaction.

Test of HLM model

To investigate three cross-level hypotheses (Hypotheses 4, 5, and 6), we employed HLM approach to analyze the relationships among the focal variables. In these three hypothesized relationships, high-performance HR practices, a plant-level variable, is expected to explain three individual-level variables: psychological climate, job satisfaction, and OCB. Before testing the hypotheses, we need to explore the conditions associated with HLM analysis. We estimated three null models with no plant-level predictors except with the three individual-level dependent variables of interest. Resulting ICC(1) values revealed that 5.7% of the variance in psychological climate resided between plants ($\tau_{00} = 1.02, p < .001$), 1.54% of the variance in job satisfaction resided between plants ($\tau_{00} = .14, p < .1$), and 1.4% of the variance in OCB lay between plants ($\tau_{00} = .23, p < .1$). At 90% of our significance level, our three hypotheses satisfied the condition of HLM. That means our individual-level variables potentially can be explained by high-performance HR practices. Accordingly, we used HLM to predict psychological climate, job satisfaction, and OCB by high-performance HR practices.

In Hypothesis 4, high-performance HR practices are expected to explain psychological climate. To test this prediction, we entered high-performance HR practices as a level 2 predictor. The results showed that it was not significantly related to psychological climate ($\gamma = -.279, p > .05$). Thus, Hypothesis 4 was not supported. Next, Hypothesis 5 asserts that high-performance HR practices positively predict job satisfaction after controlling for psychological climate. We tested this hypothesis by entering the control variables (education and tenure), and psychological climate as level 1 variables, and main effect variable (high-performance HR practices) as a level 2 predictor. The result supported Hypothesis 5 ($\gamma = .379, p < .05$), which argues that high-performance HR practices are positively related to job satisfaction. Finally, Hypothesis 6 predicts that OCB can be explained by high-performance HR practices. To test this prediction, we entered control variables and two individual-level antecedents of OCB as level 1 predictors, and we added high-performance HR practices to test this hypothesis. Against our expectations, the results showed that high-performance HR practices are not significantly related to OCB ($\gamma = -.351, p > .05$). Thus, Hypothesis 6 was not supported.

Discussion and conclusions

In the majority of high-performance HR practices literature, researchers have focused on the effect of HR practices on organizational effectiveness, and have paid less attention to outcomes at the individual level. Moreover, prior research on OCB has focused on either individual or group level analysis. This study attempts to bridge the gap between the macro and micro approaches. We applied a multilevel theoretical perspective and methodology to integrate previous research on individual OCB with organizational level predictors. In addition, we explored the mediating role of job satisfaction on the relationship between psychological climate and OCB.

Theoretical implications and contributions

In this study, we investigate the relationship between psychological transformation and behavior in detail, and employ high-performance HR practices to explain individual outcomes using data from two different sources. The current study represents a unique attempt to explore the effects of high-performance HR practices, since psychological climate, job satisfaction, and OCB were used as the subsequent variables. Sun et al. (2007) used service-oriented OCB as the firsthand outcome variable of high-performance HR practices. We have taken a more robust approach that uses to constructs to investigate the relationships. Although only job satisfaction was supported, the finding opens a new window for the understanding of both strategic human resource management and organizational behavior.

The primary contribution of this study is its attempt to build a much-needed cross-level model for the OCB literature, and to predict OCB using multiple levels of analysis. Our data were drawn from HR managers as well as corporate employees. The cross-level research method helps eliminate errors associated with single-level research designs (Hofmann 1997). In particular, this research method echoes the calls in previous literature for empirical data sourced from relevant informants at different levels in the organization for better data corroboration (Rogers and Wright 1998; Wright et al. 2001). Previous research has examined the various determinants of OCB at the individual level. However, it has rarely studied the concurrent influences of cross-level variables. Differing from the recently noteworthy studies (i.e., Sun et al. 2007; Takeuchi, Lepak, Wang and Takeuchi 2007; Whitener 2001), we hierarchically incorporated various individual-level predictors (psychological climate, job satisfaction and demographic variables) and a plant-level predictor (high-performance HR practices) within our examinations, and the findings illustrate the visibility of high-performance HR practices as a cross-level predictor of job satisfaction, which is a known antecedent of OCB. This finding may enable researchers and practitioners in the human resource field to develop more robust understandings of the positive effects of employee work attitudes. Thus, this study provides an obvious contribution by conjoining two disciplines, human resource management and organizational behavior.

