

Cross-Level Effects of High-Performance Work Systems (HPWS) and Employee Well-being: The Mediating Effect of Organisational Justice

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Abstract

In this cross-level study, we examine the mediating influence of employee perceptions of the fairness of human resource practices associated with the HPWS model. Data was collected from 187 employees in three companies in Ireland. Using cross-level analyses, employee perceptions of distributive, procedural and interactional justice were found to mediate the relationship between HPWS and job satisfaction, affective commitment and work pressure. The findings also point to a ‘management by stress’ HPWS relationship, suggesting diminished employee well-being, less satisfaction and lower commitment. The research adds to our understanding of the mechanisms through which HR practices influence employee outcomes and contributes to debates that move beyond the polemic high versus low employee well-being debates of HRM. The discussion reviews the theoretical and practical implications of these results.

Keywords

High-performance work systems, employee well-being, organisational justice, job satisfaction, affective commitment, work intensification

Introduction

Over the last twenty years, a burgeoning body of literature has emerged on the ways in which human resource (HR) practices impact positively on organisational performance, or a firm's 'bottom line' (Huselid, 1995). It is often assumed, somewhat questionably, that bundles of HR practices will be automatically performance-enhancing for both organisations and employees (Boxall and Macky, 2014). According to Guest (2011), the rush to demonstrate that HRM improves performance has been at the cost of conceptual understanding and theoretical explanation. The primary criticism leveled at high-performance work systems (HPWS) concerns its lack of theoretical development and the need for a better articulation of the 'black box' phenomenon - in other words, *how* and *why* a particular set of HR practices may improve (or not) work outcomes and how it connects with related perceptions of employee fairness and justice (Boxall, 2013; Cullinane *et al.*, 2014).

While it is known that improved organisational performance is linked to employees' positive attitudes and behaviours, research that integrates employee data is surprisingly limited (Boselie *et al.*, 2005). One review notes that few studies have properly tested the association between HRM and employee outcomes (Boon *et al.*, 2011). Guest (2011) argues that whilst researchers acknowledge that a focus on multiple stakeholders, including employees, is necessary to advance understanding, more research is needed to examine HR practices and underlying work processes. An employee perspective is particularly important given that HR practices are not necessarily implemented as intended (Nishii *et al.*, 2008).

This article contributes to existing debates and knowledge in a number of ways. First, by researching the neglected role of employees as the primary recipients of HPWS practices, we contribute to debates by exploring employee well-being from two perspectives – signalling theory and the Ability-Motivation-Opportunity (AMO) framework – to examine how HR practices affect employee well-being. Second, our study contributes to understanding how and

why HR practices may impact employee outcomes by integrating organisational justice as a potential mediator to explain the ‘black box’. Using cross-level analysis, we integrate the macro and micro-levels within HRM to better understand the complex, multilevel pathways through which HRM can influence employee outcomes. Specifically, we illustrate how perceptions of fairness regarding HR practice implementation influence how employees react to intended HR practices.

In the following sections, we first review relevant literature and studies and present our formal hypotheses. We then present a description of our sample and research method and, finally, we report our findings and consider the implications and limitations of our study.

The research framework

HPWS and employee outcomes

There is no universally agreed definition of the term HPWS due to broad differences regarding the theoretical, empirical and practical approaches adopted (Boxall and Macky, 2009, 2014). Despite this however, HPWS can broadly be understood as including a range of innovative HR practices and work design processes which, when used in certain combinations or bundles, are mutually reinforcing and produce synergistic benefits. These practices tend to gravitate around five core areas: (1) sophisticated selection and training; (2) behaviour-based appraisal; (3) contingent pay; (4) job security; and (5) employee involvement (Cook, 2001). In conceptualising HPWS, we draw on the process view of HR practices proposed by Ostroff and Bowen (2000). This suggests that HR systems comprise a number of different levels, including HR policies, practices and processes, which can be linked to outcomes at both employee and organisational levels (Boxall *et al.*, 2011; Monks *et al.*, 2013; Cafferkey and Dundon, 2015).

Research on the links between HR practices and firm-level performance is often managerially biased, with insufficient attention devoted to those at the ‘receiving end’ of HR

policy (Boxall and Macky, 2014). A further ‘problem’ is its unitarist assumptions, which presuppose that positive outcomes for organisations will be equally applicable to workers (Thompson, 2011). Importantly, employees represent more than abstract ‘objects’ against which researchers prod and measure certain responses to a given set of assumptions. They are active agents and ‘subjects’ who can and do shape the world around them (Grant and Shields, 2002; Dundon and Ryan, 2010). It is, therefore, necessary to explore beyond firm-level reported data to tease out the role of employees in shaping HRM. Evidence suggests, for example, that higher firm performance may be due to work intensification (Ramsay *et al.*, 2000) rather than greater discretion or higher job satisfaction (Wood and de Menezes, 2011). Research on the potential effect of HPWS on employee well-being has been rare (Harley *et al.*, 2007; Boxall and Macky, 2014). We conceptualise employee well-being from two of Van De Voorde *et al.*’s (2012) dimensions, namely happiness and health-related well-being. Happiness at work encompasses both job satisfaction and commitment to the organisation. Health-related well-being dimensions relate to stressors, namely work pressure.

We draw on a number of frameworks to examine *how* and *why* HR practices may influence work outcomes. One such framework is signalling theory, which proposes that HR practices send signals to employees about expected workforce behaviours and managerial intentions (Den Hartog *et al.*, 2013). Kooij *et al.* (2010: 1113), for example, suggest that employees view HR practices as ‘a personalized commitment to them ... and as recognition of their contribution’. A second framework, AMO, proposes that HR practices are complex and that performance is a function of employee Ability, Motivation and Opportunity (Purcell *et al.* 2009). For example, work practices such as employee voice, teamwork and job autonomy can help employees to identify and exploit opportunities (Ehrnrooth and Björkman, 2012). Similarly, opportunities for skill development and employee participation have been shown to impact job satisfaction (Boxall and Macky, 2009). Wood and de Menezes (2011) report that

consultative elements contribute to job satisfaction and well-being by enhancing the individuals' sense of value, worth, and security. On the basis of the above, we argue that HR practices have a signalling effect on employees which may impact on their well-being. Thus, we hypothesise:

Hypothesis 1: Firm-level HPWS practices will be positively associated with individual-level employee job satisfaction (H1a) and affective commitment (H1b).

The positive outcomes of HRM for employees may not, however, be mutually beneficial and, as Godard (2010) notes, they are at best uncertain. Ramsay *et al.* (2000) also counter the optimistic rhetoric of research by suggesting that performance gains are through increased control and work intensification rather than increased job satisfaction *per se*. A conflicting outcomes approach posits that a win-lose relationship can occur where the application of HPWS can lead to negative employee outcomes: longer working hours, stress, increased job demands (Cafferkey and Dundon, 2015). Danford *et al.* (2008:163) found support for the work intensification thesis and suggest that HPWS was 'driving labour harder through a combination of compulsory and discretionary means'. Arguably, a focus on motivation and performance-enhancing work design may translate into greater work intensification with attendant negative implications for worker well-being (Boxall and Macky, 2014). Taking account of the potentially 'dark side' of HPWS design, we hypothesise the following:

Hypothesis 1c: Firm-level HPWS practices will be positively associated with individual-level employee work pressure.

The mediating effect of organisational justice

While evidence suggests that employee outcomes are influenced by the adoption of HR practices, these relationships are not necessarily direct or unconditional (Paré and Tremblay,

2007). There is little understanding of ‘why’ employee perceptions of HR practices are linked to employee outcomes (Farndale *et al.*, 2011). It is suggested that the role of organisational justice represents a potentially important link that has been largely neglected in extant research (Fuchs and Edwards, 2012). Organisational justice refers to ‘the extent to which people perceive organizational events as being fair’ (Colquitt and Greenberg, 2003:166). Greenberg (1990:399) argues that perceptions of organisational justice are ‘a basic requirement for the effective functioning of organizations and the personal satisfaction of the individuals they employ’ which, in turn, shape employee attitudes. While previous studies have examined the relationship between justice and individual HR practices such as pay (McFarlin and Sweeney, 1992) or performance appraisals (Cheng, 2014), few have examined the fairness of the HR ‘system’ as a whole (Farndale *et al.*, 2011). Because research has found relationships between HPWS and organisational justice (Wu and Chaturvedi, 2009), the effects on employee outcomes may be mediated through perceptions of organisational justice. Importantly, justice perceptions of HPWS may highlight differences in relation to policy ‘intention’ (organisational-level) versus ‘actual’ (employee-level) practice implementation (Purcell *et al.*, 2009).

