

## ORIGINAL ARTICLE

# Cross-level effects of support climate: Main and moderating roles

Riki Takeuchi<sup>1</sup>  | Sean A. Way<sup>2</sup>  | Amy Wei Tian<sup>3</sup>

<sup>1</sup>University of Texas at Dallas, Richardson, Texas

<sup>2</sup>Monash University, Monash Business School, Australia

<sup>3</sup>Curtin University, Curtin Business School, Australia

## Correspondence

Riki Takeuchi, Naveen Jindal School of Management, University of Texas at Dallas, 800 West Campbell Rd, SM 43, Richardson, TX 75080-3021.

Email: Riki.Takeuchi@utdallas.edu

Using a sample composed of 701 food and beverage managers nested in 120 units and 40 Asian hotel properties, in the current study we investigated the effects of unit high-performance work system (HPWS) use and unit support climate on individual unit members' human resource outcomes (job performance behaviors: in-role and organizational citizenship behaviors). The results support the hypothesized relationships among unit HPWS use, unit support climate, individual affective commitment, and individual job performance behaviors. The current study's findings illuminate the ways (e.g., mediation and moderation) in which the unit support climate advances positive organizationally relevant individual-level human resource outcomes. Findings, implications, and limitations as well as avenues for future research are discussed.

## KEYWORDS

commitment, culture and climate, performance management, strategic HR

## 1 | INTRODUCTION

Human resource management (HRM) scholars (e.g., Becker & Huselid, 1998; Huselid, 1995; Way, 2002) have delineated a high-performance work system (HPWS) as a set of distinct but interrelated HRM practices including selective staffing, continuous training, developmental performance appraisals, information sharing and involvement in decision making, and equitable and performance-based rewards. Together, these HRM practices are postulated to engender positive organizationally relevant human resource outcomes such as employee attendance (e.g., Vermeeren et al., 2014; Way, Lepak, Fay, & Thacker, 2010), retention (e.g., Gardner, Wright, & Moynihan, 2011; Way, 2002; Way et al., 2010), and organizational citizenship behaviors (e.g., Messersmith, Patel, Lepak, & Gould-Williams, 2011). However, consistent with a central dogma in the extant HRM research literature that psychological climates and outcomes are precursors of human resource outcomes, the extant HRM research (cf. Chuang & Liao, 2010; Gardner et al., 2011; Messersmith et al., 2011; Way & Johnson, 2005; Zacharatos, Barling, & Iverson, 2005) indicates that the impact of HPWS use on positive organizationally relevant human resource outcomes is not direct but instead via the following mediating mechanism (causal chain): HPWS use engenders positive psychological climates and outcomes and, in turn, positive human resource outcomes.

In response to Wright and colleagues' (e.g., Wright & Boswell, 2002; Wright & Nishii, 2013) call for HRM research that integrates micro and macro HRM perspectives, a few cross-level HRM studies have emerged examining the mediating mechanisms through which the use of an HPWS at the establishment, department, or unit level affects the psychological and/or human resource outcomes of individual employees. For example, Takeuchi, Chen, and Lepak (2009) investigated the mediating effect of establishment-level concern for employees' (support) climate on the relationships between establishment-level HPWS use and the psychological outcomes (job satisfaction and affective commitment) of individual establishment members. Then again, Messersmith et al. (2011) investigated the mediating effects of individual department members' psychological outcomes (individual-level psychological empowerment, job satisfaction, and organizational commitment) on the relationship between department-level HPWS use and organizational citizenship behaviors of individual department members (a positive individual-level human resource outcome).

Eden (2002) underscored the importance and potential substantive contributions of replicating existing empirical inquiries to the management research literature. We concur with Jiang, Takeuchi, and Lepak (2013) that given the small number of published cross-level HRM empirical inquiries concerning mediating mechanisms, constructive replications and extensions afford a fruitful avenue for future

research. In the current empirical inquiry, we adopt a “generalization and extension” (Tsang & Kwan, 1999, p. 768) approach to replication.

First, we constructively replicate Takeuchi et al.'s (2009) results. That is, we (a) use a sample drawn from a different population (40 hotel properties located across Asia that were owned/managed by one multinational hotel company versus 76 Japanese establishments from 56 companies and multiple industries); (b) focus on a different level of analysis (hotel property food and beverage [F&B] manager units versus establishments); (c) use different rating sources (HR director ratings of HPWS use for their hotel property's F&B manager units versus manager ratings of their establishment's HPWS use); and (d) adopt different measures of HPWS use and climate to examine the cross-level mediating effect of the unit support climate on the relationship between unit HPWS use and the affective commitment of individual unit members. Next, we build on the Takeuchi et al. (2009) study and add a key missing component (organizationally relevant individual-level human resource outcomes) in the HPWS–human resource outcomes causal chain, that is, the job performance behaviors of individual unit members. In this study, we also rejoin Chadwick, Way, Kerr, and Thacker's (2013) call for more empirical investigations into moderators (boundary conditions) in HRM research by investigating the cross-level moderating effect of unit support climate on the relationships between individual-level affective commitment and job performance behaviors.

## 2 | DELINEATING THE KEY CONSTRUCTS AND CONCEPTUAL MODEL

Published HRM research has typically viewed HPWS use as universally consistent across organizations and disregards variability in HPWS use within an organization (e.g., Lepak & Snell, 1999, 2002). This prevailing universalistic conception results in the methodological decision to measure HPWS use at the organization level and assumes that all employees are treated similarly by their organization. This universalistic assumption, however, does not always apply because in practice organizations often treat units differently for strategic or other operational reasons (e.g., Lepak & Snell, 1999; Nishii, Lepak, & Schneider, 2008).

The extent to which organizations make use of an HPWS to manage different units varies markedly (Lepak & Snell, 1999; Ostroff & Bowen, 2016), and thus members of different units are expected to have different perceptions of their work environment. For example, members of the same F&B manager unit of a hotel property would share more similar perceptions of their work environment and organizational support than members from different units. This idea is consistent with prior conceptual and empirical research suggesting that since members of the same unit are exposed to similar HRM practices, they would form common perceptions of their work environment (e.g., Chuang & Liao, 2010; Kozlowski & Bell, 2003). Empirical research has shown the key role that HPWS use can play in shaping employees' collective perceptions of their work environment (e.g., Chuang & Liao, 2010; Takeuchi et al., 2009; Zacharatos et al., 2005). Congruently, in the current study, we focus on HPWS

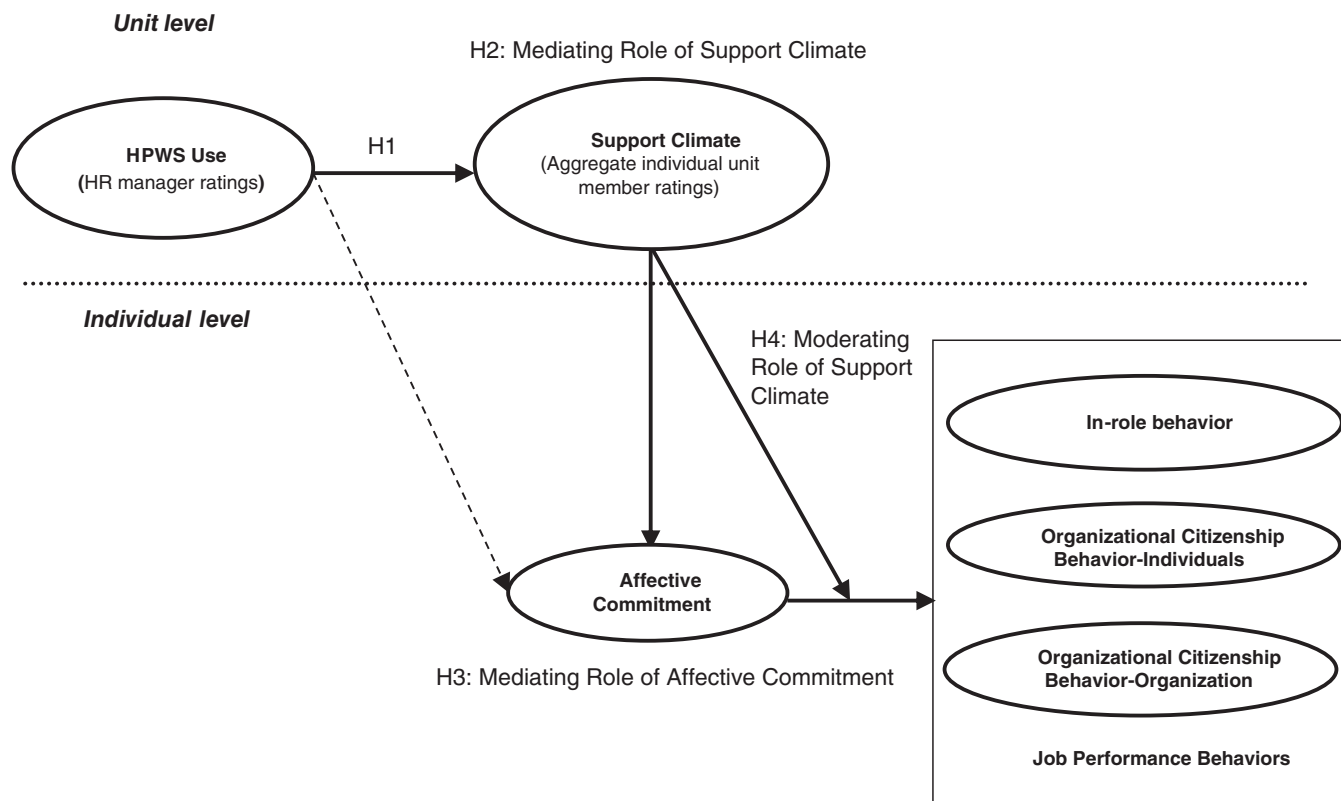
use and the support climate within the F&B manager units of hotel properties.