The present study also contributes to the understanding of OCB by exploring its antecedents and extending the mediating role of job satisfaction. Our findings indicate that a strong psychological climate produces high job satisfaction and leads to OCB. We drew upon the perception–attitude–behavior model to further realize the expected and examined relationship between job satisfaction and OCB. Consequently, this study makes a contribution to the broader OCB literature by not only manifesting the extended causal path from psychological climate to OCB, but also demonstrating that HR practice at the organizational level has an effect on employee satisfaction.

Managerial implications and contributions

This study also offers practical implications for employers seeking to motivate workers, and provides insights into why the employees are willing to engage in citizenship in organizations. Industrial practitioners have often believed that enhancing employee pleasure in their jobs or work environments may be costly and may obtain only an uncertain reward. They appear to feel it would be more worthwhile if supervisors directed their subordinates in improving productivity or task quality. However, our findings suggest that satisfied employees may engage in enhanced citizenship behavior, which is empirically known to be related to individual performance (Allen and Rush 1998) and organizational effectiveness (Podsakoff and MacKenzie 1994; Podsakoff, Ahearne, and MacKenzie 1997; Walz and Niehoff 2000). Therefore, rather than monitoring the production of workers, meeting the psychic and physical needs of employee will better enable workers to maximize their potential in their in-role and extra-role behaviors, which both contribute to organizational effectiveness. Our findings also support the notion that employee satisfaction is higher when workers develop strong psychological climate perceptions of organizational support and recognition of their contributions, and work in an innovative work environment. In a competitive world, innovation has become one of the most important competencies for firms (Higgins 1996; Ravichandran 1999). Thus, an employer who encourages employees to innovate at work, and gives them support at work, may increase the employees' sense of freedom at work, which in turn enhances their job satisfaction. Moreover, supportive organizational climate encourages employees to be unselfish and altruistic. This turns their emotions into a willingness to engage in extra-role behaviors that are not immediately related to their jobs but are beneficial to their organizations.

Moreover, the results of this study suggest a potentially important way in which management can encourage workers to engage in OCB. As our results suggest, providing high-performance HR practices may help organizations convey an impression of employee-orientation through the use of motivational practices that are closely related to the immediate interests of employees, and which are aimed at influencing employee perceptions and attitudes. High-performance HR practices, such as offering internal career opportunities, extensive training, employment security, participation and communication, sensitive selection, and incentive compensation, signal an organization's intention to build up a long-term exchange relationship with its workers. High-performance HR practices may foster employee involvement in doing business useful to their organizations, and reduce the time they spend doing things that benefit themselves but not the organization.

Limitations and suggestions for future research

There are several limitations in this study. First, due to the cross-sectional nature of our data, common method variance might inflate the estimates of the strength of the relationships among the individual-level variables (Harris and Schaubroeck 1990). Although we used the confirmatory factor analysis to reduce this weakness (Hinkin 1995), to more fully investigate these relationships, future studies need to employ a longitudinal design with multiple measurements of perceptions and attitudes. Second, the sample size at plant level limited the use of our data to observing the between-groups variance, with the result that most of the cross-level analyses were unable to be strongly verified. Thus, future research should strengthen the sample collection at plant level.

Third, the 11 plants participating in this study were distributed across eight corporations. One of the eight corporations, a large publicly held firm, provided four plants

for the survey. The four plants are located in different areas in Taiwan and each has its own operational objectives. However, there might be potential overlap between plants sharing the same corporate headquarters in terms of operational objectives and HR practices. Although a plant-level approach should allow the relationships between HR practices and employee outcomes to be more clearly examined and lead to higher accuracy of observation (Delery and Doty 1996), we encourage future research to consider a multi-level model that simultaneously investigates the impacts of organizational constructs, plant, or business unit level factors on employee attitudes and behaviors. Furthermore, it will help us more fully understand the effects of high-performance HR practices on OCB if models used in future studies can include not only psychological climate, job satisfaction, and OCB, but also employee skills, goal alignment, and culture of accountability.

Finally, survey measures in this study might not include all possible HR activities, policies, and procedures. The domain of high-performance HR practices includes a wide variety of management and HR activities. Inconsistent components of high-performance HR practices were used in prior literature. Hence, future researchers should approach this issue with caution and discretion.