Justice researchers typically distinguish between three types of justice: the perceived fairness of outcomes (distributive justice); the fairness of the processes whereby outcomes are allocated (procedural justice); and the interpersonal treatment received during the implementation of the procedure together with the perceived adequacy and timeliness of information given (interactional justice) (Colquitt *et al.*, 2001).

Employees make distributive justice judgments when receiving rewards (often financial) in exchange for the work they have done, which in turn influence their attitudes towards the organisation (Ambrose and Arnaud, 2005). When managers are seen to satisfy employees’ need for organisational justice, this is reciprocated where employees respond positively to the organisation via positive attitudes (Frenkel *et al.*, 2012). HPWS integrates

many practices, which are performance-based and which seek to link the exchange-effort relationship to positive employee outcomes. From an economic exchange perspective, when employees perceive the exchange is fair, they will be more satisfied and committed to the organisation (Ambrose and Schminke, 2003). Research has shown that perceptions of equity relate to some key HPWS outcomes including pay satisfaction and commitment (Tekleab *et al.*, 2005) and increased workload (Brockner *et al.*, 1994). In contrast, perceived inequity can result in disengagement and increased turnover (Kenny and McIntyre, 2005). Therefore:

Hypothesis 2: Distributive justice will mediate the relationship between firm-level HPWS practices and job satisfaction (H2a), affective commitment (H2b) and work pressure (H2c)

Procedural justice refers to the perceived fairness of decision-making procedures (Thibaut and Walker, 1975). It signifies a transparent decision-making process that incorporates employee voice via employees' suggestions and opinions (Wu and Chaturvedi, 2009). Employees evaluate the fairness of procedures by their level of consistency, bias suppression, accuracy, correctability, ethicality, and the degree to which they allow voice and input (Leventhal, 1980). HPWS are designed to increase employee influence through greater participation in decision-making, teamwork, and information-sharing. As a result, their procedural justice perceptions are enhanced, leading to more positive work attitudes. Control theories of procedural justice suggest that procedures that allow input by those affected by a decision are often seen as a more just and equitable outcome by those affected (Thibaut and Walker, 1975). Furthermore, the group-value model suggests that procedural justice is an important element in influencing employees' work attitudes because procedural justice signifies they have a positive, respected position within the group (Blader and Tyler, 2003). Colvin (2006) found that HRM was positively related to perceptions of procedural justice. HPWS environments in particular are

said to involve greater autonomy, involvement and increased participation, which result in employees reciprocating with higher job satisfaction and affective commitment as they promote positive perceptions of procedural fairness (Masterson *et al.*, 2000). Procedural justice has also been shown to be positively associated with a number of attitudes and behaviours, such as job satisfaction, employee commitment, work effort and work pressure as well as a more positive organisational climate (McFarlin and Sweeney, 1992; Cafferkey and Dundon, 2015). Findings from cross-sectional and longitudinal studies also suggest that procedural justice plays a role in work pressure and psychosocial stress at work (Judge and Colquitt, 2004) as it provides employees a sense of control over uncertain circumstances (Greenberg, 2004). Consistent with this argument, we hypothesise:

Hypothesis 3: Procedural justice will mediate the relationship between firm-level HPWS practices and job satisfaction (H3a), affective commitment (H3b) and work pressure (H3c).

The final element of organisational justice concerns the quality of the interpersonal treatment that employees experience from decision-makers. It has been acknowledged that line managers can impact how HR practices are implemented (Purcell and Hutchinson, 2007; Townsend and Loudoun, 2015). It has also been shown that different line management roles and types can affect employee perceptions of HR fairness and justice (Kilroy and Dundon, 2015). Interactional justice is defined as the interpersonal treatment received at the hands of decision-makers with a focus on social sensitivity and informational justification. For example, it can include clarifying what formula was used in making differential decisions about individual pay increases (Wu and Chaturvedi, 2009). The antecedents of interactional justice perceptions are strongly embedded in HPWS contexts: performance appraisals (Erdogan *et al.*, 2001) and grievance handling (Nabatchi *et al.*, 2007), among others. Communication during the implementation of HPWS can signal that management is sensitive to employees' desires

(interpersonal justice), whilst also providing an opportunity to explicitly convey the reasons behind organisational decisions (Kernan and Hanges, 2002). For example, interactional justice has been shown to influence employee outcomes such as job satisfaction (Masterson *et al.*, 2000), employee commitment and motivation (Cropanzano *et al.*, 2007) and stress (Bies, 2001). Unfair interpersonal treatment such as inadequate leadership or unfair treatment from a supervisor are said to create the same sense of uncertainty and lack of control as procedural injustice (Judge and Colquitt, 2004). Consistent with previous hypotheses, it is hypothesised that:

Hypothesis 4: Interactional justice will mediate the relationship between firm-level HPWS practices and job satisfaction (H4a), affective commitment (H4b), work pressure (H4c).

Figure 1 depicts our cross-level conceptual framework.

PUT FIGURE 1 HERE.

Methodology

A survey was administered across three organisations in the service sector to collect data at two levels: information regarding HR policy (intended HRM) from HR managers and a survey of employee HR justice perceptions and attitudes. Each firm was selected to reflect variation in terms of corporate performance, firm size, unionisation and non-unionism, variable HPWS practices used, and occupational mix. The three case organisations were drawn from the top 2000 performing companies in Ireland, as reported by the *Irish Times* business database. *FoodCo* is one of Ireland's largest catering suppliers with 4000 employees across multiple sites. *InsureCo* is a mutual insurance company that employs 85 in their Irish office. *ProfCo* is an international professional service consultancy firm, which employs 1700 in Ireland across

seven sites. The sample was randomly selected from different work units and job levels in each case. In total, 795 questionnaires were distributed and 209 returned. However, 24 responses were eliminated due to excessive missing data and therefore, the final sample size for testing was 187¹. Table 1 provides a breakdown of response rates by organisation. Over half of the respondents were female (59.9 percent); 64 percent had a higher level of education beyond secondary school; and 40 percent were aged between 26 and 35 years. Mean tenure for the sample was 5.24 years with the maximum length of employment being 34 years. The majority of respondents were full-time employees.

PUT TABLE 1 HERE

Measures

Unless otherwise noted, each measure required a response on a 5-point Likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree).

High-performance work system: The HPWS measure was derived from HR manager responses regarding the organisation's use of HR practices. The HR practices were validated measures drawn from previous research (Huselid and Rau, 1997; Guthrie, 2001). A total of 28 practices were included such as: *employee resourcing, training and development, performance management and remuneration, employee involvement and communications (see Appendix 1)*. Because practices tend to vary across employee groups, questions were asked separately for two employee categories: 'Group A' consisted of production, maintenance, service and clerical employees; and 'Group B' included executives, managers, supervisors and professional/technical employees. We followed procedures similar to those outlined in Guthrie

¹ In *FoodCo* hard paper copies of the survey were administered as employees lacked email access. An online version of the employee survey was emailed to a sample of employees from *Insureco* and *Profco*

(2001) to calculate the HPWS index. Using the number of employees in each employee group, a weighted average for each HR practice was computed. As noted by Guthrie (2001: 183), this means that ‘organizations may range from those making no use of high-involvement practices to those using *all* of the practices for *all* of the employees’. The three organisations varied in the extent to which they invested in HPWS. *FoodCo* was categorised as having low HPWS with an index score of 29.75 out of a possible 100. *InsureCo* had moderate investment with a score of 59.04. *ProfCo* invested the most in HPWS across all employee groups, with an index score of 77.46.

