

**High performance work practices, employee outcomes, and organizational performance: A 2-1-2 multilevel mediation analysis**

**Abstract**

This study examines the mediating role of employee outcomes in terms of the relationship between High Performance Work Practices (HPWP) and organizational performance. The study presents a 2-1-2 multilevel mediation model in which HPWP and organizational performance (staff absenteeism and patient satisfaction) are measured at the organizational level (Level-2), and employee outcomes at the individual level (Level-1). Using secondary data from the British National Health Service, evidence was found for a direct positive relationship between HPWP and employee outcomes (job satisfaction and employee engagement). Both job satisfaction and employee engagement mediated a negative relationship between HPWP and staff absenteeism, but the positive relationship between HPWP and patient satisfaction was mediated by job satisfaction only. We outline the research methodology and discuss practical implications for our findings.

**Keywords:** High performance work practices, job satisfaction, employee engagement, staff absenteeism, patient satisfaction.

## **Introduction**

The research on workplace innovations has emphasized the role of High Performance Work Practices (HPWP) in developing a more effective organization. HPWP are a unique set of complementary Human Resource Management (HRM) practices aimed at empowering employees to contribute favourably towards organizational performance (Appelbaum, Bailey, Berg, & Kalleberg, 2000). There is now growing evidence to suggest that HPWP promote organizational performance through the mediating role of employee outcomes (West et al., 2006; Beltrán-Martín, Roca-Puig, Escrig-Tena, & Bou-Llusar, 2008; Bonias, Bartram, Leggat, & Stanton, 2010; Jiang, Lepak, & Baer, 2012; Zhang & Morris, 2014). However, a serious methodological weakness in this research area concerns the limited use of multilevel mediation methods and techniques (Croon, Van Veldhoven, Peccei, & Wood, 2015). The vast majority of studies have examined the HPWP–employee–performance relationship via a single-level mediation approach, thereby ignoring the possibility that HPWP and organizational performance may operate at a different analytical level from employee outcomes. Such studies do not account for interdependences among employees nested within the same organization, and therefore fail to handle sources of errors more rigorously (Shen, 2015). Multilevel mediation analysis is a viable technique for addressing such errors (MacKinnon, 2008; Preacher, Zyphur, & Zhang, 2010). It is suitable for mediation models in which the predictor, mediator or outcome are measured at different levels of analysis.

The present study uses secondary data from the British National Health Service (NHS) to illustrate a specific type of multilevel mediation analysis, the 2-1-2 mediation model (Preacher et al., 2010) or bathtub model (Croon et al., 2015). We use this model to examine the indirect relationship between HPWP and organizational performance (both measured at Level-2) via employee job satisfaction and work engagement (measured at Level-1) (see Figure 1). The 2-1-2 mediation model separates measurement errors into relevant employee- and

organizational-level components to ensure more accurate estimates of multivariate relationships. This type of analysis is rarely applied in HPWP research, but necessary to tease out the micro- and macro-level effects of HPWP. The HRM literature, and indeed, organizational studies in general, will benefit from a better understanding of such an integrated multilevel framework and its application.

We begin this paper by an overview of the HPWP framework and describe the nature of its cross-level effects, with job satisfaction and employee engagement as proximal outcomes, and staff absenteeism and patient satisfaction as distal outcomes. We then introduce the 2-1-2 mediation model and explain our analytical procedure. We finish by discussing our findings.

### **High performance work practices (HPWP)**

As a management model that applies to the entire workplace, the HPWP framework is typically conceptualized at the organizational level. Its theoretical foundation rests on the high-commitment (Walton, 1985) and high-involvement (Lawler, 1986) management principles that create opportunities for employees to share ideas, develop their job skills, and utilize their knowledge for the good of the organization (Wood, Van Veldhoven, Croon, & De Menezes, 2012). Both high-commitment and high-involvement management empower employees to put forth the kinds of discretionary behaviours needed to achieve superior organizational performance. The HPWP framework operates on similar principles as its primary aim is to optimize employees' work-related knowledge, skills and abilities in ways consistent with organizational performance (Combs, Liu, Hall, & Ketchen, 2006). Employees are enabled to take greater ownership of their jobs and go beyond their personal interests for the sustained development of the organization (Gould-Williams, 2003).