In conclusion, this study contributes to the area of human resource management and organizational behavior. We bridge the macro and micro perspectives to test a cross-level model of the relationships between high-performance HR practices, psychological climate perceptions, job satisfaction, and OCB. The continuing demands for the integration of cross-level relationships into organizational research, coupled with various methodological developments, will shed a new light on a better understanding of the complex phenomena of organizations.

Acknowledgements

This study was supported by a grant from Fuji Xerox Taiwan Corporation.

References

- Allen, T.D., and Rush, M.C. (1998), 'The Effects of Organizational Citizenship Behavior on Performance Judgments: A Field Study and a Laboratory Experiment,' *Journal of Applied Psychology*, 83, 2, 247–260.
- Allen, D.G., Shore, L.M., and Griffeth, R.W. (2003), 'The Role of Perceived Organizational Support and Supportive Human Resource Practices in the Turnover Process,' *Journal of Management*, 29, 1, 99–118.
- Arthur, J.B. (1994), 'Effects of Human Resource Systems on Manufacturing Performance and Turnover,' *Academy of Management Journal*, 37, 3, 670–687.
- Bae, J., and Lawler, J.J. (2000), 'Organizational and HRM Strategies in Korea: Impact on Firm Performance in an Emerging Economy,' *Academy of Management Journal*, 43, 3, 502–517.
- Bagozzi, R.P. (1992), 'The Self-regulation of Attitudes, Intentions, and Behavior,' *Social Psychology Quarterly*, 55, 2, 178–204.
- Baltes, B.B., Bauer, C.C., Bajdo, L.M., and Parker, C.P. (2002), 'The Use of Multitrait-multimethod Data for Detecting Nonlinear Relationships: The Case of Psychological Climate and Job Satisfaction,' *Journal of Business and Psychology*, 17, 1, 3–17.
- Baron, R.M., and Kenny, D.A. (1986), 'The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations,' *Journal of Personality and Social Psychology*, 51, 6, 1173–1182.
- Becker, B., and Gerhart, B. (1996), 'The Impact of Human Resource Management on Organizational Performance: Progress and Prospects,' *Academy of Management Journal*, 39, 4, 779–801.
- Becker, B.E., and Huselid, M.A. (1998), 'High Performance Work Systems and Firm Performance: A Synthesis of Research and Managerial Implications,' *Research in Personnel and Human Resource Management*, 16, 53–101.
- Blau, P.M. (1964), *Exchange and Power in Social Life*, New York: John Wiley & Sons.