Organisational justice: Three justice scales were used to measure (1) distributive justice, (2) procedural justice, and (3) interactional justice. *Distributive justice* was measured using a nine item scale measuring distributive fairness of decisions across the following domains of HPWS practice adapted from Colquitt (2001): ‘*employee resourcing*’, ‘*training and development*’, ‘*performance management*’, ‘*pay and reward*’, ‘*communication and employee involvement*’. These measures focused on an assessment of the degree to which rewards received by employees are perceived to be fair when related to performance inputs. For example, ‘I am fairly paid for the amount of work I do’. These individual items were factor analysed and loaded onto two factors. One factor (seven items) measured employee perceptions of distributive fairness for a bundle of HR practices (*resourcing, performance management, succession planning, training and development and employee involvement*) which was titled ‘relational-distributive justice’. This factor explained 46.90 percent of variance and had a Cronbach’s alpha of 0.74. The remaining items (relating to *pay and reward*) loaded onto a second factor relating to distributive fairness of compensation titled ‘transactional-distributive justice’. Cronbach’s alpha for this scale was 0.83.

Procedural justice was measured using nine items adapted from Sweeney and McFarlin (1993) and Tyler and Lind (1992). This scale used both direct and indirect justice measures. An

example of a direct justice item was: 'In my opinion, procedures used to evaluate my performance are fair'. The indirect procedural justice items examined voice perceptions such as: 'My supervisor gives me the opportunity to express my views and feelings during my performance evaluation'. The items were factor analysed and were found to load onto two factors. One factor containing seven items measured the procedural fairness of the following domains of HPWS practice: '*resourcing*', '*performance management*', '*succession planning*', '*training and development*', and '*communication and employee involvement*'. This factor explained 53.58 percent of variance and was labelled 'relational-procedural justice' and had an alpha coefficient of 0.87. The remaining two items loaded onto a second factor relating to procedural fairness of *pay and reward*. This scale was labelled 'transactional-procedural justice' and had an alpha coefficient of 0.80.

Interactional justice was measured using Bies and Moag's (1986) measurement rules by considering whether line managers treat employees with dignity and respect (interpersonal justice) and explained decisions clearly (informational justice). The ten items were adapted from Colquitt (2001). Interpersonal items included: 'My supervisor treated with me respect and dignity during pay determination'. Informational items included: 'My supervisor lets me know my appraisal outcomes and provides justification'. This scale had a one-factor solution and a Cronbach's alpha of 0.92.

Respondents were asked to rate their perceptions of distributive, procedural and interactional justice across each domain of HPWS practice - '*resourcing*', '*performance management*', '*succession planning*', '*training and development*', and '*communication and employee involvement*'. These individual HR perceptions were then combined to give a justice evaluation of the HPWS as a whole for the three justice constructs.

Job satisfaction was measured by a three-item scale adopted from the Index of Organization Reactions (Dunham and Smith, 1979). This scale included items such as ‘All in all, I am satisfied with my job’. Cronbach’s alpha for this three-item scale was .93.

Organisational affective commitment was assessed with a five- item scale by Meyer and Allen (1997). Examples of items asked include: ‘I feel a strong sense of belonging to my organisation’. This yielded a coefficient alpha of .89.

Work pressure was measured using a six-item scale adapted from Burchell (2002) and Danford *et al.* (2005). Items included: ‘I feel under pressure from my managers and supervisors in my job’. Three items from Danford *et al.* (2005) were included to capture employee experiences of workplace stress. For example ‘I never seem to have enough time to get my job done’. The scale yielded a Cronbach’s alpha score of .87.

Control variables: These included gender, age, education, organisational tenure, and type of employment contract as previous research has shown they affect employee job attitudes (Boselie *et al.*, 2005).

Analysis

The model to be tested is multilevel in nature, since we are investigating the effect of an organisational-level construct (HPWS) on three individual-level outcome variables via three individual-level mechanisms (distributive, procedural and interactional justice). This type of mediation is referred to as cross-level mediation. The data was analysed in several phases. First, differences between firm-level HPWS for the dependent variables were examined, using One-Way ANOVA in order to distinguish between the employees within the three organisations. Firm-level HPWS did have a significant effect on job satisfaction ($F(2, 177) = 4.09, p < .05$) and work pressure ($F(2, 182) = 2.45, p < .05$). No significant differences were found for affective commitment across the three organisations.

Cross-level effect analysis was then used to help overcome the problem of small sample size at the higher level. A cross-level direct effect model suggests that a predictor variable at one level of analysis influences an outcome variable at a different level of analysis. Following Mossholder and Bedeian (1983), regression analysis procedures were then used to examine group effects. To begin with, the group-level variable in this study is represented by the organisation-level mean for HPWS for the three organisations. A higher order construct for HPWS is consistent with the work of Takeuchi *et al.* (2009) in that it examines intended HRM policy through measuring HRM at the firm-level. These mean scores were assigned to each individual respondent. For example, all employees in *FoodCo* were assigned an organisational mean for HPWS of 29.75 (as reported earlier). Fixed effect methodologies were then deployed to explore relationships between variables that can characterise a complex system. Fixed effects were examined by creating dummy variables. As there are three HPWS index scores for each of the three companies (high, medium and low), two dummy variables were created using rank order capturing highest versus lowest. A score was assigned to allow for fixed effects. For 'HPWS-High', employees in *ProfCo* were coded as 1 indicating high HPWS score at firm-level, with employees in *FoodCo* and *InsureCo* coded 0. For 'HPWS-Low', employees in *FoodCo* were coded as 1 (indicating low HPWS score at firm-level), with employees in *InsureCo* and *ProfCo* being coded 0.

To establish mediation, cross-level analysis steps were used as outlined above in conjunction with recommended steps to test for mediation by Baron and Kenny (1986). Further, Matthieu and Taylor (2007) refer to *cross-level mediation, lower-level mediator*, where X is an upper-level variable that exerts an influence on a lower-level criterion as transmitted through a lower-level mediator (i.e., $X \rightarrow m \rightarrow y$). While the Baron and Kenny (1986) steps for mediation are well-established, the procedure has been questioned (Hayes, 2009). To further test for

mediation, we used a Sobel test together with nonparametric bootstrapping analyses based on 5000 samples (Preacher *et al.*, 2007).

Findings

Descriptive statistics and bivariate correlations for the variables are presented in Table 2. Tests showed there were no multicollinearity problems in any of the regression analyses. A confirmatory factor analysis was conducted using AMOS 18.0 for two dependent variables due to the high correlation between them (i.e. job satisfaction and affective commitment). The fit index shows a good fit to the two-factor model ($\chi^2/df = 53.87/25 = 2.15$, $p < .001$, comparative fit index [CFI] = .98, root-mean-square error of approximation [RMSEA] = .08, and the standardized root mean square residual [SRMR] = .03). We also ran a one-factor model ($\chi^2/df = 119.96/26$, $p < .001$, CFI = .93, RMSEA = .14, SRMR = .04). The two-factor model has better fit compared to the one-factor model ($\Delta\chi^2 = 66.09$, $\Delta df = 1$, $p < .001$). Therefore, we treat job satisfaction and affective commitment as two distinct variables in the analysis.

PUT TABLE 2 HERE

Hypothesis 1 stated that firm-level HPWS is positively related to job satisfaction (H1a) and affective commitment (H1b) and negatively related to work pressure (H1c). Results in Table 3 indicate that high investment in HPWS at policy level was found to have a significant negative impact on job satisfaction ($\beta = -.292$, $t = -2.809$, $p < .01$) and affective commitment ($\beta = -.217$, $t = -2.075$, $p < .05$) (Step 1 - column 1 and 5). Therefore, hypotheses 1a, and 1b were not supported. Regression results indicate that high HPWS was a strong predictor of increased work pressure ($\beta = .229$, $t = 2.133$, $p < .05$), thus supporting Hypothesis 1c.