A prominent feature in HPWP research is the concept of 'HRM bundling' (MacDuffie, 1995; Dyer & Reeves, 1995; Beltrán-Martín et al., 2008), the idea that individual HRM practices should be used together in coherent bundles to generate a greater impact on outcomes.

HRM bundling draws on the concept of ‘internal fit’, which entails aligning HRM activities into coherent and internally consistent systems that support one another (Delery, 1998). When individual HRM practices are used together in coherent bundles, their mutually supportive properties are activated, so that their combined effect is greater than the sum of their individual impact (MacDuffie, 1995). Although the idea of HRM bundling has featured in many HPWP studies, there is little consensus on what HRM practices should be included in a typical HPWP bundle (Beltrán-Martín et al., 2008). In the present study, we follow Appelbaum et al.’s (2000) Ability-Motivation-Opportunity (AMO) model in deciding the HRM practices to include in our HPWP bundle. The AMO model stipulates three key dimensions for HPWP – *ability* (e.g., staff training), *motivation* (e.g., performance appraisal), and *opportunity* (e.g., team working) (Jiang, Lepak & Baer, 2012; Zhang & Morris, 2014). A key aspect of this model is that all three elements should be applied coherently together in order to elicit positive employee attitudes and foster organizational performance.

### **Cross-level effects of HPWP**

HPWP have been associated positively with organizational performance indicators such as financial performance (Guerrero and Barraud-Didier, 2004), labour productivity (MacDuffie, 1995), reduced staff absence (Wood et al., 2012), and healthcare-specific outcomes such as patient satisfaction (Sang, DonHee, & Chang-Yuil, 2012) and reduced patient mortality (West et al., 2006). The rationale for a positive HPWP–performance relationship is hinged on the resource-based view (RBV) of an organization, the assumption that employees are a primary source of competitive advantage for an organization (Barling et al., 2003). An organization’s human resources represent a rare and inimitable asset that the organization may deploy to perform better than its competitors. In line with this reasoning, a number of scholars have explored the role of employee outcomes in explaining the links between HPWP and organizational performance (Bonias et al., 2010; Jiang et al., 2012; Zhang & Morris, 2014).

These studies depict employee outcomes as having a significant mediating role in terms of the links between HPWP and organizational performance.

The AMO model is one of the most prominent theoretical frameworks that describe the intermediary role of employee outcomes in the HPWP–performance relationship (Van De Voorde, Paauwe, & Van Veldhoven, 2012). The model assumes HRM systems can improve employee attitudes and reinforce organizational performance if such systems develop employees' ability and motivation to perform well, and provide opportunities for employees to exert discretionary effort (Appelbaum et al., 2000). Within the AMO framework, employees' job satisfaction is commonly cited as a positive employee outcome (Jiang et al., 2012). Job satisfaction refers to the positive emotional state arising from one's assessment of one's workplace experiences (Barling et al., 2003). Another useful employee-level outcome is employee work engagement, defined as the positive and rewarding work-related state of mind that inspires individuals to undertake their jobs in ways most favourable to organizational success (Schaufeli & Bakker, 2004). Both job satisfaction and employee engagement are vital for the effective functioning of an organisation, and relevant for service quality in healthcare delivery (Sang et al., 2012; West & Dawson, 2012).

#### *HPWP and employee outcomes*

There is evidence to suggest a direct positive relationship between HPWP and employees' job satisfaction (Barling et al., 2003; West et al., 2006) and work engagement (Bal, Kooij, & De Jong, 2013). HPWP impact favourably on these outcomes because they transmit positive signals regarding the extent to which employees are valued by the organization (Whitener, 2001; Gould-Williams, 2003). These signals may be transmitted through the AMO components of HPWP. Thus, by enhancing employees' skills (e.g., through employee training), motivating employees to perform well (e.g., through workplace support), and providing opportunities for employees to utilize their skills (e.g., team working), HPWP influence

employees' perceptions as to how much the organization is concerned about their welfare. This in turn might enhance employees' job satisfaction (Gould-Williams, 2003) and stimulate their level of work engagement (Bal et al., 2013).