Support climate at the unit level is conceptualized as an organization-centered phenomenon reflecting the shared beliefs of unit members about the extent to which their organization (a) values and recognizes their contributions, (b) cares about their unit and their well-being, and (c) supports them in effectively discharging their duties (e.g., Rhoades & Eisenberger, 2002). Published studies have adopted a social exchange perspective to explicate the causal chain in the HRM practices–human resource outcomes causal chain (e.g., D. G. Allen, Shore, & Griffeth, 2003; Wayne, Shore, & Liden, 1997). Consistent with these studies and building on the work of Takeuchi et al. (2009), in the current study, we posit that unit support climate plays a key role in shaping individual unit members' affective commitment and job performance behaviors.

Specifically, we postulate that within-organization variances in unit HPWS use engender variances in unit support climate, which in turn engender variances in individual unit members' “emotional attachment to, identification with, and involvement in, the organization” (affective commitment; N. J. Allen & Meyer, 1990, p. 1) and variances in positive individual unit members' human resource outcomes such as those employee behaviors “recognized by formal reward systems and are part of the requirements as described in job descriptions” (in-role behaviors; Williams & Anderson, 1991, p. 606) and organizational citizenship behaviors that benefit either specific individuals or the organization in general (OCBI and OCBO, respectively; Williams & Anderson, 1991, pp. 601–602). Given the large body of empirical evidence linking perceived organizational support, affective commitment, and human resource outcomes (see Kurtessis et al., 2017; Rhoades & Eisenberger, 2002; Riggall, Edmonson, & Hansen, 2009), it is surprising that we know little about the role that support climate plays in the HPWS use–human resource outcomes causal chain. Figure 1 depicts the current study's conceptual model and hypotheses.

## 3 | HYPOTHESIS DEVELOPMENT

The foundation for the postulated positive association between unit HPWS use and unit support climate comes from the notion that unit HPWS use signifies to unit members that the organization is supportive and seeks to establish or continue a social exchange relationship with them (e.g., D. G. Allen et al., 2003; Snape & Redman, 2010; Sun, Aryee, & Law, 2007; Takeuchi et al., 2009). More specifically, an HPWS involves practices that signify to unit members that the organization (a) cares about their well-being by providing continuous training (e.g., Eisenberger, Huntington, Hutchison, & Sowa, 1986; Snape & Redman, 2010; Wayne et al., 1997) and conducting developmental performance appraisals (e.g., Takeuchi et al., 2009); (b) values their contributions by sharing information with them and involving them in decision making (e.g., D. G. Allen et al., 2003; Eisenberger et al., 1986); (c) recognizes their contributions by offering equitable and performance-based rewards (e.g., D. G. Allen et al., 2003; Snape & Redman, 2010; Way, 2002); and (d) supports them in effectively



**FIGURE 1** Cross-level model of high-performance work systems, support climate, and individual attitudes and behaviors

discharging their duties through all of these measures in addition to selective staffing (e.g., Snape & Redman, 2010; Way, 2002).

There is strong empirical evidence that individuals' perceptions toward the use of certain HRM practices affect the way they perceive organizational support (D. G. Allen et al., 2003). In addition, a few multilevel HRM studies have examined the effect of adopting HRM practices at the organization, establishment, or unit level on individuals' perceptions of organizational support (e.g., Snape & Redman, 2010; Zhong, Wayne, & Liden, 2016). Although perceived organizational support was originally conceptualized at the individual level (Eisenberger et al., 1986), a unit-level psychological climate emerges when employees from the same unit form a consensus about whether the organization values them (Chuang & Liao, 2010). Consistent with Takeuchi et al. (2009), we hypothesize that unit HPWS use is positively associated with unit support climate—that is, unit members' shared beliefs about the extent to which their organization (a) values and recognizes their contributions, (b) cares about their well-being, and (c) supports them in effectively discharging their functions in this study. Specifically:

**Hypothesis 1:** *Unit HPWS use is positively related to unit support climate.*

Furthermore, social exchange theory and the norm of reciprocity (Gouldner, 1960) connote that positive, beneficial actions directed at unit members by the organization contribute to the establishment of a high-quality exchange relationship obliging unit members to reciprocate in positive, beneficial ways (Settoon, Bennett, & Liden, 1996, p. 219). Hence, unit HPWS use is postulated to improve unit

members' perceptions of their work environment and their firm's commitment to them (unit support climate) and engender a sense of obligation to repay the organization for treating them well (e.g., Collins & Smith, 2006; Kehoe & Wright, 2013; Snape & Redman, 2010; Zhong et al., 2016). Affective commitment can be viewed as a means by which individual unit members can repay organizations (Rhoades & Eisenberger, 2002). Together, the HRM practices included in an HPWS shape the nature of an organization's exchange with unit members (unit support climate), which may motivate unit members to reciprocate through high affective commitment. Thus, consistent with Takeuchi et al. (2009), we posit that unit support climate mediates the relationship between unit HPWS use and the affective commitment of individual unit members. Specifically:

**Hypothesis 2:** *Unit support climate mediates the relationship between unit HPWS use and individual affective commitment.*

The principles of social exchange theory and the norm of reciprocity suggest that people often feel obliged to respond in kind (Gouldner, 1960). Thus, we contend that unit HPWS use advances unit support climate (Takeuchi et al., 2009), which advances the affective commitment of individual unit members (Luthans, Norman, Avolio, & Avey, 2008; Takeuchi et al., 2009), and this affective commitment in turn elicits reciprocation from individual unit members in the form of higher levels of in-role behaviors as well as cooperative (OCBI) and other extra-role behaviors (OCBO) that benefit the organization (see Harrison, Newman, & Roth, 2006; Luthans et al., 2008; Muse, Harris, Giles, & Field, 2008). Muse et al.'s (2008) results

highlight the mediating effect of individual-level affective commitment; they found that organizational support as perceived by individuals engenders affective commitment, which in turn elicits reciprocation from them in the form of higher levels of in-role and contextual performance behaviors (interpersonal facilitation and job dedication). Similarly, Fu and Deshpande (2014) found that individuals' perceptions of organizational care had a positive, direct effect on their organizational commitment; the authors also showed that individuals' organizational commitment had a positive, direct effect, whereas their perceptions of organizational care had a positive, indirect effect on their job performance. However, we are not aware of any published empirical studies examining the mediating effect that the affective commitment of individual unit members has on the positive, cross-level relationships between their job performance behaviors and unit support climate. Nonetheless, we posit that their affective commitment partially mediates these relationships. Specifically:

**Hypothesis 3:** *Individual affective commitment partially mediates the relationships between unit support climate and individual (a) in-role behavior, (b) OCBI, and (c) OCBO.*

Echoing organizational climate scholars (e.g., Ehrhart, 2004; Schneider et al., 2013, 2017; Walumbwa et al., 2010), we posit that process-focused climates (see Schneider et al., 2013) such as unit support climate act as cross-level moderators between the attitudes (individual unit members' affective commitment) and job performance behaviors (individual unit members' in-role behavior, OCBI, and OCBO) of individual unit members. Hofmann, Morgeson, and Gerrass (2003) posited that social exchange creates the motivation to reciprocate (as represented by the cross-level, direct effect of support climate on affective commitment), while climate delineates the exchange currency or the valued behavior in this case.

More specifically, unit members who experience a higher level of affective commitment to their organization are likely to be motivated to perform their core task responsibilities well and to display more extra-role behaviors. These positive relationships are likely to be enhanced within units with a strong support climate because in such units, individual unit members are expected to experience a greater sense of alignment with their organizations' values and goals. Although we are not aware of any published study examining unit support climate as a moderator (boundary condition) of the relationships between individual-level attitudes and job performance behaviors, in the current study, we rejoin Chadwick et al.'s (2013) and Chuang, Jackson, and Jiang's (2016) calls for more empirical investigations into moderators in HRM research and elucidate the cross-level moderating effect of unit support climate on these relationships. Specifically, we propose that:

**Hypothesis 4:** *Unit support climate moderates the relationships between individual affective commitment and job performance behaviors such that the positive relationships between individual affective commitment and individual (a) in-role behavior, (b) OCBI, and (c) OCBO*

*will be stronger in units with higher levels of support climate.*

## 4 | METHOD

### 4.1 | Sample and procedures

Target respondents were HR directors and F&B managers from 40 hotel properties across Asia, which were owned/operated by a single multinational hotel chain. All 40 were full-service deluxe hotel properties providing a variety of F&B services and had multiple F&B outlets (restaurants, lounges, bars, etc.). The hotel chain's chief HR director and chief F&B director informed us that each property's F&B department had three distinct F&B manager units (Level 1, Level 2, and Level 3) and that these units were managed differently (via different degrees of HPWS use). Thus, our HR director survey was designed to collect data from each hotel property's HR director regarding the extent to which his/her hotel property used an HPWS (consisting of nine high-performance work practices) to manage its (a) L1 F&B manager unit, (b) L2 F&B manager unit, and (c) L3 F&B manager unit. Responses were received from the HR directors of all 40 hotel properties (i.e., 100% response rate).