- Bowen, D.E., and Ostroff, C. (2004), 'Understanding HRM-firm Performance Linkages: The Role of the Strength of the HRM System,' *Academy of Management Review*, 29, 2, 203–221.
- Bryk, A.S., and Raudenbush, S.W. (1992), *Hierarchical Linear Models: Applications and Data Analysis Methods*, Newbury Park, CA: Sage.
- Delery, J.E., and Doty, D.H. (1996), 'Modes of Theorizing in Strategic Human Resource Management: Tests of Universalistic, Contingency, and Configurational Performance Predictions,' *Academy of Management Journal*, 39, 4, 802–835.
- Delaney, J.M., and Huselid, M.A. (1996), 'The Impact of Human Resource Management Practices on Perceptions of Organizational Performance,' *Academy of Management Journal*, 39, 4, 949–969.
- Dyer, L., and Reeves, T. (1995), 'Human Resource Strategies and Firm Performance: What Do We Know and Where Do We Need to Go?' *International Journal of Human Resource Management*, 6, 3, 656–670.
- Eisenberger, R., Cummings, J., Armeli, S., and Lynch, P. (1997), 'Perceived Organizational Support, Discretionary Treatment, and Job Satisfaction,' *Journal of Applied Psychology*, 82, 5, 812–820.
- Eisenberger, R., Huntington, R., Hutchison, S., and Sowa, D. (1986), 'Perceived Organizational Support,' *Journal of Applied Psychology*, 71, 3, 500–507.
- Fasolo, P. (1995), 'Procedural Justice and Perceived Organizational Support: Hypothesized Effects on Job Performance,' in *Organizational Politics, Justice, and Support*, eds. R. Cropanzano and K. Kacmar, Westport, CT: Quorum, pp. 185–195.
- Griffin, R.W., and McMahan, G.C. (1994), 'Motivation through Job Design,' in *Organizational Behavior: The State of the Science*, ed. J. Greenberg, Hillsdale, NJ: Lawrence Erlbaum Publishers, pp. 23–43.
- Guthrie, J.P. (2001), 'High-involvement Work Practices, Turnover, and Productivity: Evidence from New Zealand,' *Academy of Management Journal*, 44, 1, 180–190.
- Guzzo, R.A., and Noonan, K.A. (1994), 'Human Resource Practices as Communications and the Psychological Contract,' *Human Resource Management*, 33, 3, 447–462.
- Harris, M.M., and Schaubroeck, J. (1990), 'Confirmatory Modeling in Organizational Behavior/Human Resource Management: Issues and Applications,' *Journal of Management*, 16, 2, 337–360.
- Hinkin, T.R. (1995), 'A Review of Scale Development Practices in the Study of Organizations,' *Journal of Management*, 21, 5, 967–988.
- Higgins, J.M. (1996), 'Achieving the Core Competence – It's as Easy as 1, 2, 3, ... 47, 48, 49,' *Business Horizons*, 39, 2, 27–32.
- Hofmann, D.A. (1997), 'An Overview of the Logic and Rationale of Hierarchical Linear Models,' *Journal of Management*, 23, 6, 723–744.
- Homans, G.C. (1961), *Social Behavior: Its Elementary Forms*, New York: Harcourt, Brace & World.
- Huselid, M.A. (1995), 'The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance,' *Academy of Management Journal*, 38, 3, 635–672.
- Ichniowski, C., Shaw, K., and Prennushi, G. (1997), 'The Effects of Human Resource Management Practices on Productivity: A Study of Steel Finishing Lines,' *American Economic Review*, 87, 3, 291–313.
- James, L.R., James, L.A., and Ashe, D.K. (1990), 'The Meaning of Organizations: the Role of Cognition and Values,' in *Organizational Climate and Culture*, ed. B. Schneider, San Francisco, CA: Jossey-Bass, pp. 40–84.
- James, L.R., Hater, J.J., Gent, M.J., and Bruni, J.R. (1978), 'Psychological Climate: Implications from Cognitive Social Learning Theory and Interactional Psychology,' *Personnel Psychology*, 31, 783–813.
- James, L.R., and Jones, A.P. (1974), 'Organizational Climate: A Review of Theory and Research,' *Psychological Bulletin*, 81, 12, 1096–1112.
- Janssen, O. (2001), 'Fairness Perceptions as a Moderator in the Curvilinear Relationships between Job Demands, and Job Performance and Job Satisfaction,' *Academy of Management Journal*, 44, 5, 1039–1050.
- Jones, A.P., and James, L.R. (1979), 'Psychological Climate: Dimensions and Relationships of Individual and Aggregated Work Environment Perceptions,' *Organizational Behavior and Human Performance*, 23, 2, 201–250.