Pertinent here is the norm of reciprocity, a social exchange theory explaining the mutual expectation of reciprocity between management and employees (Whitener, 2001). Norm of reciprocity connotes the expectation that favourable treatment from management towards employees may trigger a sense of obligation, on the part of employees, to reciprocate through positive workplace behaviours and greater levels of dedication at work. For example, the provision of training, job autonomy, team working, and workplace support, as part of HPWP, might relay consistent signals about management's desire to develop a more competent and motivated workforce. Employees perceive these signals as a form of managerial 'goodwill' aimed at improving employees' job performance. In return, employees may attach positive meanings to the intended outcomes of HPWP and exert their physical and cognitive energies at work. On this basis, we anticipate a direct positive relationship between HPWP and employees' job satisfaction and work engagement.

*Hypothesis 1:* HPWP are directly and positively associated with employees' job satisfaction

*Hypothesis 2:* HPWP are directly and positively associated with employee work engagement.

#### *HPWP, employee outcomes, and organization performance*

In addition to their direct positive relationship with employees' job satisfaction and work engagement, HPWP might influence organizational performance through the mediating role of these employee outcomes. That is to say, job satisfaction and employee engagement could facilitate an indirect relationship between HPWP and organizational performance. This type of indirect relationship illustrates what has become known as the mutual gains perspective

of HPWP (Van De Voorde et al., 2012; Ogbonnaya & Valizade, 2015), the idea that HPWP foster a ‘win-win’ situation in which both the organization and employees are beneficiaries. The mutual gains perspective holds that employee outcomes are central in the causal chain between HPWP and organizational performance. Given that employees are in a more direct line of sight to HRM practices, HPWP tend to have the most immediate impact on employee outcomes (Zhang and Morris, 2014), and through this impact, organisational performance outcomes are elicited (Bonias et al., 2010). In what follows, we specify our typology of organizational performance and outline how it might be affected by employees’ job satisfaction and work engagement.

Organizational performance has been conceptualized in different ways. Dyer and Reeves (1995, p, 661) described at least three categories of organizational performance in HRM research. The first two categories, human resource and organizational outcomes, are more directly influenced by HRM activities, whereas the third category, financial outcomes, is less directly influenced by HRM activities. The present study concentrates on staff absenteeism and customer satisfaction (precisely patient satisfaction), which reflect Dyer and Reeves’s human resource and organizational outcomes, respectively. Staff absenteeism is a measure of employees’ habitual pattern of absence from work. It can be distinguished as voluntary (absences within the immediate control of the employee) or involuntary (absences beyond the immediate control of the employee) absenteeism (Sagie, 1998). Customer satisfaction is concerned with customers’ feelings of pleasure and contentment derived from the services (e.g., perceived quality of care) rendered by an organisation (Sang et al., 2012).

If HPWP improve employees’ job satisfaction, as assumed in Hypotheses 1, we might expect a corresponding reduction in staff absenteeism. This expectation follows the idea that the more satisfied employees are with work, the less likely they are to be absent from work (Hackett, 1989; Sagie, 1998; Hardy, Woods & Wall, 2003). The question may arise, however,

as to whether the negative job satisfaction–absenteeism relationship is specific to voluntary but not involuntary employee absence. In a comprehensive review of the literature, Hackett (1989) found little variation in the reported negative relationship between job satisfaction and both forms of absenteeism. Absenteeism is fundamentally a behavioural reflection of one’s level of attachment or detachment from work, rather than a mere indication of morbidity (Hardy et al., 2003). As such, satisfied employees would tend to avoid withdrawal behaviours even if they might have genuine reasons (e.g., sickness) to be absent from work (Sagie, 1998; Hardy et al., 2003). As with job satisfaction, employee engagement is also an important factor for reducing absenteeism (West & Dawson, 2012). Thus, one would expect a decline in staff absenteeism if HPWP increase employees’ level of engagement with work. High employee engagement is concomitant with lower levels of burnout and diminished interest in work (Schaufeli & Bakker, 2004), and this could have a significant reducing impact on employees’ habitual pattern of absence from work.