We also sent our F&B manager unit surveys (i.e., L1, L2, and L3 unit surveys) to all members of the 40 hotel properties' L1, L2, and L3 F&B manager units. These surveys included items that we used to create our unit-level support climate variable, as well as our individual-level affective commitment and job performance behaviors variables. A cover letter conveyed the purpose of the study to the respondents, sought their voluntary participation, and assured them of the anonymity of their responses. Responses were received from all F&B managers who were working at the company's 40 Asian hotel properties at the time that our study's F&B manager surveys were administered. Our final sample includes 701 individuals from 120 different units and 40 hotel properties: (a) 64 individuals from 40 different L1 F&B manager units (average response of 1.60 per unit) who held the title of Food and Beverage Directors and Executive Chefs (range = 1 to 3; 18 establishments with one response; 20 establishments with two responses; and 2 establishments with three responses); (b) 85 individuals from 40 different L2 F&B manager units (average response of 2.13 per unit) who held the title of Assistant Food and Beverage Directors and Executive Sous Chefs (range = 1 to 9; 18 establishments with one response; 12 establishments with two responses; 6 establishments with three responses; 1 establishment with four responses; 2 establishments with six responses; and 1 establishment with nine responses); and (c) 552 individuals from 40 different L3 F&B manager units (average response of 13.80 per unit) who held the title of Food and Beverage Outlet Managers and Sous Chefs (range = 1 to 55; 4 establishments with one response; 2 establishments with three responses; 1 establishment each with four, six, and seven responses; 4 establishments with eight responses; and the remaining establishments had more than 10 respondents). F&B manager unit member respondents ( $n = 701$  F&B managers from 120 units) were primarily males (73%) in their mid-30s (mean age was 36.58 years) with over 8 years of tenure at the hotel company

(mean organizational tenure was 8.46 years), and most respondents were an L3 F&B manager (79%).

To maintain the largest sample size available (retain all 120 unit-level and 701 individual unit member-level cases), we replaced missing values with grand mean substitution rather than dropping cases in a listwise manner.<sup>1</sup> This study's hypotheses were assessed using grand mean replacement ( $n = 701$  F&B managers from 120 units) and listwise deletion ( $n = 685$  F&B managers from 109 units) to show convergence of results. The close similarity of results across methods<sup>2</sup> indicate that mean replacement did not substantially affect—and demonstrates the robustness of—the results presented in this manuscript (see Tables 2 through 3C).

## 4.2 | Measures

The data used to generate this study's unit HPWS use variable were obtained from each hotel property's HR director (Source 1), whereas the data used to generate the unit support climate and individual-level affective commitment, in-role behavior, OCBI, and OCBO variables were obtained from unit members (Source 2). Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

### 4.2.1 | Unit HPWS use (HR director ratings)

The second author met with the chief HR director on several occasions to discuss which high-performance work practices are employed for our study's sampled units. The nine HPWS items we employed to measure unit-level HPWS use (see appendix) were thus selected based on (a) the discussions with the chief director of HR and (b) prior HRM research (e.g., Huselid, 1995; Takeuchi et al., 2009; Way, 2002; Way et al., 2010). The HR director from each hotel property provided ratings of HPWS use for his/her hotel property's L1 F&B manager unit, L2 F&B manager unit, and L3 F&B manager unit, respectively.

As we stated earlier, the hotel chain's group director of human resources and F&B director both asserted that hotel properties' managed their L1, L2, and L3 manager units differently (via different degrees of HPWS use). To validate this assertion, we used the procedure in random coefficient modeling (RCM; also termed *hierarchical linear modeling*) analysis and tested for the intercept variability in HPWS (i.e., whether or not HPWS use varied across hotels and/or units) by contrasting the random-intercept model in which intercepts vary "randomly" across hotels or units with the equal-intercept model in which intercepts are "fixed" across hotels or units. Consistent with this assertion, the results of RCM show that the use of HPWS varied across hotels (likelihood ratio = 1,301.42,  $p < .001$ ) as well as across units (likelihood ratio = 40,760.97,  $p < .001$ ). This set of results also illustrates that variability in HPWS use was greater at the unit level than at the hotel level, providing additional empirical support for conceptualizing/operationalizing HPWS use at the unit level.

### 4.2.2 | Unit support climate (aggregate unit member ratings)

Unit-level support climate is defined as unit members' shared belief that the larger organization cares about their well-being and that "aid will be available from the organization when it is needed to carry out

their job effectively and to deal with stressful situations" (Rhoades & Eisenberger, 2002, p. 698). As shown in the appendix, we adapted five items from Eisenberger et al.'s (1986) "Survey of Perceived Organizational Support" to assess unit-level support climate. Given that we intended to aggregate the responses of individual unit members to these five items to the unit level, we reworded the items to reflect the unit level of analysis by changing the focus of the items to the F&B manager unit. The reference-shift consensus approach used in the current study is consistent with the guidelines offered by scholars for specifying and explicating the level of the constructs in cross-level studies (e.g., Klein, Dansereau, & Hall, 1994). To support the aggregation of our support climate measure to the unit level, we examined three conventional aggregation statistics: one interrater agreement statistic, that is,  $R_{wg(j)}$  (James, Demaree, & Wolf, 1984), and two interrater reliability statistics, that is, intraclass correlation—ICC(1) and ICC(2). To calculate  $R_{wg(j)}$ , we used a uniform null distribution. The median  $R_{wg(j)}$  was 0.92 for the unit support climate measure and the ICC(1) and ICC(2) values were 0.09 and 0.94, respectively. The above statistics support the aggregation of support climate to the unit level, as they suggest that ratings were highly similar within units yet reliably different across units. The Cronbach's alpha for this study's five-item unit-level support climate scale was .89.

### 4.2.3 | Individual affective commitment (unit member ratings)

N. J. Allen and Meyer's (1990) eight-item scale was used to assess individual (self-reported) affective commitment. The Cronbach's alpha for this study's eight-item affective commitment measure was .90.

### 4.2.4 | Individual job performance behaviors (unit member ratings)

Williams and Anderson's (1991) seven-item in-role behavior, seven-item OCBI, and seven-item OCBO scales were used to assess three individual (self-reported) job performance behaviors. We conducted confirmatory factor analysis (CFA), using MPlus 7.4 (Muthén & Muthén, 1998–2013), to confirm the dimensionality of the Williams and Anderson (1991) job performance behaviors instrument. The CFA of the 21-item, three-factor, first-order job performance behaviors measurement model demonstrated a good fit with the data ( $n = 691$ ):  $\chi^2_{186} = 712.88$ ,  $p < .001$ ; root mean square error of approximation (RMSEA) = 0.04; comparative fit index (CFI) = 0.92; Tucker–Lewis index (TLI) = 0.91. In contrast, the CFA of an alternative 21-item, one-factor, first-order job performance behaviors measurement model demonstrated a poor fit with the data ( $n = 691$ ):  $\chi^2_{189} = 1218.33$ ,  $p < .001$ ; RMSEA = 0.06; CFI = 0.85; TLI = 0.83. Thus, consistent with published studies (Williams & Anderson, 1991), we retained in-role behavior, OCBI, and OCBO as three separate dependent variables. The Cronbach's alphas for these seven-item in-role behavior, OCBI, and OCBO scales were .88, .84, and .86, respectively.

## 4.3 | Common method variance

Data obtained from individual unit members were used to generate this study's unit-level support climate variable and individual-level



affective commitment, in-role behavior, OCBI, and OCBO variables. To address the common methods variance issue empirically, we used Harman's one-factor test and the unmeasured latent method factor technique. First, individual unit members' responses ( $n = 701$ ) to the items that were used to create this study's support climate (five items), affective commitment (eight items), in-role behavior (seven items), OCBI (seven items), and OCBO (seven items) variables were entered in a principal components extraction factor analysis, and the results of the unrotated solution were examined (see Way et al., 2010). Six factors with an eigenvalue greater than 1 emerged from this analysis, and no single factor accounted for most of the variance. Thus, the results of Harman's one-factor test indicate that common method variance is not a problem in this current study (see Podsakoff & Organ, 1986; Way et al., 2010).

Next, we used the unmeasured latent method factor technique, which involves adding a first-order method factor whose only measures are the indicators of the measurement model's factors that share a common method (Podsakoff, MacKenzie, & Podsakoff, 2012). The CFA of the five-factor (support climate, affective commitment, in-role behavior, OCBI, and OCBO) measurement model in which all items were specified to load onto their respective five factors demonstrated a good fit with the data ( $n = 682$ ):  $\chi^2_{517} = 1385.07$ ,  $p < .001$ ; RMSEA = 0.05; standardized root mean square residual (SRMR) = 0.04; CFI = 0.93; TLI = 0.93.<sup>3</sup> Similarly, the CFA of the six-factor measurement model in which an unmeasured latent methods factor was added to the five-factor measurement model and all items were specified to load onto their respective five factors as well as the unmeasured latent methods factor demonstrated a good fit with the data ( $n = 682$ ):  $\chi^2_{490} = 1322.76$ ,  $p < .001$ ; RMSEA = 0.05; SRMR = 0.07; CFI = 0.93; TLI = 0.92. The comparison of the goodness-of-fit of these models was calculated by CFI difference. The change of CFI between the five-factor measurement model and the six-factor measurement model (0.003) is well below the suggested rule of thumb of 0.05 (Bagozzi & Yi, 1990). Thus, one can conclude that including the unmeasured latent methods factor in the measurement model does not significantly improve the overall fit of the measurement model. Together, these results indicate that common method variance is not a problem in this current study.