To test the cross-level mediation effects of organisational justice, the predictor variable (firm-level HPWS) was recoded as a dummy variable (1 = high-HPWS; 0 = low and medium-HPWS). Hypothesis 2 theorised that distributive justice would positively mediate the effects of firm-level HPWS on the three dependent variables. The results for the mediation analyses are reported in Table 3. HPWS is significantly related to job satisfaction, affective commitment and work pressure, thus satisfying the first condition for mediation. Step 2 indicate that HPWS is significantly related to relational-distributive justice ($\beta = -.233, p < .01$)². Step 3 reveals that relational-distributive justice is significantly related to the dependent variables, thus meeting the next two requirements of mediation. Finally, when both HPWS and relational-distributive justice are entered into the model simultaneously (step 4), HPWS drops from significance for both job satisfaction ($\beta = -.098, p = ns$) and affective commitment ($\beta = -.074, p = ns$), suggesting full mediation. When the mediator and HPWS were entered into the regression for work pressure, the effect of relational-distributive justice reduced to zero for the mediator, whilst the dependent variable remained significant, suggesting no mediation effect. Sobel tests supported the findings for job satisfaction ($z = 2.46, p < .05$) and affective commitment ($z = 2.53, p < .05$).

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Hypothesis 3 theorised that procedural justice would positively mediate the effects of firm-level HPWS on the dependent variables. Table 4 (step 2) indicates that HPWS is a significant predictor of the mediating variable relational-procedural justice ($\beta = -.264, p < .01$). In step 3, the mediator is significantly related to the three dependent variables - job satisfaction

² All mediators were found to be significant predictors of the three dependent variables with two exceptions – transactional-distributive justice and transactional-procedural justice. Therefore these two mediators were not included in the final mediation test and are not reported in the tables.

($\beta = .524, p < .001$), affective commitment ($\beta = .515, p < .001$) and work pressure ($\beta = -.236, p < .01$). When both HPWS and the mediator are put into the model (step 4), relational-procedural justice was found to be a full mediator between HPWS and both job satisfaction and affective commitment, as the effect of HPWS when controlling for relational-procedural justice reduced to zero. The Sobel test was significant for both job satisfaction ($z = 2.93, p < .01$) and affective commitment ($z = 2.93, p < .01$). When HPWS and the relational-procedural justice are entered in the model (step 4), the association between HPWS and work pressure declined, although both remained significant, indicating partial mediation. The Sobel test supported the findings ($z = 2.34, p < .05$).

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Hypothesis 4 stated interactional justice would mediate the relationship between HPWS and the dependent variables. Results in Table 5 show that the first three conditions for mediation are met. Step 4 indicated that when HPWS and interactional justice are included in the analysis, the previously significant relationship between HPWS and job satisfaction was no longer significant. In support of hypothesis 4b, when interactional justice was added to the model, it was found to be significantly related to affective commitment ($\beta = .547, p < 0.001$) and the direct effect of HPWS became insignificant ($\beta = -0.21, ns$), suggesting full mediation. Sobel test results showed that both mediations were significant (job satisfaction: $z = 2.93, p < .01$; affective commitment: $z = 2.93, p < .01$). Finally, the direct effect of HPWS on work pressure reduced but was still significant when interactional justice was entered into the equation, suggesting partial mediation. The Sobel test was significant ($z = 2.16, p < .05$). Our 5000 samples bootstrapping analysis indicated that the indirect effect of HPWS on the dependent

variables via organisational justice was significant (except for relational-distributive justice mediating HPWS and work pressure). Ninety-five percent lower and upper bootstrap confidence intervals (CI) are reported in Tables 3, 4 and 5.

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Discussion

The research advances knowledge on the relationship between HPWS and employee well-being and, in particular, the mediating effect of organisational justice. The results show that HPWS can yield negative consequences for employee well-being in terms of work-intensification experiences. The findings suggest important cross-level mechanism effects between firm-level HR policies, employee-level perceptions of justice and employee outcomes. These are important determinants in explaining the links between intended policy and outcome reality, which has been neglected in much previous research. Three theoretical implications arise from this evidence that warrant further discussion.

First, employees who experience a high incidence of HPWS were found to have lower job satisfaction and affective commitment, coupled with stronger perceptions of work pressure. In short, HPWS is not necessarily positive for the employees who have to labour under such work designs. The reported relationships between HPWS and employee outcomes reinforce the arguments made by Guest (2011) that the causal effects of HRM remain contested. These findings are broadly in line with research that argues that a greater diffusion of HRM systems can lead to negative employee experiences, including lower perceptions of job-security and increased job strain (Green, 2004). Theoretically, it would appear necessary that employee perceptions of well-being are placed at the centre of any analysis about HPWS impacts and

potential outcomes. The findings show it is workers who ‘experience’ these enacted policies in actual practice and it is their perceptions of fairness that have been shown to make a difference. It is in this way that knowledge can then seek to unpick and shed light into the ‘black box’ debate. A related issue for practice may be that HPWS policies may increase system complexity. In other words, too many high-performance management initiatives can lead to overload for employees. As Macky and Boxall (2007:558) have previously pointed out, outcomes for employees ‘become less optimal as complexity increases: when, for example, performance appraisal is added to teamwork in a flattened hierarchy, along with increased participation in decision making, enhanced information flows, and so on’.

A second implication relates to the theoretical framework of organisational justice in assessing employee positive attitudes, particularly well-being. This suggests that the effects of HPWS on employee outcomes are neither direct nor unconditional, and in reality may be ‘mediated’ in various ways and in multiple directions. Evidence showed that employees differentiate between pay and other HR practices in terms of distributive and procedural fairness. This distinction is important when examining the mediating effect of justice on employee well-being, as it was relational aspects (e.g. longer-term investments in employees through employee involvement, promotion and training) which had the strongest mediating effect. Neither distributive nor procedural justice perceptions of pay (transactional) were found to mediate the relationship between HPWS and the dependent variables. In contrast, relational-distributive justice and procedural justice were full mediators for HPWS, job satisfaction and affective commitment. These also partially mediated the work pressure relationship. Further, findings for interactional justice reinforced the important role played by the line manager with respect to policy implementation, as it fully mediated the relationship between HPWS and both job satisfaction and affective commitment, and was a partial mediator for work pressure. This suggests that social exchange is a key mechanism mediating potential outcomes around well-

being, in particular, interactional fairness (Farndale and Kelliher, 2013). The line manager's role in enacting HRM practices introduces the possibility of differences between what was intended and what was enacted (Nishii *et al.*, 2008). It can be argued, therefore, that line manager roles during HPWS design and implementation are key factors in better understanding how these relationships are mediated.

Moreover, organisational justice is an important theoretical lens neglected in much HRM research. Related to the earlier call for the need to place the employee at the centre of analysis, the explanatory utility of organisational justice can be seen as an important mediator. From this it can be argued that when employees perceive that HPWS are procedurally and distributively fair, and when their line manager treats them with dignity and respect, then job satisfaction and affective commitment may increase and perceptions of work pressure may decrease. This can be linked to signalling theory, in that employees' attitudes can be influenced by the actions of those around them in the workplace, by showing that the organisation or the line manager cares about employee well-being. A corollary of this is that employers need to realise employees are not passive recipients of a system designed to automatically evoke performance-enhancing behaviours at will. Employees engage in job tasks through iterative, complex and integrated social workplace relationships which can be shaped by justice perceptions of outcome reality. The implication is not too far removed from other related research findings. For example, perceptions of the rightfulness of procedures in an organisation have been found to have effects on decreased levels of stress (Ambrose and Schminke, 2003).