- Koys, D.J., and DeCotiis, T.A. (1991), 'Inductive Measures of Psychological Climate,' *Human Relations*, 44, 2, 265–285.
- Levinson, H. (1965), 'Reciprocity: The Relationship Between Man and Organization,' *Administrative Science Quarterly*, 9, 4, 370–390.
- MacDuffie, J.P. (1995), 'Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry,' *Industrial and Labor Relations Review*, 48, 2, 197–221.
- Macky, K., and Boxall, P. (2007), 'The Relationship between High-performance Work Practices and Employee Attitudes: An Investigation of Additive and Interaction Effects,' *International Journal of Human Resource Management*, 18, 4, 537–567.
- Mossholder, K.W., Settoon, R.P., and Henagan, S.C. (2005), 'A Relational Perspective on Turnover: Examining Structural, Attitudinal, and Behavioral Predictions,' *Academy of Management Journal*, 48, 4, 607–618.
- Niehoff, B., and Moorman, R.H. (1993), 'Justice as a Mediator of the Relationship between Methods of Monitoring and Organizational Citizenship Behavior,' *Academy of Management Journal*, 36, 3, 527–556.
- Organ, D.W. (1988), *Organizational Citizenship Behavior. The Good Soldier Syndrome*, Lexington, MA: Lexington Books.
- Organ, D.W., and Konovsky, M.A. (1989), 'Cognitive versus Affective Determinants of Organizational Citizenship Behavior,' *Journal of Applied Psychology*, 74, 1, 157–164.
- Organ, D.W., and Ryan, K. (1995), 'A Meta-Analytic Review of Attitudinal and Dispositional Predictors of Organizational Citizenship Behavior,' *Personnel Psychology*, 48, 4, 775–802.
- Orlitzky, M., and Frenkel, S.J. (2005), 'Alternative Pathways to High-performance Workplaces,' *International Journal of Human Resource Management*, 16, 8, 1325–1348.
- Parker, C.P., Baltes, B.B., Young, S.A., Huff, J.W., Altmann, R.A., Lacost, H.A., and Roberts, J.E. (2003), 'Relationships between Psychological Climate Perceptions and Work Outcomes: A Meta-analytic Review,' *Journal of Organizational Behavior*, 24, 4, 389–416.
- Podsakoff, P.M., Ahearne, M., and MacKenzie, S.B. (1997), 'Organizational Citizenship Behavior and the Quantity and Quality of Work Group Performance,' *Journal of Applied Psychology*, 82, 2, 262–270.
- Podsakoff, P.M., and MacKenzie, S.B. (1994), 'Organizational Citizenship Behaviors and Sales Unit Effectiveness,' *Journal of Marketing Research*, 3, 1, 351–363.
- Podsakoff, P.M., MacKenzie, S.B., and Bommer, W.H. (1996), 'Transformational Leader Behaviors and Substitutes for Leadership as Determinants of Employee Satisfaction, Commitment, Trust, and Organizational Citizenship Behaviors,' *Journal of Management*, 22, 2, 259–298.
- Podsakoff, P.M., MacKenzie, S.B., Moorman, R., and Fetter, R. (1990), 'Transformational Leader Behaviors and Their Effects on Trust, Satisfaction, and Organizational Citizenship Behaviors,' *The Leadership Quarterly*, 1, 107–142.
- Podsakoff, P.M., MacKenzie, S.B., Paine, J.B., and Bachrach, D.G. (2000), 'Organizational Citizenship Behaviors: A Critical Review of the Theoretical and Empirical Literature and Suggestions for Future Research,' *Journal of Management*, 26, 3, 513–563.
- Ravichandran, T. (1999), 'Redefining Organizational Innovation: Towards Theoretical Advancements,' *The Journal of High Technology Management Research*, 10, 2, 243–274.
- Rhoades, L., Eisenberger, R., and Armeli, S. (2001), 'Affective Commitment to the Organization: The Contribution of Perceived Organizational Support,' *Journal of Applied Psychology*, 86, 5, 825–836.
- Rogers, E.W., and Wright, P.M. (1998), 'Measuring Organizational Performance in Strategic Human Resource Management: Problems, Prospects, and Performance Information Markets,' *Human Resource Management Review*, 8, 3, 311–331.
- Rousseau, D.M. (1995), *Psychological Contracts in Organizations*, Thousand Oaks, CA: Sage.
- Schneider, B. (1990), 'The Climate for Service: An Application of the Climate Construct,' in *Organizational Climate and Culture*, ed. B. Schneider, San Francisco, CA: Jossey-Bass, pp. 383–412.
- Sgro, J.A., Worchel, P., Pence, B.C., and Orben, J.A. (1980), 'Perceived Leader Behavior as a Function of a Leader's Interpersonal Trust Orientation,' *Academy of Management Journal*, 23, 1, 161–165.
- Snell, S., and Dean, J. (1992), 'Integrated Manufacturing and Human Resource Management: A Human Capital Perspective,' *Academy of Management Journal*, 35, 3, 467–504.