#### 4.4 | Analytic procedure

We employ hierarchical linear modeling (HLM) to assess the current study's hypotheses concerning cross-level relationships (Bryk & Raudenbush, 1992). In comparison with ordinary least squares (OLS) regression, HLM appropriately partitions a variable's total variance into within-unit variance and between-unit variance and provides more precise parameter estimates for multilevel data. In HLM, effects of unit-level predictors on the between-unit portion of individual outcomes are referred to as cross-level effects (Bliese, 2002). Hence, we first assessed the extent to which affective commitment, in-role behavior, OCBI, and OCBO varied between units to establish if there was significant unit-level variance in these variables as indicated by ICC(1). ICC(1) was 0.12 for affective commitment, indicating that 12% of its total variance resided between units. ICC(1) was 0.26 for in-role behavior, indicating that 26% of its total variance resided

between units. ICC(1) was 0.26 for OCBI, indicating that 26% of its total variance resided between units. ICC(1) was 0.29 for OCBO, indicating that 29% of its total variance resided between units. These results indicate that there was significant unit-level variance in affective commitment, in-role behavior, OCBI, and OCBO, suggesting that unit-level HPWS use and support climate could explain between-unit variance in these outcomes (Bliese, 2002). Thus, the use of HLM was deemed appropriate.

Tables 2 through 3C present this study's HLM results. However, the pseudo  $R^2$  values explaining the amount of variance can be unstable, and either under- or overestimate the true effect size (Snijders & Bosker, 1999). Hence, the  $R^2$  values reported in Tables 2 and 3 should be considered simply as an indicator of variance explained by a particular set of variables at different levels. Additionally, we employed a sample bootstrapping method developed by Preacher and Hayes (2008) to test this study's hypotheses concerning mediation. The main advantage of this method over other approaches is that it does not arbitrarily require a normal distribution for the standard error of the indirect effect. Instead, it uses sample bootstrapping to generate bias-corrected confidence intervals for the standard errors that can be used in nonparametric tests.

## 5 | RESULTS

Table 1 presents means, standard deviations, and correlations for the key variables. In support of Hypothesis 1, the OLS regression results for unit support climate ( $n = 120$  units) showed that unit HPWS use was positively related to unit support climate ( $B = 0.41$ ,  $p < .001$ ) and that unit HPWS use explained 13.4% of the variance in unit support climate ( $F = 18.30$ ,  $df = 1, 118$ ).

The results of the HLM analyses for individual unit members' affective commitment are presented in Table 2. As shown in Table 2, Model 1a, unit HPWS use was not significantly related to individual affective commitment ( $B = -.05$ ,  $p > .05$ ). As shown in Model 1b, unit support climate was positively related to individual affective commitment ( $B = .25$ ,  $p < .001$ ) and explained an additional 40.26% of the between-unit variance in the latter. The sample bootstrapping method developed by Preacher and Hayes (2008) was used to further test Hypothesis 2 (that unit support climate mediates the relationship between unit HPWS use and individual affective commitment). Consistent with Hypothesis 2, unit HPWS use had a positive standardized indirect effect (SIE) on individual affective commitment (SIE = 0.02,  $p < .05$ ). These results together provide support for Hypotheses 1 and 2.

Hypotheses 3a, 3b, and 3c concern the mediating role of individual affective commitment in the relationships between unit support climate and individual in-role behavior, OCBI, and OCBO, respectively. As reported above and shown in Table 2, Model 1b, unit support climate was positively related to individual affective commitment ( $B = .25$ ,  $p < .001$ ). Tables 3A, 3B, and 3C report the HLM results for individual in-role behavior, OCBI, and OCBO, respectively. As shown in Table 3A, Model 1a, unit support climate was positively related to individual in-role behavior ( $B = .10$ ,  $p < .001$ ); and as shown in Model 1b, individual affective commitment was positively

**TABLE 1** Descriptive statistics and correlations for key study variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 GM satisfaction with hotel property F&B department performance <sup>a</sup>	3.28	0.48												
2 L1 F&B unit/manager	0.09	0.29	-.05											
3 L2 F&B unit/manager	0.12	0.33	.01	-.12**										
4 Age <sup>b</sup>	36.58	7.30	.10**	.11**	.05									
5 Gender <sup>b</sup>	0.27	0.51	.02	-.14**	-.11**	-.20**								
6 Education level <sup>b</sup>	1.99	1.38	.01	.07	.01	-.03	.34**							
7 Organizational tenure <sup>b</sup>	8.46	6.63	.00	-.13**	-.06	.37**	.11**	-.02						
8 HPWS use <sup>c</sup>	3.58	0.34	.02	-.02	.07	-.17**	.06	.02	-.14**					
9 Support climate <sup>c</sup>	3.62	0.32	.19**	.09*	.19**	-.09*	-.01	.10**	-.13**	.12**				
10 Affective commitment <sup>b</sup>	3.76	0.67	.01	.03	.01	.15**	-.03	.01	.07	-.03	.25**			
11 In-role behavior <sup>b</sup>	4.01	0.52	.06	.15**	.00	.09*	-.03	.07	.04	-.03	.22**	.40**		
12 OCBI <sup>b</sup>	4.05	0.53	.03	.09*	.01	.05	.00	.01	.05	-.10**	.17**	.37**	.67**	
13 OCBO <sup>b</sup>	4.17	0.55	.01	.19**	.04	.08*	.01	.02	.02	-.05	.16**	.30**	.69**	.70**

**Notes:**  $n = 701$  individuals nested in 120 F&B manager units. OCBI = OCB individually directed; OCBO = OCB organizationally directed. \*  $p < .05$ ; \*\*  $p < .01$ .

<sup>a</sup> Hotel property-level mean score assigned to individual unit members.

<sup>b</sup> Individual-level scores.

<sup>c</sup> Unit-level mean scores assigned to individual unit members.

**TABLE 2** HLM results for individual affective commitment

	Model 1a			Model 1b		
	$\beta$	SE	p	$\beta$	SE	p
Unit HPWS use	-0.05	(0.14)		-0.19	(0.13)	
Unit support climate				0.25	(0.04)	***
Df	118			117		
$R^2_{L1}$	n.a.			n.a.		
$R^2_{L2}$	0.00%			40.26%		

**Notes:** Table 2 presents the HLM results for individual affective commitment ( $n = 701$  individuals nested in 120 F&B manager units).  $\beta$  = unstandardized coefficient; SE = standard error; df = degree of freedom;  $R^2_{L1}$  = within-unit variance accounted for by Level 1 (individual-level) predictors;  $R^2_{L2}$  = between-unit variance accounted for by Level 2 (unit-level) predictors; n.a. = not applicable. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

related to individual in-role behavior ( $B = .19$ ,  $p < .001$ ). Consistent with Hypothesis 3a, the parameter estimate associated with unit support climate was smaller in Table 3A, Model 1b ( $B = .08$ ,  $p < .01$ ) than in Model 1a ( $B = .10$ ,  $p < .001$ ). As shown in Table 3B, Model 1a, unit support climate was positively related to individual OCBI ( $B = .10$ ,

$p < .001$ ); and as shown in Model 1b, individual affective commitment was positively related to individual OCBI ( $B = .18$ ,  $p < .001$ ). Consistent with Hypothesis 3b, the parameter estimate associated with unit support climate was smaller in Table 3B, Model 1b ( $B = .06$ ,  $p < .05$ ) than in Model 1a ( $B = .10$ ,  $p < .001$ ). Finally, as shown in Table 3C, Model 1a, unit support climate was positively related to individual OCBO ( $B = .10$ ,  $p < .001$ ); and as shown in Model 1b, individual affective commitment was positively related to individual OCBO ( $B = .15$ ,  $p < .001$ ). Consistent with Hypothesis 3c, the parameter estimate associated with unit support climate was smaller in Table 3C, Model 1b ( $B = .06$ ,  $p < .05$ ) than in Model 1a ( $B = .10$ ,  $p < .001$ ).

We employed the sample bootstrapping method developed by Preacher and Hayes (2008) to further assess the hypothesized mediating effect of individual affective commitment on the relationships between unit support climate and individual in-role behavior, OCBI, and OCBO (individual job performance behaviors). Consistent with Hypotheses 3a, 3b, and 3c, unit support climate had a positive indirect effect on individual in-role behavior (SIE = 0.04,  $p < .01$ ), OCBI

**TABLE 3A** HLM results for individual in-role behavior

	Model 1a			Model 1b			Model 1c		
	$\beta$	SE	p	$\beta$	SE	p	$\beta$	SE	p
Unit support climate $\times$ individual affective commitment							0.04	(0.02)	*
Unit HPWS use	-0.01	(0.07)		-0.03	(0.08)		-0.01	(0.07)	
Unit support climate	0.10	(0.02)	***	0.08	(0.02)	**	0.06	(0.03)	**
Individual affective commitment				0.19	(0.02)	***	0.20	(0.03)	***
Df	117,581			117,580			117,579		
$R^2_{L1}$	n.a.			14.53%			21.15%		
$R^2_{L2}$	28.57%			34.44%			38.21%		

**Notes:** Table 3A presents the HLM results for individual in-role behavior ( $n = 701$  F&B managers nested in 120 units).  $\beta$  = unstandardized coefficient; SE = standard error; df = degree of freedom;  $R^2_{L1}$  = within-unit variance accounted for by Level 1 (individual-level) predictors;  $R^2_{L2}$  = between-unit variance accounted for by Level 2 (unit-level) predictors; n.a. = not applicable.

\*  $p < .10$ . \*\*  $p < .05$ . \*\*\*  $p < .01$ .