The third implication concerns the use of cross-level data methodologies. The findings from this research provide support for the work of Bowen and Ostroff (2004) and Takeuchi *et al.* (2009) by examining HPWS across multiple levels in order to show how policy is implemented and how employees experience HRM. The cross-level analysis proved valuable when looking at the sequence of boxes that reflect HPWS and employee experiences at both

the firm and subsequent individual levels. A great deal of previous research has been from single respondents (usually the HR manager), whereas the evidence in this article investigates both firm-level system design with employee-level outcomes. Findings show that examining employee justice perceptions of HRM, in addition to firm-level practices, proved critical to advancing knowledge of their mediating effects on formal HR practices and employee attitudes and potential outcomes. It can, therefore, be suggested that future research may benefit from more precise and sophisticated multi-level forms of analysis integrating justice constructs of employee experiences about managerial and hierarchical systems of HRM.

The findings of this study raise important implications for practice. Organisations may take note that having policies in place can be insufficient on its own. It appears crucial to include an emphasis on consistent, non-biased implementation of and communication about HRM. A further issue concerns the role that line managers play in HRM. Inference from the research in this article shows that managers may be key agents affecting the mediation processes between policy design and actual implementation at a workplace. Importantly, discrepancies can exist between line managers and how they may enact policy that can have adverse implications for the organisation through negative employee outcomes.

As with all research, there are some limitations. All measures in our study were collected at one point in time thus limiting causality. Justice ratings and the dependent variables were also supplied by a single source, which may suggest common-method bias. We therefore employed several procedural and statistical strategies to mitigate against possible common method bias (as per Podsakoff *et al.* 2003). In terms of procedural remedies, we ensured survey respondent anonymity; we separated the predictors and criteria on the survey; pilot tested the survey prior to distribution; ensured scale item quality (e.g., items had familiar terms and were succinct); and we conducted the Harman one-factor test. The research design sourced data from HR managers. Gerhart *et al.* (2000) questioned the reliability of single respondent measures of

HR due to a problem with measurement error. Nonetheless, HR managers are often in an informed position to generate context-specific information. Further, the research did incorporate employees themselves to build theory and help counter possible managerial bias. It is also possible that the relatively small size of the aggregate data set, and the lower response rate from *ProfCo* (11.5%), are further limitations. As with all quantitative analysis, it is always possible that other variables omitted might explain variance in the results (e.g. firm size or leadership quality). Strategies to minimise these methodological challenges included sample variability; for example, different cases offered coverage of firm size, occupational diversity, unionisation and non-unionism, and market sector variation. Finally, the cross-level tests and explorations utilising employee data offers fruitful lines of analysis and potential mediating explanations that researcher may find useful in the future in reducing methodological limitations.

Conclusion

This article adds to knowledge and debates about how and why organisational justice mediates the HPWS-employee outcomes relationship. In part, the findings support a ‘management by stress’ set of HPWS mediating relationships, from which the result may diminish employee well-being, satisfaction and lower commitment. The findings further showed that an organisational justice framework can advance knowledge in explaining *why* organisational-level HR practices can affect employee attitudes, particularly well-being. It does so by bringing the employee back into the heart of the HPWS debate using a social justice lens.

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References

- Ambrose, M.L. and Schminke, M (2003). 'Organization structure as a moderator of the relationship between procedural justice, interactional justice, perceived organizational support, and supervisory trust'. *Journal of Applied Psychology*, 88,295-305.
- Ambrose, M.L. and Arnaud, A. (2005). 'Distributive and procedural justice: Construct distinctiveness, construct interdependence, and overall justice.' *The Handbook of Organizational Justice*, 59-84.
- 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*, 51:1173-1182.
- Bies, R.J. (2001). 'Interactional (in)justice: the sacred and the profane'. In J.C. Greenberg (Ed.), *Advances in organizational justice*, 89-118. San Francisco:Stanford University Press.
- Bies, R.J., and Moag, J.F. (1986). Interactional justice: communication criteria of fairness. In R.J. Lewicki, B.H. Sheppard and M.H. Bazerman (Eds) *Research on negotiations in organizations* (43–55). Greenwich,CT: JAI Press.
- Blader, S.L. and Tyler, T.R. (2003). 'What constitutes fairness in work settings? A four-component model of procedural justice'. *Human Resource Management Review*, 13:107-126.
- Boon, C., Den Hartog, D.N., Boselie, P. and Paauwe, J. (2011). 'The relationship between perceptions of HR practices and employee outcomes: examining the role of person-organisation and person-job fit'. *International Journal of Human Resource Management*. 22:138-162.
- Boselie, P., Dietz, G., and Boon, C. (2005). 'Commonalities and contradictions in HRM and performance research'. *Human Resource Management Journal*, 15:67-94.
- 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*, 29:203-221.
- Boxall, P. (2013), 'Mutuality in the management of human resources: assessing the quality of alignment in employment relationships'. *Human Resource Management Journal*, 23:1,3-17.
- Boxall, P. and Macky, K. (2009). 'Research and theory on high-performance work systems: progressing the high-involvement stream'. *Human Resource Management Journal*, 19,3-23.
- Boxall, P. and Macky, K. (2014). 'High-involvement work processes, work intensification and employee well-being'. *Work, employment and society*, 28:6,963–984.

- Boxall, P, Ang, S, and Bartram, T. (2011). 'Analysing the 'Black Box' of HRM: Uncovering HR Goals, Mediators, and Outcomes in a Standardized Service Environment', *Journal of Management Studies*, 48:7,1504-1532.
- Brockner, J. Konovsky, M., Cooper-Schneider, R., Folger, R, Martin, C., and Bies, R.J. (1994). 'Interactive effects of procedural justice and outcome negativity on victims and survivors of job loss.' *Academy of Management Journal*, 37:397-409.
- Burchell B. (2002). 'The prevalence and redistribution of job insecurity and work intensification. In B. Burchell, D. Lapido and F. Wilkinson (Eds.), *Job insecurity and work intensification* (61-76). London:Routledge.
- Cafferkey, K. and Dundon, T. (2015) 'High Performance Work Systems, Innovation and Employee Outcomes: Embedding Macro and Micro Perspectives', *Personnel Review* 44:5, 666-68.
- Cheng, SY (2014). 'The mediating role of organizational justice on the relationship between administrative performance appraisal practices and organizational commitment, *International Journal of Human Resource Management*, 25:8, 1131-1148.
- Colquitt, J.A. (2001). 'On the dimensionality of organizational justice: A construct validation of a measure'. *Journal of Applied Psychology*, 86:386-400.
- Colquitt, J.A., Wesson, M., Porter, C., Conlon, D. and Ng, KY. (2001). 'Justice at the Millennium: A Meta-Analytic Review of 25 Years of Organizational Justice Research'. *Journal of Applied Psychology*, 86:3, 425-445.
- Colquitt, J.A. and Greenberg, J. (2003). 'Organizational justice: A fair assessment of the state of the literature'. In J. Greenberg (Ed.), *Organizational behavior: The state of the science* (165-210).Mahwah, NJ:Erlbaum.
- Colvin, A. (2006). 'Flexibility and fairness in liberal market economies: the comparative impact of the legal environment and high-performance work systems', *British Journal of Industrial Relations*, 44:73-97.
- Cook, F.L. (2001). 'Human resource strategy to improve organizational performance: a route for firms in Britain?' *International Journal of Management Reviews*, 3:321-339.
- Cropanzano, R., Bowen, D.E. and Gilliland, S.W. (2007). 'The management of organizational justice'. *Academy of Management Perspectives*, 21:34-48.
- Cullinane, N., Donaghey, J., Dundon, T., Dobbins, T. and Hickland, E. (2014), 'Regulating for Mutual Gains: Non-Union Employee Representation and the Information & Consultation Directive', *International Journal of Human Resource Management*, 25:6, 810-828