*Hypothesis 3a:* Employees’ job satisfaction mediates a negative relationship between HPWP and staff absenteeism.

*Hypothesis 3b:* Employee engagement mediates a negative relationship between HPWP and staff absenteeism.

Our expectation for a positive indirect relationship between HPWP and patient satisfaction via job satisfaction and employee engagement is based on the idea that satisfied and engaged workers tend to be more productive than their counterparts (West & Dawson, 2012; Taris et al., 2009). Such employees take pride in doing high-quality work and perform their jobs at a high standard to ensure customer satisfaction. This assumption was confirmed in a meta-analysis by Harter, Schmidt and Hayes (2002) who concluded that employees’ job satisfaction and work engagement promote organizational outcomes (e.g., customer satisfaction) at a magnitude that may generalize across different companies. Similarly, Sang et

al. (2012) found evidence that job satisfaction and employee engagement are positively associated with customer satisfaction in high-contact work environments such as hospitals. Satisfied and engaged workers strive to foster positive interactions with patients because they are happy with their job, and sometimes, with the organisation as a whole. As a consequence, we anticipate higher job satisfaction and employee engagement arising from HPWP to enhance patient satisfaction.

*Hypothesis 4a:* Employees' job satisfaction mediates a positive relationship between HPWP and patient satisfaction

*Hypothesis 4b:* Employee engagement mediates a positive relationship between HPWP and patient satisfaction

### **The study**

Our cross-level predictions involve a type of hierarchical mediation process in which both HPWP and organizational performance are operationalized at the organizational level, and employee outcomes at the individual level. Whilst such predictions are common in HRM studies, researchers have tended to adopt single-level mediation techniques that do not account for differences across analytical levels (Croon et al., 2015). The main drawback of applying single-level analysis to cross-level data is that the assumption of independent observations is violated; leading to biased standard error estimates (Preacher et al., 2010). Multilevel mediation analysis is more suitable for mediation models involving two or more hierarchical levels. The premise for multilevel mediation is that mediated effects are influenced by different mechanisms at Level-2 and Level-1; hence, the need to account for variation in measurement errors across levels (MacKinnon, 2008). Various multilevel mediation designs have been proposed including 1-1-2, 2-1-1, 2-2-1, and 2-1-2 mediation models (MacKinnon, 2008; Preacher et al., 2010; Croon et al., 2015).

The present study adopts the 2-1-2 mediation model, first introduced by Preacher et al. (2010). This model is based on Multilevel Structural Equation Modelling (MSEM) with a latent variable measurement model. It entails two kinds of cross-level effects: a 2-1 portion (the effect of a Level-2 predictor on a Level-1 mediator) and a 1-2 portion (the effect of a Level-1 mediator on a Level-2 outcome). Both portions of the model are examined simultaneously following a one-stage procedure that estimates the direct and indirect multivariate pathways. Preacher et al.'s 2-1-2 mediation model is preferred to other multilevel mediation techniques because it supports a random coefficient typology in which both the intercepts and slopes are allowed to vary randomly across Level-2 units. This takes into account the fact that the indirect relationship between a Level-2 predictor (e.g., HPWP) and a Level-2 outcome (organizational performance) via a Level-1 mediator (employee outcomes) varies across Level-2 units.