**TABLE 3B** HLM results for individual OCBI

	Model 1a			Model 1b			Model 1c		
	$\beta$	SE	p	$\beta$	SE	p	$\beta$	SE	p
Unit support climate $\times$ individual affective commitment							0.04	(0.02)	*
Unit HPWS use	-0.13	(0.08)		-0.10	(0.08)		-0.09	(0.08)	
Unit support climate	0.10	(0.03)	***	0.06	(0.03)	*	0.05	(0.03)	+
Individual affective commitment				0.18	(0.02)	***	0.20	(0.02)	***
Df	117,581			117,580			117,579		
$R^2_{L1}$	n.a.			11.69%			15.69%		
$R^2_{L2}$	19.61%			31.20%			38.29%		

**Notes:** Table 3B presents the HLM results for individual OCBI ( $n = 701$  F&B managers nested in 120 units).  $\beta$  = unstandardized coefficient; SE = standard error; df = degree of freedom;  $R^2_{L1}$  = within-unit variance accounted for by Level 1 (individual-level) predictors;  $R^2_{L2}$  = between-unit variance accounted for by Level 2 (unit-level) predictors; n.a. = not applicable.

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$ .

**TABLE 3C** HLM results for individual OCBO

	Model 1a			Model 1b			Model 1c		
	$\beta$	SE	p	$\beta$	SE	p	$\beta$	SE	p
Unit support climate $\times$ individual affective commitment							0.04	(0.02)	*
Unit HPWS use	-0.10	(0.10)		-0.07	(0.08)		-0.04	(0.08)	
Unit support climate	0.10	(0.03)	***	0.06	(0.03)	*	0.05	(0.02)	+
Individual affective commitment				0.15	(0.02)	***	0.16	(0.02)	***
Df	117,581			117,580			117,579		
$R^2_{L1}$	n.a.			8.16%			12.94%		
$R^2_{L2}$	12.00%			18.02%			23.18%		

**Notes:** Table 3C presents the HLM results for individual OCBO ( $n = 701$  F&B managers nested in 120 units).  $\beta$  = unstandardized coefficient; SE = standard error; df = degree of freedom;  $R^2_{L1}$  = within-unit variance accounted for by Level 1 (individual-level) predictors;  $R^2_{L2}$  = between-unit variance accounted for by Level 2 (unit-level) predictors; n.a. = not applicable. \* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$ .

(SIE = 0.04,  $p < .01$ ), and OCBO (SIE = 0.03,  $p < .01$ ), respectively. Together, these results provide support for Hypotheses 3a, 3b, and 3c.

Hypotheses 4a, 4b, and 4c concern the moderating effects of unit support climate on the relationships between individual affective commitment and individual in-role behavior, OCBI, and OCBO, respectively. As shown in Table 3A, Model 1c and consistent with Hypothesis 4a, the unit support climate–individual affective commitment interaction term (Unit support climate  $\times$  Individual affective commitment) was positively related to individual in-role behavior ( $B = .04$ ,  $p < .05$ ) and explained an additional 6.62% of the within-unit variance and an additional 3.77% of the between-unit variance. As shown in Table 3B, Model 1c and consistent with Hypothesis 4b, the unit support climate–individual affective commitment interaction term was positively related to individual OCBI ( $B = .04$ ,  $p < .05$ ) and explained an additional 4.00% of the within-unit variance and an additional 7.09% of the between-unit variance. Finally, as shown in Table 3C, Model 1c and consistent with Hypothesis 4c, the unit support climate–individual affective commitment interaction term (Unit support climate  $\times$  Individual affective commitment) was positively related to individual OCBO ( $B = .04$ ,  $p < .05$ ) and explained an additional 4.78% of the within-unit variance as well as an additional 5.16% of the between-unit variance.

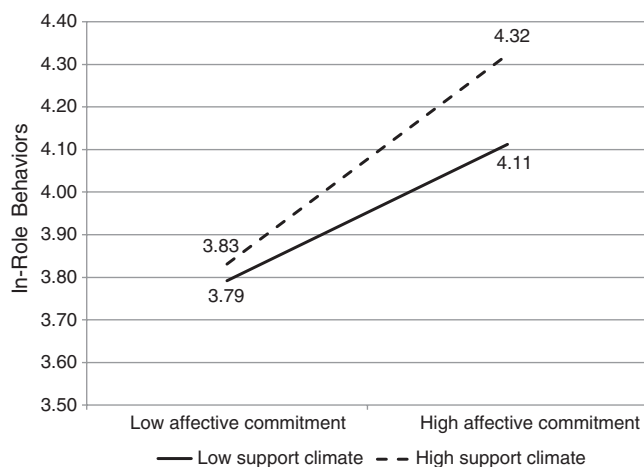
To facilitate the interpretation of the above significant interactions, we generated three interaction plots (presented in Figures 2–4) following the procedure recommended by Aiken and West (1991).

These three interaction plots are consistent with each other and illustrate that the relationships between individual affective commitment and in-role behaviors (Figure 2), OCBI (Figure 3), and OCBO (Figure 4) are positive when unit support climate is high but less positive when unit support climate is low (i.e., the slopes are flatter). Hence, these results provide further support for Hypotheses 4a, 4b, and 4c.

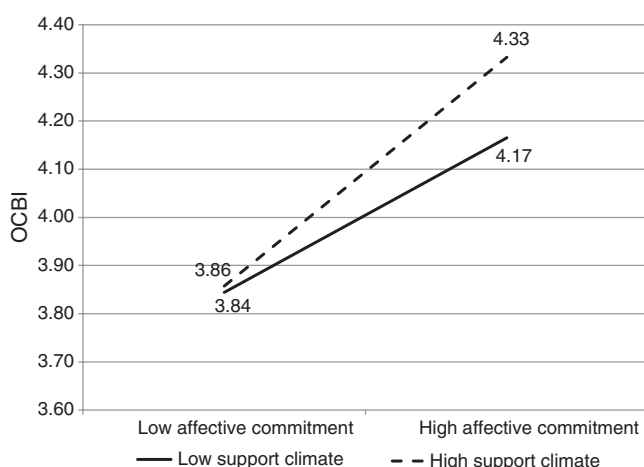
## 5.1 | Auxiliary HLM analyses and results

To minimize the concern associated with unmeasured hotel property and unit characteristics, the following controls were included in an auxiliary HLM model used to further assess Hypothesis 1 (the posited positive relationship between unit HPWS use and unit support climate): (a) overall hotel property performance, that is, hotel property general manager satisfaction with overall hotel property performance; (b) company-reported F&B manager job category dummy variables, that is, L1 F&B manager/unit, L2 F&B manager/unit, or L3 F&B manager/unit (omitted category); and (c) the number of respondents per F&B manager unit. The auxiliary HLM results for unit support climate (available from the first author upon request) were consistent with the OLS regression results for unit support climate reported above and provided further support for Hypothesis 1. In addition to the above controls, the following (individual, self-reported) controls were included (where appropriate) in auxiliary HLM models used to further assess Hypotheses 2 to 4c: (a) age, (b) gender, (c) education level, and (d) tenure with the hotel chain. These auxiliary HLM results for





**FIGURE 2** Moderating role of unit support climate in the individual affective commitment–In-role behavior relationship

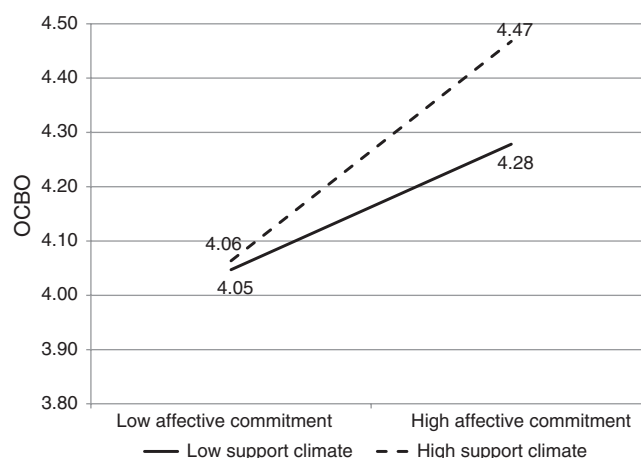


**FIGURE 3** Moderating role of unit support climate in the individual affective commitment – OCBI relationship

individual affective commitment, in-role behavior, OCBI, and OCBO (available from the first author upon request) were consistent with the HLM results reported above and in Table 2 and Tables 3A, 3B, and 3C and provided further support for Hypotheses 2 to 4c.

## 6 | DISCUSSION

Conceptual research has highlighted that the impact of HPWS use on positive, organizationally relevant human resource outcomes is not direct but rather occurs via the effects of HPWS use on employees' collective perceptions of their work environment (e.g., Bowen & Ostroff, 2004; Ostroff & Bowen, 2000, 2016; Way & Johnson, 2005). However, published empirical studies have seldom investigated the mediated, cross-level causal chain through which HPWS use engenders positive, individual-level human resource outcomes (e.g., Aryee, Walumbwa, Seidu, & Otaye, 2012). In the current study, we draw on social exchange theory to illuminate a mediating mechanism (causal chain) through which HPWS use engenders three positive, organizationally relevant, individual-level human resource outcomes (in-role behavior, OCBI, and OCBO), that is, to illuminate potential links



**FIGURE 4** Moderating role of unit support climate in the individual affective commitment – OCBO relationship

among unit HPWS use, unit support climate, individual affective commitment, and individual job performance behaviors.