- Danford, A., Richardson, M., and Upchurch, M. (2005). *New unions, new workplaces: A study of union resilience in the restructured workplace*, London:Routledge.
- Danford, A, Richardson, M., Stewart, P., Tailby, S., and Upchurch, M. (2008). 'Partnership, high performance work systems and quality of working life'. *New Technology, Work and Employment*, 23:151-166.
- Den Hartog, D., Boon, C., Verburg, R.M. and Croon, M.A. (2013). 'HRM, Communication, Satisfaction, and Perceived Performance A Cross-Level Test'. *Journal of Management*, 39:6,1637-1665.
- Dundon, T., and Ryan, P. (2010). 'Interviewing reluctant respondents: strikes, henchmen and Gaelic games'. *Organizational Research Methods*, 13:562-581.
- Dunham, R.B., and Smith, F.J. (1979). *Organizational surveys*. Glenview, IL:Scott,Foresman.
- Ehrnrooth M, Björkman I. (2012). 'An Integrative HRM Process Theorization: Beyond Signalling Effects and Mutual Gains'. *Journal of Management Studies*, 49:6,1109-1135.
- Erdogan, B., Kraimer, M.L., and Liden, R.C. (2001). 'Procedural justice as a two-dimensional construct: An examination in the performance appraisal context'. *Journal of Applied Behavioral Science*, 37:205-228.
- Farndale, E., Hope-Hailey, V., and Kelliher, C. (2011). 'High commitment performance management: the roles of justice and trust'. *Personnel Review*, 40,5-23.
- Farndale, E. and Kelliher, C. (2013). 'Implementing performance appraisal: exploring the employee experience. *Human Resource Management*, 52:6,879–897.
- Frenkel, S.J., Lloyd, L., Restubog, D. and Bednall, T. (2012). 'How employee perceptions of HR policy and practice influence discretionary work effort and co-worker assistance: evidence from two organizations.' *International Journal of Human Resource Management*, 23:20, 4193-4210.
- Fuchs, S., and Edwards, M.R. (2012). 'Predicting pro-change behaviour: the role of perceived organisational justice and organisational identification'. *Human Resource Management Journal*, 22,39-59.
- Godard, J. (2010). 'What is best for workers? The implications of workplace and human resource management practices revisited.' *Industrial Relations: A Journal of Economy and Society*, 49:3,466-488.
- Grant, D., and Shields, J. (2002). 'In search of the subject: researching employee reactions to human resource management'. *Journal of Industrial Relations*, 44,313-334.
- Green, F. (2004). 'Work intensification, discretion, and the decline in well-being at work'. *Eastern Economic Journal*, 30,615-625.

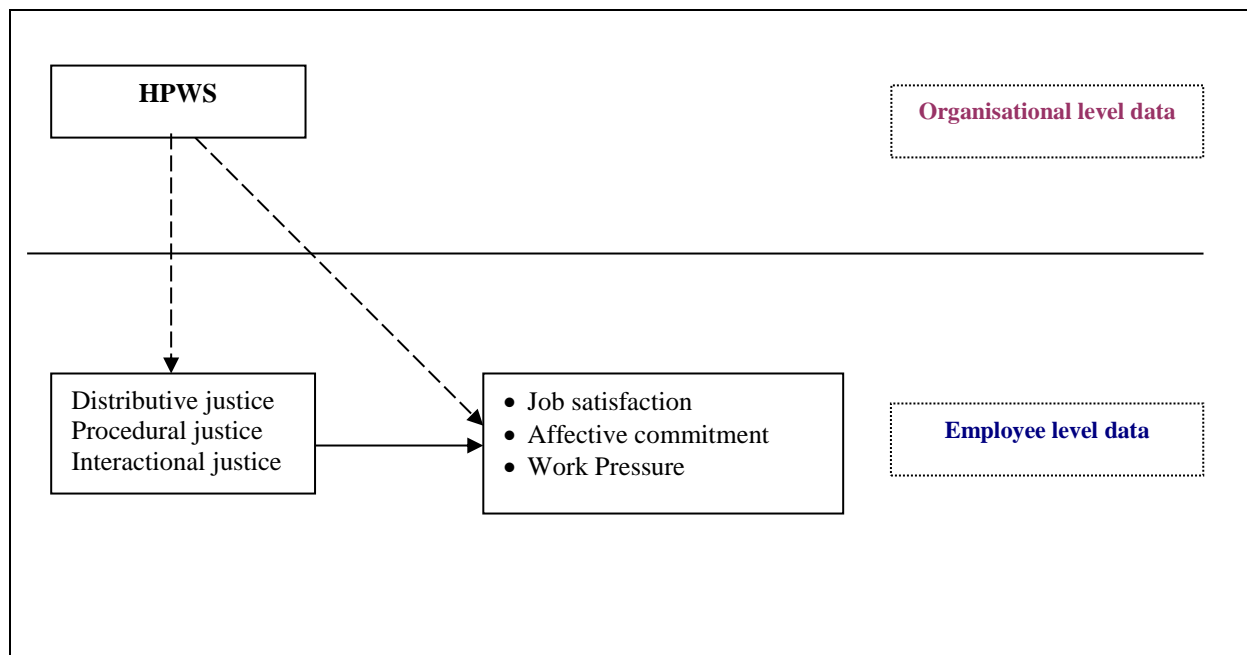
- Greenberg, J. (1990). 'Organizational justice: yesterday, today, and tomorrow'. *Journal of Management*, 16,399-445.
- Guest, D. (2011). 'Human resource management and performance: still searching for some answers'. *Human Resource Management Journal*, 21,3-13.
- Guthrie, J.P. (2001). 'High-Involvement work practices, turnover, and productivity: evidence from New Zealand'. *Academy of Management Journal*, 44,180-190.
- Harley, B., Allen, B.C., and Sargent, LD. (2007)'High-performance work systems and employee experience of work in the service sector: The case of aged care'. *British Journal of Industrial Relations*, 45,607-633.
- Hayes, A. (2009). 'Beyond Baron and Kenny: statistical mediation analysis in the new millennium'. *Communication Monographs*, 76(4):408-420.
- Huselid, M. (1995). 'The impact of human resource management practices on turnover, productivity, and corporate financial performance'. *Academy of Management Journal*, 38,635-672.
- Huselid, M. and Rau, B.L(1997). 'The determinants of high performance work systems: cross-sectional and longitudinal analyses'. *Academy of Management Annual Meetings*. Boston:MA.
- Judge, T.A., and Colquitt, J.A. (2004). 'Organizational justice and stress: the mediating role of work-family conflict'. *Journal of Applied Psychology*, 89,395-404.
- Kernan, M.C. and Hanges, P. (2002). 'Survivor reactions to reorganization: antecedents and consequences of procedural, interpersonal, and informational justice.' *Journal of Applied Psychology*, 87:5,916.
- Kenny, D.T., and McIntyre, D. (2005). 'Constructions of occupational stress: nuance or novelty?' In A.S. Antoniou and C.L. Cooper (Eds), *Research Companion to Organizational Health Psychology* (pp.20-58).Cheltenham: Edward-Elgar Publishing.
- Kilroy, J. and Dundon, T. (2015) 'The multiple faces of front line managers: a preliminary examination of FLM styles and reciprocated employee outcomes', *Employee Relations*, 37:4,407-27.
- Kooij, T.A., Jansen, P.G., Dijkers, J.S.E. and deLange, A.H. (2010). 'The influence of age on the associations between HR practices and both affective commitment and job satisfaction: A meta-analysis'. *Journal of Organizational Behavior*, 31:8,1111-1136.
- Leventhal, GS. (1980). 'What should be done with equity theory?' In K.J. Gergen, Greenberg, M.S. and Willis, R.H. (Eds.), *Social Exchange: Advances in theory and research*. NY:Plenum.