More recently, Croon et al. (2015) demonstrated applicability of the 2-1-2 mediation model in HRM research. Their approach was called a 'bathtub model' due to its steep vertical sides and relatively flat bottom (see Figure 1). Croon et al. examined two approaches to the bathtub model. The first approach involves MSEM with latent variables, same method as Preacher et al. (2010). The second approach is similar to Preacher et al., as both the 2-1 and 1-2 portions of the model are examined simultaneously; however, it uses manifest variables rather than latent variables. Our analysis corresponds to Croon et al.'s second approach due to the nature and design of our study variables. But to be consistent with Preacher et al. (2010) we adopted a random coefficient typology that includes both random intercepts and random slopes. The advantage is to allow each Level-2 unit to have a unique 2-1 and 1-2 effect, in addition to having unique intercepts.

### **Sample and data**

We used data from the 2012 NHS Staff Survey, the tenth in a series of annual surveys first conducted by the Care Quality Commission (CQC) in 2003. The survey covers employees

of all NHS Trusts in England and provides information regarding organization of work, job design, occupational health and safety management, employee attitudes and well-being. NHS Trusts are corporations within the British NHS that provide specialised hospital, community and healthcare services. Data were gathered through self-completion questionnaires, distributed by external survey contractors to a random selection of NHS employees. The survey contractors, appointed by the CQC, were responsible for collecting completed questionnaires and returning them to an Advice Centre in Aston University. A total of 101,169 questionnaires from 259 NHS Trusts in England were completed and returned. The median number of employees in sampled NHS Trusts is 398, and the range is 75 to 580.

Data for organisational performance were obtained from other sources, and matched with data from the 2012 NHS Staff Survey. Staff absenteeism data were collected via sickness absence rates (the number of full time equivalent [FTE] calendar days lost to sickness absence divided by the number of FTE days available in a calendar year) for employees at NHS Trusts on the Electronic Staff Record (ESR). The ESR is a human resources and payroll system containing NHS staff records. Data on patient satisfaction were derived from the 2012 National Patient Survey, a survey on patients' overall ratings of care and treatment received during their admission to hospital. The survey covers issues that affect patients' admission to hospital, interaction with healthcare professionals, care and treatment, and operation procedures. Adult patients, excluding maternity and psychiatry patients, who had stayed in the participating NHS Trust for at least one night, were invited to take part in the survey. A total of 64,505 respondents completed the survey, with a response rate of 49%.

## **Measures**

### *HPWP bundle*

Our HPWP measure was derived by eight HRM practices that reflect at least one of three dimensions of the AMO model – staff training (*ability*); performance appraisal and

supportive management (*motivation*); team working, job design, job discretion, involvement in decisions and communication (*opportunity*). The eight HRM practices were operationalized as multiple-item scales using items from the 2012 NHS Staff Survey. All items, except those for staff training and performance appraisal, were measured by five-point Likert scales from 1 = ‘Strongly disagree’ to 5 = ‘Strongly agree’. Staff training was developed from seven items, each measuring different aspects of the training (e.g., infection control, health and safety) paid for or provided by the NHS Trust. Performance appraisal was measured by three binary ‘Yes’ or ‘No’ items (e.g., did appraisal help you to improve how you do your job?). Although we were constrained by coverage of HRM questions in the 2012 NHS Staff Survey, our HRM measures were consistent with previous healthcare studies (e.g., Preuss, 2003; West et al., 2006; Bonias et al., 2010, Sang et al., 2012).

Since organizational-level information was not measured directly in the 2012 NHS Staff Survey, organizational-level HRM practices were derived indirectly by data aggregation (Shen, 2015), a commonly used procedure in management research (e.g., Whitener 2001; Sun, Aryee & Law, 2007; Taris et al, 2009). Three statistical tests were performed to justify our use of data aggregation. Two of these tests, Intraclass Correlation Coefficient 1 and 2 (ICC1 and ICC2) examined the degree of interrater reliability among raters of observed items (see details Bliese, 2000; LeBreton & Senter, 2008). The third test was the interrater agreement index ( $r_{WG(j)}$ ) for ascertaining absolute consensus between ratings supplied by raters (Bliese, 2000; LeBreton & Senter, 2008). Our tests showed sufficient justification for data aggregation. ICC1 values ranged from 0.02 to 0.06, and ICC2 values from 0.76 to 0.95. The mean  $r_{WG(j)}$  values for each of the eight HRM practices ranged from 0.73 to 0.97. As an additional check, we performed a paired t-test to compare the means of HRM practices at the aggregate-level and the non-aggregated level to ensure that they do not vary significantly. We found no significant differences in means across the levels of HRM practices.