Adopting a generalization and extension approach to replication (Tsang & Kwan, 1999), the current empirical inquiry contributes to the HRM research literature by constructively replicating the results of Takeuchi et al. (2009) and illustrating the cross-level mediating effect of the unit support climate on the relationship between unit HPWS use and individual affective commitment. While the current study differs from Takeuchi et al.'s (2009) study in important ways (e.g., different rating sources of HPWS use, different HPWS measure, different support climate measure, etc.), as Rosenthal (1991) stated, the more imprecise the replications, the greater the benefits would be to the external validity of the tested relationships if the results support them. Our study thus further validates Takeuchi et al.'s (2009) findings. More specifically, consistent with their study, we also observed a positive relationship between HPWS use and support climate at the unit level (as opposed to the establishment level) of analysis, illustrating the generalizability of such findings across two different contexts.

In addition, the current empirical inquiry contributes to the HRM research literature by building on Takeuchi et al.'s (2009) study and adding a key missing component (individual human resource outcomes) in the HPWS–human resource outcomes causal chain. Furthermore, in the current study, we rejoin Chadwick et al.'s (2013) call for more empirical investigations into moderators (boundary conditions) in HRM research and illustrate the cross-level moderating effect of unit support climate on the relationships between individual unit members' affective commitment and job performance behaviors. The current empirical inquiry affords insight into the multiple roles that unit support climate plays in translating the benefits of HPWS use to individual-level outcomes. More specifically, this study's findings illuminate unit support climate as a cross-level antecedent of individual affective commitment and a cross-level mediator and moderator of the relationships between individual affective commitment and job performance behaviors, that is, three organizationally relevant individual-level human resource outcomes.

Our results largely support our hypotheses. First, we found that HR managers' ratings of unit HPWS use was positively related to unit members' shared perceptions of organizational support (unit support

climate). This finding not only confirms that of Takeuchi et al. (2009) in terms of the direct effect of HPWS use on support climate, but also provides further empirical evidence supporting the view that HPWS use is a key proximal antecedent of workplace climate. Second, we found that unit support climate mediated the relationship between unit HPWS use and individual affective commitment. Again, not only do our findings validate those of Takeuchi et al. (2009), they add to the limited research investigating climate as a cross-level mediating mechanism of the impact of HPWS use on individual outcomes.

Third, we found that individual affective commitment mediated the relationships between unit support climate and individual unit members' job performance behaviors (i.e., in-role behavior, OCBI, and OCBO). This further contributes to the HRM and organizational climate literature by demonstrating that a shared climate perception may be a more distal determinant of individual human resource (behavioral) outcomes, and as a critical antecedent of individual affective commitment. We are not aware of any published empirical studies that have examined this study's postulated mediating effect of individual affective commitment on the cross-level relationships between unit support climate and individual job performance behaviors.

Furthermore, in the current study, we rejoin calls for empirical inquiries to operationalize climate as a contextual variable and illuminate the cross-level (direct and indirect) effects of climate variables on the relationships among other constructs (Schneider et al., 2013, 2017). In addition, this study provides much-needed empirical evidence supporting the distal effect of support climate on individual human resource (behavioral) outcomes. More specifically, our findings indicate that unit support climate positively moderated the relationships between individual unit members' affective commitment and job performance behaviors.

## 6.1 | Implications for theory and practice

A pivotal contribution of the current study is that it illuminates the important roles unit support climate plays in translating the intended objectives of an HPWS into increases in affective commitment, which in turn enhances various job performance behaviors. Moreover, the findings regarding the moderating effect of support climate on the relationships between affective commitment and various job performance behaviors suggest that the phenomena of interest to strategic HRM scholars are likely very complex and perhaps even dynamic, with various actors playing a part in the process (Wright, Snell, & Dyer, 2005). Consistent with the conceptual work of Ostroff and Bowen (2000, 2016) and Bowen and Ostroff (2004), our findings indicate that the influence of HPWS use on positive, organizationally relevant human resource outcomes is not direct but occurs through the influence of HPWS use on employees' collective perceptions of their work environment. Our findings provide corroborative evidence for the key role of unit support climate, which enables individual unit members to interpret the system of HRM practices governing them and gauge the extent to which the organization values their contributions and cares about their well-being. Consequently, the extent to which unit members believe that the organization values their

contributions and cares about their well-being is reflected in their affective commitment toward the organization and their job performance.

In terms of practical implications, findings in the current study may be helpful to managers seeking ways to enhance the benefits of their HPWS. First, in fostering a more committed workforce, the HPWS utilized does matter. Our results suggest that HPWS use has the capacity to create a strong supportive climate, which in turn increases individual employees' affective commitment. Second, and related to the first point, managers should know that the use of HPWS does not immediately result in more desirable human resource outcomes. Our findings suggest that while investing in an HPWS enhances the unit support climate, it does not directly increase individual unit members' affective commitment or job performance behaviors (in-role behavior, OCBI, and OCBO). Rather, HPWS use signals to employees the extent to which the organization values and cares about them (support climate), and if they are satisfied with the way the organization treats them they would feel obliged to repay the organization (e.g., Snape & Redman, 2010; Zhong et al., 2016). Therefore, organizations that are aiming to build a more committed and productive unit via implementing an HPWS should consider unit members' shared perceptions of their work environment when evaluating the impact of HPWS use.

The third practical implication is the importance of group processes (i.e., unit climate) for the effectiveness of an HPWS and individual outcomes. That is, managers must be mindful of employees' existing perceptions of support climate. The cross-sectional relationships demonstrated in the present study provide empirical evidence that the group perception of climate (unit support climate) is key to translating the benefits of an HPWS to desirable individual human resource outcomes. Shore and Shore (1995) suggested that the way the organization treated employees in the past would likely influence their perceptions of organizational support. This implies that when an organization first introduces an HPWS, it is important for managers to carefully assess and understand employees' existing perceptions of support climate because the benefits of the HPWS may take longer to manifest if current support climate is low. Furthermore, if the organization has a history of providing little to no employee support, then introducing an HPWS may be perceived as a management intervention to boost productivity (D. G. Allen et al., 2003). However, more research, especially longitudinal research, is required to establish the extent of causality in this domain.

Another important practical implication is to highlight the importance of understanding unit HPWS use within the organization. Especially in larger organizations, where many decisions concerning HRM are centralized, HRM is "essentially a unit-level management intervention" (Snape & Redman, 2010, p. 1241) and managers need to be aware of the between-unit variation when evaluating the effectiveness of HPWS use. It is possible that the use of HRM systems and employees' perceptions of such systems vary between business units (Liao & Chuang, 2004). Thus, the shared climate perceptions and collective behaviors of employees may emerge via bottom-up processes within the business unit (Kozlowski & Klein, 2000). Thus, managers may be able to enhance the benefits of HPWS use and improve

support climate through frequent and clear communication with employees (Nishii et al., 2008).

## 6.2 | Limitations and future research

The results of this study must be viewed in light of its limitations. First, in terms of the research design requirement, it was infeasible for us to collect longitudinal data because of the multilevel nature of our study (obtaining data from multiple sources for multiple units). Thus, the cross-sectional nature of the data prevents us from inferring causality. Although we do not expect reverse causality to be a critical concern, we encourage future studies to replicate our findings with longitudinal data. Relatedly, while we replicated and extended Takeuchi et al.'s (2009) findings, the context is still Asian. According to Rabl, Jayasinghe, Gerhart, and Kühlmann (2014), the HPWS has a stronger impact on firm performance in collectivistic cultures. The cultural context of our study (i.e., Asian) may have influenced our findings and therefore may constrain their generality to other cultural contexts as well as industries. However, this should not be a concern because the conceptual arguments used to derive the hypotheses are not culturally bound and the findings are consistent with the conceptual arguments in the HRM literature in both Asian (e.g., Liao, Toya, Lepak, & Hong, 2009; Takeuchi et al., 2009; Zhong et al., 2016) and non-Asian contexts (e.g., D. G. Allen et al., 2003; Messersmith et al., 2011). Nevertheless, we encourage future research to replicate and extend our findings with data obtained from multiple cultural contexts.

Second, we specifically developed and used a new nine-item HPWS scale. Although these nine items were consistent with the core elements underlying an HPWS (Armstrong et al., 2010) and represented the HRM practices adopted by the hotel chain, it does introduce difficulties in accumulating our knowledge. While the fact that our findings replicate those of Takeuchi et al. (2009) upholds that the current study's new HPWS scale is valid, we nonetheless encourage future studies to use the same items in other contexts (countries, industries, etc.) to replicate our results.

Third, the job performance of unit members was reported by the members themselves, which may be a limitation (Aguinis, 2009), as this source has rarely been used in the literature (e.g., Podsakoff, Ahearne, & MacKenzie, 1997). However, the correlations among this study's in-role behavior, OCBI, and OCBO variables do not appear to be significantly higher than those reported in published empirical studies. Moreover, despite the fact that this study's predictor (Source 1) and criterion (Source 2) variables were generated from data obtained from two distinct sources, the data used to generate this study's unit-level support climate and individual-level affective commitment and job performance behaviors (in-role behavior, OCBI, and OCBO) variables were obtained from unit members (Source 2). To address the common methods variance issue empirically, we used Harman's one-factor test and the unmeasured latent method factor technique. As we reported above, the results indicate that common method variance is not a problem in the current study. Nevertheless, we encourage future studies to replicate the current study's findings using individual job performance behaviors (in-role behavior, OCBI, OCBO, etc.) variables that are generated from data obtained from a

different source (e.g., peers and/or supervisors) than the unit support climate and individual affective commitment variables.