- 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.
- Masterson,S., Lewis,K., Goldman,BM., and Taylor,S. (2000). 'Integrating justice and social exchange: The differing effects of fair procedures and treatment on work relationships'. *Academy of Management Journal*, 43,738-748.
- Mathieu, J.E. and Taylor, S.R. (2007). 'A framework for testing meso-mediational relationships in Organizational Behavior'. *Journal of Organizational Behavior*, 28:2, 141-172.
- McFarlin, D.B., and Sweeney, PD. (1992). 'Distributive and procedural justice as predictors of satisfaction with personal and organizational outcomes'. *Academy of Management Journal*, 35,626-637.
- Meyer, J.P., and Allen, N.J. (1997). *Commitment in the workplace: Theory, research, and application*. Thousand Oaks,CA:Sage.
- Mossholder, K.W. and Bedeian, A.G. (1983). 'Cross-level inference and organizational research: perspectives on interpretation and application'. *Academy of Management Review*, 8:547-558.
- Monks, K., Kelly, G., Conway, E., Flood, P., Truss, K. and Hannon, E. (2013), 'Understanding how HR systems work: the role of HR philosophy and HR processes'. *Human Resource Management Journal*,23(4):379–395
- Nabatchi, T., Blomgren Bingham, L., and Good, D. (2007). 'Organizational justice and workplace mediation: a six-factor model'. *International Journal of Conflict Management*, 18,148-174.
- Nishii, LH., Lepak, D.P. and Schneider, B. (2008), 'Employee attributions of the “why” of HR practices: their effects on employee attitudes and behaviors and customer satisfaction. *Personnel Psychology*, 61:3,503–545.
- Ostroff, C. and Bowen, D.E. (2000). 'Moving human resource to a higher level: Human resource practices and organizational effectiveness. In K.J. Klein & S.W.J. Kozlowski (Eds), *Multilevel theory, research, and methods in organizations* (211–266). San Francisco:Jossey-Bass.
- Paré, G., and Tremblay, M. (2007). 'The influence of high-involvement human resources practices, procedural justice, organizational commitment, and citizenship behaviors on information technology professionals' turnover intentions'. *Group and Organization Management*,32,326-357.

- Podsakoff, P.M., MacKenzie, S.B. and Lee, J.Y. and Podsakoff, N.P. (2003). 'Common method biases in behavioral research: a critical review of the literature and recommended remedies'. *Journal of Applied Psychology*, 88:5,879.
- Preacher, K.J., Rucker, D.D. and Hayes, A.F. (2007). 'Assessing moderated mediation hypotheses: Theory, methods, and prescriptions'. *Multivariate Behavioral Research*, 42, 185-227.
- Purcell, J. and Hutchinson, S. (2007). 'Front-line managers as agents in the HRM-performance causal chain: theory, analysis and evidence'. *Human Resource Management Journal*, 17(1):3-20
- Purcell, J., Kinnie, N., Swart, J., Rayton, B., and Hutchinson, S. (2009). *People Management and Performance*. London:Routledge.
- Ramsay, H., Scholarios, D., and Harley, B. (2000). 'Employees and high-performance work systems: testing inside the black box'. *British Journal of Industrial Relations*, 38,501-531.
- Sweeney, P.D., and McFarlin, DB. (1993). 'Workers' evaluations of the ends and the means: an examination of four models of distributive and procedural justice'. *Organizational Behavior and Human Decision Processes*, 55:23-40.
- Takeuchi, R., Chen, G., and 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.
- Tekleab, A.G., Bartol, K.M., and Liu, W. (2005). 'Is it pay levels or pay raises that matter to fairness and turnover?' *Journal of Organizational Behavior*, 26,899-921.
- Thibaut, J., and Walker, L. (1975). *Procedural Justice: A Psychological Analysis*, Hillsdale, NJ:Erlbaum.
- Thompson, P. (2011). 'The trouble with HRM'. *Human Resource Management Journal*, 21,355-367.
- Townsend, K. and Loudoun, R. (2015) 'The front line manager's role in informal voice pathways', *Employee Relations*, 37(4):475-486.
- Tyler, T.R., and Lind, E.A. (1992). 'A relational model of authority in groups'.In M.Zanna (Ed.), *Advances in Experimental Social Psychology* (115-191).NY: Academic Press.
- Van De Voorde, K., Paauwe, J. and Van Veldhoven, M. (2012). 'Employee Well-being and the HRM-Organizational Performance Relationship: Review of Quantitative Studies'. *International Journal of Management Reviews*, 14:4,391-407

- Wood, S., and de Menezes, L.M. (2011). 'High involvement management, high-performance work systems and well-being'. *International Journal of Human Resource Management*, 22,1586-1610.
- Wu, P.C. and Chaturvedi, S. (2009). 'The Role of Procedural Justice and Power Distance in the Relationship between High Performance Work Systems and Employee Attitudes: A Multilevel Perspective'. *Journal of Management*, 35:5,1228-1247.

Figure 1: Conceptual framework



- Denotes a correlation and regression relationship
- - - - -→ Denotes a cross-level inference of the relationship between macro level HPWS investment and employee level variables

Table 1: Response rates and demographic characteristics (n=187)

Characteristics	Profco	Insureco	Foodco
Targeted sample	400	85	315
Overall response rate (%)	11.5	53	38
Overall n	41	39	107
Gender			
Male	31.7	35.9	44.9
Female	68.3	64.1	55.1
Age			
Under 25 years	2.4	25.6	30.4
26 to 35 years	48.8	46.2	37.3
36-45 years	36.6	23.1	17.6
46-55 years	12.2	2.6	11.8
56 years or more	0	2.6	2.9
Education			
Primary	2.4	0	10.5
Secondary/High school diploma	12.2	15.4	43.1
Certificate/Diploma	17.1	30.8	33.7
Bachelors degree	39	46.2	8.5
Masters degree	24.4	7.6	4.2
Doctoral degree	4.9	0	0
Employment status			
Full time permanent	87.8	89.7	73.3
Full time (fixed term/temporary contract)	4.9	5.1	10.5
Part-time	7.3	5.1	16.2
Length of employment			
Under 1 year	6.4	16	32.4
1 to 5 years	35.5	44	40
6 to 10 years	29	20	19
11 to 15 years	19.4	0	5.7
16 to 20 years	3.2	8	1.9
Over 20 years	6.5	12	1

Table 2: Correlation matrix

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gender	-	-															
2. Age	-	-	.028														
3. Education	-	-	-.077	-.107													
4. Employee Category	-	-	.050	.112	.111												
5. Tenure	5.27	5.82	-.001	.540*	.063	.242**											
6. HPWS-High	-	-	-.091	.175*	.215**	.104	.240**										
7. HPWS-Low	-	-	.112	-.077													
8. DJ (Trans)	3.24	1.11	.009	.140	-.030	-.162*	.198*	-.033	-.095	(.83)							
9. DJ (Rel)	3.44	.683	-.014	.004	-.049	-.097	.137	-.189**	.103	.406**	(.74)						
10. PJ (Trans)	3.26	1.01	.009	-.008	-.037	-.132	.096	-.089	-.038	.718**	.554**	(.81)					
11. PJ (Rel)	3.62	.809	-.025	.084	.012	-.081	.165*	-.190**	.039	.463**	.711**	.639**	(.87)				
12. IJ	3.73	.831	-.027	.043	-.008	-.083	.162*	-.157*	.016	.471**	.659**	.656**	.723**	(.92)			
13. JS	3.65	.943	-.033	.232**	-.044	-.032	.249**	-.115	-.071	.348**	.435**	.442**	.569**	.622**	(.88)		
14. AC	3.35	.980	-.074	.236**	-.085	-.010	.283**	-.071	.009	.293**	.479**	.435**	.545**	.588**	.833**	(.93)	
15. WP	2.88	.980	.086	-.054	.042	.147*	.060	.158*	-.126	-.216**	-.196**	-.270**	-.275**	-.246**	-.156*	-.218**	(.87)

N = 187 (Listwise) * p < 0.05, ** p < 0.01, *** P < .001 (two-tailed tests). Cronbach's alphas are presented in brackets.