- Strutton, D., Pelton, L.E., and Lumpkin, J.R. (1993), 'The Relationship between Psychological Climate and Salesperson-Sales Manager Trust in Sales Organizations,' *The Journal of Personal Selling & Sales Management*, 13, 4, 1–14.
- Sun, L.Y., Aryee, S., and Law, K.S. (2007), 'High-performance Human Resource Practices, Citizenship Behavior, and Organizational Performance: A Relational Perspective,' *Academy of Management Journal*, 50, 3, 558–577.
- Swift, C.O., and Campbell, C. (1998), 'Psychological Climate: Relevance for Sales Managers and Impact on Consequent Job Satisfaction,' *Journal of Marketing Theory and Practice*, 6, 1, 27–37.
- Takeuchi, R., Lepak, D.P., Wang, H., and Takeuchi, K. (2007), 'An Empirical Examination of the Mechanisms Mediating Between High-Performance Work Systems and the Performance of Japanese Organizations,' *Journal of Applied Psychology*, 92, 4, 1069–1083.
- Tsui, A.S., Pearce, J.L., Porter, L.W., and Tripoli, A.M. (1997), 'Alternative Approaches to the Employee Organization Relationship: Does Investment in Employees Pay Off?' *Academy of Management Journal*, 40, 5, 1089–1121.
- Walz, S.M., and Niehoff, B.P. (2000), 'Organizational Citizenship Behavior: Their Relationship to Organizational Effectiveness,' *Journal of Hospitality & Tourism Research*, 24, 3, 301–319.
- Wayne, S.J., Shore, L.M., and Liden, R.C. (1997), 'Perceived Organizational Support and Leader-Member Exchange: A Social Exchange Perspective,' *Academy of Management Journal*, 40, 1, 82–111.
- Whitener, E.M. (2001), 'Do High Commitment Human Resource Practices Affect Employee Commitment? A Cross-level Analysis Using Hierarchical Linear Modeling,' *Journal of Management*, 27, 5, 515–535.
- Wood, S., and de Menezes, L. (1998), 'High Commitment Management in the UK: Evidence from the Workplace Industrial Relations Survey and Employers' Manpower and Skills Practice Survey,' *Human Relations*, 51, 4, 485–515.
- Wright, P.M., Gardner, T.M., Moynihan, L.M., Park, H.J., Gerhart, B., and Delery, J.E. (2001), 'Measurement Error in Research on Human Resources and Firm Performance: Additional Data and Suggestions for Future Research,' *Personnel Psychology*, 54, 4, 875–901.
- Wright, P.M., McMahan, G.C., and McWilliams, A. (1994), 'Human Resources and Sustained Competitive Advantage: Resource-based Perspective,' *International Journal of Human Resource Management*, 5, 2, 301–326.
- Youndt, M.A. Jr., Dean, J.W., and Lepak, D.P. (1996), 'Human Resource Management, Manufacturing Strategy, and Firm Performance,' *Academy of Management Journal*, 39, 4, 836–866.

Appendix 1. Items of high-performance HR practice measure

Our organization ...

Internal career opportunities

- ... fills vacancies with people already employed at the organization.
- ... has a well-designed development program.

Extensive training

- ... offers employees diverse training programs for different training needs.
- ... structures training process systematically.
- ... encourages employees to undertake continuous training.
- ... provides individuals extensive training programs in order to increase general skills.

Employment security

- ... provides employees with job security.
- ... expects employees to stay in organization as long as they wish.

Participation and communication

- ... emphasizes employee participation.
- ... provides employees the opportunity to suggest improvements in the way things are done.
- ... keeps open communications with employees in their jobs.
- ... allows employees to participate in many decisions.

Sensitive selection

- ... makes extensive efforts to select the right person.
- ... uses panel interviews to select new employees.
- ... adopts fair procedures in selection.

- ... considers the similarity of candidate's personality and organizational culture.
- ... emphasizes employee prior work experiences.

Incentive compensation

- ... has a competency-based pay system.
- ... offers bonuses based on team performance.
- ... offers pay levels competitive with those of competitors.
- ... grants bonuses based on the profit of the organization.
- ... involves employees in calculating their compensation base.

Appendix 2. Results of measurement model for individual-level constructs

<i>Items</i>	<i>Lambda</i>
<i>Psychological climate</i>	
Managers in this organization are easy to talk to about job-related problems.	0.66
Managers in this organization support subordinate delivery of new ideas.	0.74
Subordinates have effective channels to express their opinions' and 'superiors accept subordinates' suggestions and implement them.	0.63
Managers in this organization encourage subordinates to be creative.	0.59
Managers in this organization follow through on their commitments to subordinates.	0.71
My boss is quick to recognize good performance.	0.57
<i>Job satisfaction</i>	
How satisfied or dissatisfied are you with ...	
... your present job in light of your career expectations?	0.79
... the reputation of your present job and position?	0.78
... pay and benefits of your organization?	0.50
... your working environments?	0.42
... your job contents?	0.54
<i>OCB</i>	
Is willing to risk disapproval in order to express individual beliefs about what is best for the company.	0.55
Attends functions that are not required, but help the company image.	0.69
Takes steps to try to prevent problems with other workers.	0.71
Keeps abreast of changes in the organization.	0.72
Is always ready to lend a helping hand to colleagues.	0.72
Attendance at work is above the norm.	0.77
Turns in budgets, sales projections, expense reports, and other documents earlier than required.	0.57
Willingly helps others to do the extra-role job.	0.75