In line with previous HPWP studies (e.g., Guerrero & Barraud-Didier, 2004; Sun et al., 2007; Beltrán-Martín et al., 2008), we used factor analysis by means of a single Confirmatory Factor Analysis (CFA) model to derive and validate our HPWP bundle. Goodness-of-fit was assessed by the Comparative Fit Index (CFI) at the cut-off level of  $\geq .95$ , and the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) at cut-off levels of  $< .08$  (see details Byrne, 2012). All HRM practices loaded adequately and significantly on a single HPWP latent factor (CFI = 0.950; RMSEA = 0.009, SRMR = 0.043). The validity of our HPWP measure was further strengthened by adequate Composite Reliability (CR) and Average Variance Extracted (AVE) scores (see Table 1). The HPWP bundle, hereinafter referred to as HPWP, was measured as a composite of all eight HRM practices.

#### *Employee outcomes*

Employees' job satisfaction was derived from eight items each measuring the level of pleasure derived from different aspects of employees' jobs. Each item was measured on a five-point Likert scale from 1 = 'Very dissatisfied' to 5 = 'Very satisfied' ( $\alpha = 0.86$ ). Employee engagement was derived from three items measured on a five-point Likert scale from 1 = 'Strongly disagree' to 5 = 'Strongly agree' ( $\alpha = 0.81$ ). The items are based on a measure of psychological engagement as defined by its three main dimensions – vigour, dedication and absorption. CR and AVE were tested to establish convergent and discriminant validity of the employee outcome scales (see Table 1). The AVE value for employee engagement is slightly lower than the 0.50 threshold, but its CR value is strong and factor loadings for its constituent items are greater than 0.60 ( $p < 0.001$ ).

#### *Organizational performance*

Staff absenteeism was measured by the average number of days lost to employee sickness absence in the period between July 2011 and June 2012. Patient satisfaction was

derived from the 2012 National Patient Survey by six items measured on a ten-point Likert scale, where ten indicates higher patient satisfaction (Cronbach's alpha = 0.83). These items were aggregated as mean scores that proxy patient satisfaction for each NHS Trust.

### *Control variables*

We introduced a number of control variables. The control variables were originally measured at the employee level, but due to the multilevel nature of our analysis, aggregate scores were developed to proxy organizational-level characteristics of each NHS Trust. The control variables include: gender (female is the reference category), age (six age bands with '66 and above' as the reference), working hours, the degree of employee contact with patients (with 'no contact' as reference), workplace tenure (six bands with 'more than 15 years' as reference), and occupational group (ten categories with 'registered nurses and midwives' as reference).

### **Hypotheses testing**

Hypothesized relationships were examined by two separate 2-1-2 mediation models, using the robust maximum likelihood (MLR) estimator in each. The models, labelled Models 1 and 2, involve a single-stage process that estimates simultaneously the direct relationship between HPWP and employee attitudes, and the indirect relationship between HPWP and organizational performance via the employee outcomes. Our preference for the MLR estimator lies in its capacity to accommodate large survey data and provide robust standard errors in multilevel analysis (Asparouhov & Muthén, 2006). The MLR estimator also has good utility for multilevel mediation analysis (Preacher et al., 2010). Model 1 corresponds to Hypotheses 1, 3a and 4a, while Model 2 corresponds to Hypotheses 2, 3b and 4b.