DJ = Distributive justice, PJ = Procedural Justice, IJ = Interactional Justice, JS = Job Satisfaction, AC = Affective Commitment, WP = Work Pressure

Table 3: Hierarchical regression results for testing mediation: distributive justice (N=187)

	Job Satisfaction				Affective commitment				Work Pressure			
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>
<i>Controls</i>												
Gender	.044	-.001	.057	-.015	-.041	-.001	-.027	-.070	.168*	-.001	.163*	.100
Age1	.051	.009	-.047	-.321	.016	.009	-.016	-.268	-.006	.009	.006	.092
Age2	.222*	-.111	.229**	-.282*	.170	-.111	.206*	-.272	-.059	-.111	-.073	.117
Education	-.002	.012	-.006	.027	-.020	.012	-.029**	-.015	-.086	.012	-.084	-.078
Employee category	-.093	-.096	-.059	-.042	-.033	-.096	.005	.013	.083	-.096	.070	.077
Tenure	.220*	.286**	.108	.142	.281**	.286**	.156	.170	-.011	.286**	.032	.035
<i>Predictors</i>												
HPWS-High	-.292**	-.233**		-.098	-.217*	-.233**		-.074	.229*	-.233**		.206*
HPWS-Low	-.203	-		-	-.078	-			-.042	-		
<i>Mediator</i>												
DJ(Rel)			.387***	.381***			.432***	.431***			-.199*	-.156
Bootstrap (CI)				(-.3651 to -.0234)				(-.4285 to -.0534)				(.0046 to .2256)
Adj R²	.108	.056	.246	.223	.102	.056	.274	.279	.047	.056	.062	.052
Δ R²	.048	.046	.135	.515	.028	.046	.167	.167	.055	.046	.020	.022
F	3.260**	2.304*	6.389***	6.347***	3.138**	2.304*	7.293***	8.245***	1.941*	2.304*	2.115*	2.032*

* = $p < .05$ ** = $p < .01$ *** = $p < .001$ (standardised coefficients reported) Gender (1=male; 0= female); Education (1= primary degree 0= no degree); (1= permanent; 0= non-permanent); Age1(1= 25-45 years; 0= < 20 years and greater than 45); Age2 (1 = > 45 years; 0 = less than 25 years). Significance testing of R² is compared to the control model. CI = Confidence interval (lower and upper-bound reported). The mediator DJ(Trans) was not included due to not meeting Baron and Kenny's (1986) mediation criteria

Table 4: Hierarchical regression for testing mediation: procedural justice (N=187)

	Job Satisfaction				Affective commitment				Work Pressure			
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>
<i>Controls</i>												
Gender	.044	-.013	.067	-.005	-.041	-.013	-.020	-.062	.168*	-.013	.158*	.097
Age1	.051	-.045	-.022	-.275*	.016	-.045	.008	-.215	-.006	-.045	-.005	.073
Age2	.222*	-.045	.209*	-.259*	.170	-.045	.181*	-.242	-.059	-.045	-.066	.109
Education	-.002	.099	-.047	-.020	-.020	.099	-.068	-.060	-.086	.099	-.064	-.056
Employee category	-.093	-.108	-.040	-.024	-.033	-.108	.019	.026	.083	-.108	.058	.067
Tenure	.220*	.270**	.088	.114	.281**	.270**	.151	.158*	-.011	.270**	.050	.055
<i>Predictors</i>												
HPWS-High	-.292**	-.264**		-.049	-.217*	-.264**		-.041	.229*	-.264**		.178*
HPWS-Low	-.203	-			-.078	-			-.042	-		
<i>Mediator</i>												
PJ(Rel)			.524***	.512***			.515***	.506***			-.236**	-.221**
Bootstrap (CI)				(-.4878 to -.0458)				(-.4775 to -.0398)				(.0203 to .2787)
Adj R²	.108	.071	.349	.331	.102	.071	.336	.342	.047	.071	.093	.083
Δ R²	.048	.059	.232	.233	.028	.059	.226	.227	.055	.059	.049	.051
F	3.260**	2.682*	9.867***	10.213***	3.138**	2.682*	9.440***	10.765***	1.941*	2.682*	2.726**	2.706**

* = p< .05 ** = p< .01 *** = p < .001 (standardised coefficients reported) Gender (1= male; 0= female); Education (1= primary degree 0= no degree); (1= permanent; 0= non-permanent; Age1 (1= 25-45 years; 0= < 20 years and greater than 45); Age2 (1= > 45 years; 0= less than 25 years). Significance testing of R² is compared to the control model. CI = Confidence interval (lower and upper-bound reported). The mediator PJ(Trans) was not included due to not meeting Baron and Kenny's (1986) mediation criteria.

Table 5: Hierarchical regression results testing mediation: interactional justice N=187

	Job Satisfaction				Affective commitment				Work Pressure			
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>
<i>Controls</i>												
Gender	.044	-.016	-.007	-.005	-.041	-.016	-.065	-.064	.168*	-.016	.096	.096
Age1	.051	-.065	-.024	-.269	.016	-.065	.013	-.209	-.006	-.065	-.021	.074
Age2	.222*	-.070	.206*	-.268**	.170	-.070	.182*	-.250*	-.059	-.070	-.077	.113
Education	-.002	.079	-.044	-.019	-.020	.079	-.064	-.056	-.086	.079	-.070	-.064
Employee category	-.093	-.108	-.027	-.018	-.033	-.108	.026	.029	.083	-.108	.069	.071
Tenure	.220*	.268**	.060	.088	.281**	.268**	.131	.139	-.011	.268**	.037	.044
<i>Predictors</i>												
HPWS-High	-.292**	-.262**		-.025	-.217*	-.262**		-.021	.229*	-.262**		.189*
HPWS-Low	-.203	-			-.078	-			-.042	-		
<i>Mediator</i>												
IJ			.568***	.573***			.546***	.547***			-.202*	-.200*
Bootstrap (CI)				(-.4884 to -.0115)								(.0035 to .2581)
Adj R²	.108	.069	.401	.388	.108	.069	.378	.377	.108	.069	.061	.066
Δ R²	.048	.058	.282	.287	.048	.058	.262	.289	.048	.058	.036	.036
F	3.260**	2.623*	12.070***	12.829***	3.260**	2.623*	11.136***	12.364***	3.260**	2.623*	2.087*	2.339**

* = p < .05 ** = p < .01 *** = p < .001 (standardised coefficients reported) Gender (1=male; 0 = female); Education (1 = primary degree 0 = no degree); (1 = permanent; 0= non-permanent; Age1(1= 25-45 years; 0= < 20 years and greater than 45); Age2 (1= > 45 years; 0= less than 25 years). Significance testing of R² is compared to the control model. CI = Confidence interval (lower and upper-bound reported)

Appendix 1:

HRM items included to calculate HPWS index across two employee categories

What proportion of your employees....	
1	EMPLOYEE RESOURCING
	Are interviewed during the hiring process using structured, standardized interviews
	Are administered one or more validated employment tests
	Hold jobs which have been subjected to a formal job analysis to identify position requirements
	Hold non-entry level jobs as a result of internal promotions
	Hold non-entry level jobs due to promotions based upon merit or performance
	Can expect to stay in this organisation for as long as they wish
	On leaving the firm are subjected to a formal exit interview
2	TRAINING AND DEVELOPMENT
	Receive formal induction training/ socialisation to the organisation
	Have been trained in a variety of jobs or skills (cross trained) and/or routinely perform more than one job
	Have received training in company-specific skills
	Have received training in generic skills (e.g., problem-solving, communication skills, etc)?
	Receive specific training as a direct result of their performance appraisal
	Have been involved in a Total Quality Management programme
3	PERFORMANCE MANAGEMENT AND REMUNERATION
	Receive formal performance appraisals on a routine basis
	Receive formal performance feedback from more than one source
	Receive compensation partially contingent on individual merit or performance
	Receive compensation partially contingent on group performance
	Have options to obtain shares of your organisation's stock
	Are paid primarily on the basis of a skill or knowledge-based pay system
	Are paid a premium wage in order to attract and retain them
	What proportion of the average employee's total annual remuneration is contingent on performance
4.	COMMUNICATION AND INVOLVMENT
	Are involved in programmes designed to elicit participation and employee input
	Are provided relevant financial performance information
	Are provided relevant strategic information
	Are administered attitude surveys on a regular basis
	Have access to a formal grievance/complaint resolution procedure or system
	Are organised in self-directed work teams in performing a major part of their work roles
5	WORK LIFE BALANCE
	What proportion of workforce covered by family-friendly or work-life balance practices