Fourth, our study adopted a cross-sectional research design, which prevents us from drawing firm conclusions about causality. Although the "causal" arrows depicted in Figure 1 are grounded in a social exchange perspective and the relationships we reported are consistent with our hypotheses and theory, as well as with prior empirical evidence (e.g., Chuang & Liao, 2010; Snape & Redman, 2010; Takeuchi et al., 2009), future studies might usefully incorporate a longitudinal design. However, given problems with research access for multilevel studies, we also acknowledge that this would be extremely demanding.

Finally, in order to maintain the largest possible sample size, we used grand mean substitution to replace missing values because prior Monte Carlo analyses of missing data techniques have shown that parameters can be effectively estimated using grand mean substitution (e.g., Roth, Switzer, & Switzer, 1999). While it is beyond the scope of this current study to examine if different techniques of replacing missing values (multiple imputation, regression imputation, etc.) would influence our results, future research may want to examine this issue. Nonetheless, as reported earlier (see Footnote 2), the results using list-wise deletion were highly comparable to those reported in Tables 2 through 3B and therefore should be fairly robust.

## 7 | CONCLUSION

In sum, this study contributes to the HRM literature by demonstrating the various mediating mechanisms through which HPWS use augments individual job performance behaviors. Furthermore, the findings also highlight the moderating role of unit-level support climate in the individual affective commitment–individual job performance behaviors relationship. These results together underline the value of assessing unit-level HPWS use and provide insights into the mechanisms through which unit HPWS use influences the job performance behaviors (human resource outcomes) of individual unit members. We hope that this current study will stimulate further multilevel empirical and conceptual HRM research to explicate the influence of HPWS use on the human resource outcomes of individual members, organizational units, and organizations as well as illustrating the associated mediating mechanisms.

## ACKNOWLEDGMENTS

We thank Micki Kacmar and Michael Sturman for their helpful comments on an earlier version of this article.

## NOTES

<sup>1</sup>At the individual level of analysis, the HPWS scale had two missing cases; unit-level support climate did not have any missing cases; and there were 11 missing cases for affective commitment, in-role behaviors, OCBI, and OCBO. This would have reduced the overall sample size to 685 food and beverage (F&B) managers nested in 109 units.

<sup>2</sup>Specifically, consistent with the results using grand mean replacement presented in Table 2 and Tables 3A, 3B, and 3C, the results

using listwise deletion (available from the first author upon request) indicate (a) that unit HPWS use was not significantly related to individual affective commitment and that unit support climate was positively related to individual affective commitment ( $B = .53, p < .001$ ); (b) that unit HPWS use was not significantly related to individual in-role behavior, OCBI, and OCBO and that unit support climate was positively related to individual in-role behavior ( $B = .39, p < .001$ ), OCBI ( $B = .32, p < .001$ ), and OCBO ( $B = .32, p < .001$ ) and that when individual affective commitment was included in the models, the coefficients associated with unit support climate became smaller for individual in-role behavior ( $B = .25, p < .001$ ), OCBI ( $B = .18, p < .05$ ), and OCBO ( $B = .24, p < .01$ ); and (c) that the unit support climate-individual affective commitment interaction term was positively related to individual in-role behavior ( $\beta = .19, p < .01$ ), OCBI ( $\beta = .17, p < .05$ ), and OCBO ( $\beta = .20, p < .05$ ).

<sup>3</sup>We ran this CFA with listwise deletion, which reduced the sample size to 682.

## ORCID

Riki Takeuchi  <http://orcid.org/0000-0001-8386-6640>

Sean A. Way  <http://orcid.org/0000-0003-1944-5256>

## REFERENCES

- Aguinis, H. (2009). *Performance management* (2nd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Allen, D. G., Shore, L. M., & Griffeth, R. W. (2003). The role of perceived organizational support and supportive human resource practices in the turnover process. *Journal of Management*, 29, 99–118.
- Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational and Organizational Psychology*, 63, 1–18.
- Armstrong, C., Flood, P. C., Guthrie, J. P., Liu, W., MacCurtain, S., & Mkwawa, T. (2010). The impact of diversity and equality management on firm performance: Beyond high performance work systems. *Human Resource Management*, 49, 977–998.
- Aryee, S., Walumbwa, F. O., Seidu, E. Y., & Otake, L. E. (2012). Impact of high-performance work systems on individual and branch-level performance: Test of a multilevel model of intermediate linkages. *Journal of Applied Psychology*, 97, 287–300.
- Bagozzi, R. P., & Yi, Y. (1990). Assessing method variance in multitrait-multimethod matrices: The case of self-reported affect and perceptions at work. *Journal of Applied Psychology*, 75, 547–560.
- Becker, B. E., & Huselid, M. A. (1998). High performance work systems and firm performance: A synthesis of research and managerial implications. In G. R. Ferris (Ed.), *Research in personnel and human resources* (Vol. 16, pp. 53–101). Stamford, CT: JAI Press.
- Bliese, P. D. (2002). Using multilevel random coefficient modeling in organizational research. In F. Drasgow & N. Schmitt (Eds.), *Advances in measurement and data analysis* (pp. 401–445). San Francisco, CA: Jossey-Bass.
- Bowen, D. E., & Ostroff, C. (2004). Understanding HRM-firm performance linkages: The role of the “strength” of the HRM system. *Academy of Management Review*, 29, 203–221.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage.
- Chadwick, C., Way, S. A., Kerr, G., & Thacker, J. W. (2013). Boundary conditions of the high-investment human resource systems-small-firm labor productivity relationship. *Personnel Psychology*, 66, 311–343.
- Chuang, C. H., Jackson, S. E., & Jiang, Y. (2016). Can knowledge-intensive teamwork be managed? Examining the roles of HRM systems, leadership, and tacit knowledge. *Journal of Management*, 42, 524–554.
- Chuang, C. H., & Liao, H. (2010). Strategic human resource management in service context: Taking care of business by taking care of employees and customers. *Personnel Psychology*, 63, 153–196.
- Collins, C. J., & Smith, K. G. (2006). Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal*, 49, 544–560.
- Eden, D. (2002). From the editors: Replication, meta-analysis, scientific progress, and AMJ's publication policy. *Academy of Management Journal*, 45, 841–846.
- Ehrhart, M. G. (2004). Leadership and procedural justice climate as antecedents of unit-level organizational citizenship behavior. *Personnel Psychology*, 57, 61–94.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71, 500–507.
- Fu, W. H., & Deshpande, S. P. (2014). The impact of caring climate, job satisfaction, and organizational commitment on job performance of employees in a China's insurance company. *Journal of Business Ethics*, 124, 339–349.
- Gardner, T. M., Wright, P. M., & Moynihan, L. M. (2011). The impact of motivation, empowerment, and skill-enhancing practices on aggregate voluntary turnover: The mediating effect of collective affective commitment. *Personnel Psychology*, 64, 315–350.
- Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25, 161–178.
- Harrison, D. A., Newman, D. A., & Roth, P. L. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. *Academy of Management Journal*, 49, 305–325.
- Hofmann, D. A., Morgeson, F. P., & Gerrass, S. J. (2003). Climate as a moderator of the relationship between leader-member exchange and content specific citizenship: Safety climate as an exemplar. *Journal of Applied Psychology*, 88, 170–178.
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38, 635–672.
- James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology*, 69, 85–98.
- Jiang, K., Takeuchi, R., & Lepak, D. P. (2013). Where do we go from here? New perspectives on the black box in strategic human resource management research. *Journal of Management Studies*, 50, 1448–1480.
- Kehoe, R. R., & Wright, P. M. (2013). The impact of high-performance human resource practices on employees' attitudes and behaviors. *Journal of Management*, 39, 366–391.
- Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. *Academy of Management Review*, 19, 195–229.
- Kozlowski, S. W., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology* (Vol. 12: Industrial and organizational psychology, pp. 333–375). London, England: Wiley.
- Kozlowski, S. W., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 3–90). San Francisco, CA: Jossey-Bass.
- Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management*, 43, 1854–1884.
- Lepak, D. P., & Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review*, 24, 31–48.
- Lepak, D. P., & Snell, S. A. (2002). Examining the human resource architecture: The relationships among human capital, employment, and human resource configurations. *Journal of Management*, 28, 517–543.
- Liao, H., & Chuang, A. (2004). A multilevel investigation of factors influencing employee service performance and customer outcomes. *Academy of Management Journal*, 47, 41–58.
- Liao, H., Toya, K., Lepak, D. P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology*, 94, 371–391.
- Luthans, F., Norman, S. M., Avolio, B. J., & Avey, J. B. (2008). The mediating role of psychological capital in the supportive organizational