Indirect or mediated effects ( $\alpha\beta$ ) were calculated by the product-of-coefficients method (MacKinnon, Fritz, Williams, & Lockwood, 2007), where  $\alpha\beta$  is the product of  $\alpha$  (the regression path between the independent variable and the mediator) and  $\beta$  (the regression path between

the mediator and the dependent variable). Statistical significance for the  $\alpha\beta$  coefficient was validated by confidence intervals from the distribution of the product method (MacKinnon et al., 2007) and the Monte Carlo method for assessing mediation (Preacher et al., 2010), both of which are suitable for multilevel models. The distribution of the product method estimates indirect effects by comparing the product of standardized scores for  $\alpha$  and  $\beta$  parameters to a table of critical values, whereas the Monte Carlo method examines indirect effects by simulating a sampling distribution of the  $\alpha\beta$  coefficient (Preacher et al., 2010).

## Results

Descriptive statistics and correlations between study variables are provided in Table 1. Multivariate results are presented in Tables 2 (for Model 1) and 3 (for Model 2). Each table contains a 'Part A' showing standardized regression coefficients, corresponding residuals and statistical significance for the direct effects, and a 'Part B' showing confidence intervals for indirect effects. As shown in 'Part A' of Table 2, HPWP have a direct positive relationship with employees' job satisfaction ( $\beta = 0.148, p < 0.001$ ); thus, Hypothesis 1 is fully supported. HPWP are negatively related with staff absenteeism ( $\beta = -0.236, p < 0.001$ ) and positively related with patient satisfaction ( $\beta = 0.208, p < 0.001$ ). Job satisfaction is negatively related with staff absenteeism ( $\beta = -0.131, p < 0.001$ ) and positively related with patient satisfaction ( $\beta = 0.095, p < 0.001$ ). The 95% confidence intervals reported in the lower portion of Table 2 (Part B) show the mediated path from job satisfaction to staff absenteeism is significant and negative, whereas the path from job satisfaction to patient satisfaction is significant and positive. Thus, job satisfaction mediates a negative relationship between HPWP and staff absenteeism, and mediates a positive relationship between HPWP and patient satisfaction (full support for Hypotheses 3a and 4a, respectively).

'Part A' of Table 3 shows HPWP have a direct positive relationship with employee engagement ( $\beta = 0.097, p < 0.001$ ); thus, full support for Hypothesis 2. HPWP relate negatively

with staff absenteeism ( $\beta = -0.327, p < 0.001$ ) and positively with patient satisfaction ( $\beta = 0.182, p < 0.001$ ). Employee engagement relates negatively with staff absenteeism ( $\beta = -0.028, p < 0.001$ ), but has no significant relationship with patient satisfaction ( $\beta = 0.001, p > 0.05$ ). The 95% confidence intervals reported in 'Part B' of Table 3 show a negative path from employee engagement to staff absenteeism, but a non-significant path from engagement to patient satisfaction. Employee engagement mediates a negative relationship between HPWP and staff absenteeism (support for Hypothesis 3a), but no significant indirect relationship was found between HPWP and patient satisfaction via employee engagement (Hypothesis 4a not supported).

## **Discussion**

HRM research has lagged behind other disciplines in applying multilevel analytical methods and theories (Shen, 2015). Up till now, the mediating role of employee outcomes in terms of the HPWP–performance relationship is rarely examined by multilevel mediation procedures. Researchers have often used single-level mediation methods that fail to account for interdependences among employees nested within the same organization. Acknowledging this methodological gap, the present study adopted the 2-1-2 mediation model to examine simultaneously the direct impact of HPWP on employees' job satisfaction and work engagement, and the role of these employee outcomes in explaining the links between HPWP and organizational performance.

We found evidence that HPWP are directly and positively related to employees' job satisfaction and work engagement, respectively. This evidence corroborates reports that a coherent bundle of HRM practices might encourage positive employee attitudes and behaviours (Macky & Boxall, 2007; Bal et al., 2013). When an extensive range of HRM practices are used together in combination, they generate mutually supportive effects that shape the quality of employees' functioning at work (Appelbaum et al., 2000; Van De Voorde et al., 2012).