- climate-employee performance relationship. *Journal of Organizational Behavior*, 29, 219–238.
- Messersmith, J. G., Patel, P. C., Lepak, D. P., & Gould-Williams, J. S. (2011). Unlocking the black box: Exploring the link between high-performance work systems and performance. *Journal of Applied Psychology*, 96, 1105–1118.
- Muse, L., Harris, S. G., Giles, W. F., & Field, H. S. (2008). Work-life benefits and positive organizational behavior: Is there a connection? *Journal of Organizational Behavior*, 29, 171–192.
- Muthén, L. K., & Muthén, B. O. (1998–2013). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Nishii, L. H., Lepak, D. P., & Schneider, B. (2008). Employee attributions of the “why” of HR practices: Their effects on employee attitudes and behaviors, and customer satisfaction. *Personnel Psychology*, 61, 503–545.
- Ostroff, C., & Bowen, D. E. (2000). Moving HR to a higher level: HR practices and organizational effectiveness. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 211–266). San Francisco, CA: Jossey-Bass.
- Ostroff, C., & Bowen, D. E. (2016). Reflections on the 2014 decade award: Is there strength in the construct of HR system strength? *Academy of Management Review*, 41, 196–214.
- Podsakoff, P. M., Ahearne, M., & MacKenzie, S. B. (1997). Organizational citizenship behavior and the quantity and quality of work group performance. *Journal of Applied Psychology*, 82, 262–270.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 65, 539–569.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531–544.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891.
- Rabl, T., Jayasinghe, M., Gerhart, B., & Kühmann, T. M. (2014). A meta-analysis of country differences in the high-performance work system-business performance relationship: The roles of national culture and managerial discretion. *Journal of Applied Psychology*, 99, 1011–1041.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87, 698–714.
- Riggle, R. J., Edmondson, D. R., & Hansen, J. D. (2009). A meta-analysis of the relationship between perceived organizational support and job outcomes: 20 years of research. *Journal of Business Research*, 62, 1027–1030.
- Rosenthal, R. (1991). Replication in behavioral research. In J. W. Neuliep (Ed.), *Replication research in the social sciences* (pp. 1–39). Newbury Park, CA: Sage.
- Roth, P. L., Switzer F. S. III, & Switzer, D. M. (1999). Missing data in multiple item scales: A Monte Carlo analysis of missing data techniques. *Organizational Research Methods*, 2, 211–232.
- Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual Review of Psychology*, 64, 361–388.
- Schneider, B., González-Romá, V., Ostroff, C., & West, M. A. (2017). Organizational climate and culture: Reflections on the history of the constructs in JAP. *Journal of Applied Psychology*, 102, 468–482.
- Settoon, R. P., Bennett, N., & Liden, R. C. (1996). Social exchange in organizations: Perceived organizational support, leader-member exchange, and employee reciprocity. *Journal of Applied Psychology*, 81, 219–227.
- Shore, L. M., & Shore, T. H. (1995). Perceived organizational support and organizational justice. In R. S. Cropanzano & K. M. Kacmar (Eds.), *Organizational politics, justice, and support: Managing the social climate of the workplace* (pp. 149–164). Westport, CT: Quorum.
- Snap, E., & Redman, T. (2010). HRM practices, organizational citizenship behaviour, and performance: A multi-level analysis. *Journal of Management Studies*, 47, 1219–1247.
- Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. London, England: Sage.
- Sun, L. Y., Aryee, S., & Law, K. S. (2007). High-performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. *Academy of Management Journal*, 50, 558–577.
- Takeuchi, R., Chen, G., & Lepak, D. P. (2009). Through the looking glass of a social system: Cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology*, 62, 1–29.
- Tsang, E. W., & Kwan, K. M. (1999). Replication and theory development in organizational science: A critical realist perspective. *Academy of Management Review*, 24, 759–780.
- Vermeeren, B., Steijn, B., Tummers, L., Lankhaar, M., Poerstamper, R.-J., & Van Beek, S. (2014). HRM and its effect on employee, organizational and financial outcomes in health care organizations. *Human Resources for Health*, 12, 1–9.
- Walumbwa, F. O., Hartnell, C. A., & Oke, A. (2010). Servant leadership, procedural justice climate, service climate, employee attitudes, and organizational citizenship behavior: A cross-level investigation. *Journal of Applied Psychology*, 95, 517–529.
- Way, S. A. (2002). High performance work systems and intermediate indicators of firm performance within the US small business sector. *Journal of Management*, 28, 765–785.
- Way, S. A., & Johnson, D. E. (2005). Theorizing about the impact of strategic human resource management. *Human Resource Management Review*, 15, 1–19.
- Way, S. A., Lepak, D. P., Fay, C. H., & Thacker, J. W. (2010). Contingent workers' impact on standard employee withdrawal behaviors: Does what you use them for matter? *Human Resource Management*, 49, 109–138.
- Wayne, S. J., Shore, L. M., & Liden, R. C. (1997). Perceived organizational support and leader-member exchange: A social exchange perspective. *Academy of Management Journal*, 40, 82–111.
- Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management*, 17, 601–617.
- Wright, P., & Nishii, L. (2013). Strategic HRM and organizational behavior: Integrating multiple levels of analysis. In D. Guest, J. Paaue, & P. M. Wright (Eds.), *Human resource management and performance: Building the evidence base* (pp. 97–110). Oxford, England: Blackwell.
- Wright, P. M., & Boswell, W. R. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. *Journal of Management*, 28, 247–276.
- Wright, P. M., Snell, S. A., & Dyer, L. (2005). New models of strategic HRM in a global context. *International Journal of Human Resource Management*, 16, 875–881.
- Zacharatos, A., Barling, J., & Iverson, R. D. (2005). High-performance work systems and occupational safety. *Journal of Applied Psychology*, 90, 77–93.
- Zhong, L., Wayne, S. J., & Liden, R. C. (2016). Job engagement, perceived organizational support, high-performance human resource practices, and cultural value orientations: A cross-level investigation. *Journal of Organizational Behavior*, 37, 823–844.

## AUTHOR'S BIOGRAPHIES

**RIKI TAKEUCHI** is a Jindal School of Management Advisory Council Distinguished Professor in Naveen Jindal School of Management at University of Texas at Dallas and a full professor at Hong Kong University of Science & Technology. He received his PhD in Human Resources Management (HRM) from the University of Maryland, College Park. His current research focuses on strategic HRM/human capital, international/cross-cultural adjustment, and social exchange relationships at work. He has published in journals such as *Academy of Management Journal*, *Journal of Applied Psychology*, *Journal of Management*, *Organizational Behavior and Human Decision Processes*, *Organization Science*, and *Strategic Management Journal*, among others.

**SEAN A. WAY** is an Associate Professor of HRM at Monash University. He received his PhD in Industrial Relations and



Human Resources from Rutgers University. His current research focuses on strategic HRM topics such as the effects of HRM systems, HR flexibility, and support and internal marketing climates on the performance and effectiveness of organizations and their employees. He has published in journals such as *Journal of Management*, *Human Resource Management*, *Journal of Business Ethics*, *Personnel Psychology*, *International Journal of Hospitality Management*, *Human Resource Management Review*, *Cornell Hospitality Quarterly*, and *Journal of Small Business and Entrepreneurship*.

**AMY WEI TIAN** is a senior lecturer at Curtin University. She received her PhD in HRM from Cardiff University in the United Kingdom. Her research interests, spanning HRM and organizational behavior include the impact of high-performance HRM systems on individual-, team-, and organizational-level outcomes; knowledge management in the workplace; leadership effectiveness; and the impact of multiculturalism at work. She has published in journals such as *Journal of Organizational Behavior*, *Human Resource Management*, and *International Journal of Human Resource Management*, among others. She currently serves on the editorial boards of the *Journal of Business Review* and *International Journal of Human Resource Management*.

**How to cite this article:** Takeuchi R, Way SA, Tian AW. Cross-level effects of support climate: Main and moderating roles. *Hum Resour Manage*. 2018;57:1205–1218. <https://doi.org/10.1002/hrm.21891>

## APPENDIX

### Unit-level HPWS use.

We measured unit-level HPWS use with nine items that were selected based on discussions with the hotel chain's chief human resources director as well as prior strategic HRM research (e.g., Huselid, 1995; Takeuchi et al., 2009; Way, 2002; Way et al., 2010). The HR director from each hotel property was asked to provide separate ratings for his/her hotel property's L1, L2, and L3 F&B manager units. Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). For example, the following items were used to

assess the extent to which each hotel property used an HPWS to manage its L2 F&B manager unit:

1. When hiring L2 F&B managers, your property's selection process typically includes extensive testing (e.g., skills tests, aptitude tests, etc.).
2. Your property prepares its L2 F&B managers to perform well.
3. Your property's L2 F&B managers are properly trained to perform their service roles.
4. The skills and knowledge development of L2 F&B managers is an ongoing process at your property.
5. L2 F&B managers' performance appraisals have a great deal of influence on your property's assessment of their training needs.
6. Your property's formal work practices (e.g., involvement in town-hall meetings, temporary work groups, cross-functional work groups, etc.) enable your L2 F&B managers to act on the decisions they have made regarding the use of property assets.
7. Your property uses the data it gathers from L2 F&B managers to improve their jobs.
8. L2 F&B managers' performance appraisals have a great deal of influence on your property's determination of their wages/salaries, bonuses, and/or incentives.
9. Your property's typical L2 F&B manager is eligible for and/or has received group-based performance pay (profit sharing, etc.).

### Unit-level support climate.

We measured unit-level support climate with five items adapted from Eisenberger et al.'s (1986) Survey of Perceived Organizational Support to assess unit-level support climate. The instructions and sample items for the members of a hotel property's L2 F&B manager unit were as follows: Indicate whether on average the members of your hotel property's L2 F&B manager unit would *strongly disagree*, *disagree*, *neither disagree nor agree*, *agree*, or *strongly agree* with the following statements:

1. This hotel property really cares about the well-being of its L2 F&B managers.
2. This hotel property cares about the general satisfaction of its L2 F&B managers at work.
3. This hotel property cares about the opinions of its L2 F&B managers.
4. This hotel property is willing to extend itself in order to help its L2 F&B managers perform their jobs to the best of their ability.
5. Help is available from the hotel property when its L2 F&B managers have a problem.