Moreover, individual components of HPWP may each have varying positive and/or negative effects on employee outcomes, but their combined use may override some of the negative effects to create an overall positive influence on employees (Macky & Boxall, 2007). Some critics may disagree with this, arguing that extensive use of HPWP could intensify work, encourage employee exploitation, and exert harmful effects on employee well-being (Kroon, Van de Voorde, & Van Veldhoven, 2009). Our findings deviate from this criticism and demonstrate instead that the combined utility of range of HRM practices is beneficial for employees' job satisfaction and work engagement.

The positive HPWP–satisfaction and HPWP–engagement relationships add value to the notion that HPWP have positive signalling effects (Gould-Williams, 2003). HPWP entail a set of job characteristics, which according to the AMO model, enhance employees' workplace abilities, improve employees' motivation to utilize their abilities, and provide opportunities for employees' to exercise discretionary effort (Appelbaum et al., 2000; Zhang & Morris, 2014). These characteristics relay positive signals about the extent to which employees are integral to organizational growth. Employees in turn perceive these signals as favourable treatment from management and reciprocate through a positive disposition toward the organization (Whitener, 2001; Bal et al., 2013). This type of management–employee exchange relationship has practical implications, more so in healthcare settings, as positive employee attitudes and behaviours are essential for employees' work efficacy (Harter et al., 2002). Employers need, therefore, to examine their HRM strategies and ensure that the right signal communicated to employees in a consistent manner. This will enhance employees' understanding of what the organization expects of them and elicit desirable employee responses.

With regard to the specific context of our study, the public healthcare sector, our results demonstrate the potency of HPWP beyond organizational settings (e.g., the manufacturing sector and financial institutions) where HPWP outcomes have conventionally been examined.

We show that the direct positive relationship between HPWP and desired employee outcomes may also apply in hospital environments. This lends support to the ‘universalist’ principle of HRM, the idea that management models such as HPWP represent a set of ‘best’ HRM practices that generate positive effects irrespective of organizational settings, size, industry, or corporate strategy (Pfeffer, 1994). Whilst HPWP have been shown to have positive effects on employee outcomes in private sector work environments (e.g., Appelbaum et al., 2000; Sun et al., 2007; Zhang & Morris, 2014), our analysis shows HPWP may also impact positively on employee outcomes in public healthcare settings.

One of the more significant evidence to emerge from our analysis concerns the role of employee outcomes in explaining the process mutual gains (or the idea that HPWP create a ‘win-win’ situation for both employees and employers). We found evidence that higher job satisfaction and employee engagement (benefit for employees) arising from HPWP may in turn reduce staff absenteeism (benefit for employers). Thus, when organizations make investments in coherent bundles of HRM practices, they are likely to achieve lower levels of habitual patterns of sickness absence among employees due to increased job satisfaction and employee engagement. One could also take this to imply that lower employees’ job satisfaction and lack of engagement are critical factors to the number of working days lost by an organization to sickness absence. Our findings therefore convey a practical message to managers in organizations such as the British NHS where the annual cost of employees’ sickness absence is worth over £1.7 billion (Boorman, 2009). The use of HPWP might foster positive employee outcomes, and these are likely to avert excessive financial costs due to staff absence.

Another important evidence to emerge from the present study is that job satisfaction mediates a positive relationship between HPWP and patient satisfaction. That is to say, higher job satisfaction arising from a coherent bundle of HRM practices might spill on to patient satisfaction. We interpret this to suggest that HPWP positively influence patients’ perceptions

of the quality of care and treatment received at the hospital, and employees' job satisfaction might explain why. Indeed, if employers expose their employees to management practices that have tangible benefits for workers' experience of job satisfaction, employees are more likely to perform their jobs in ways that promote favourable patient (or customer) experiences. Our result has practical significance for practitioners given that customer satisfaction is both an indicator of organizational performance (Dyer and Reeves, 1995) and a criterion for assessing service quality in hospital settings (Sang et al., 2012). Managers have good reasons to justify enactment of HPWP given the positive impact on employees' job satisfaction and thence customer satisfaction.

Contrary to expectations, we found no significant indirect relationship between HPWP and patient satisfaction via employee engagement. This finding contradicts previous evidence that employees who feel vigorous, enthused and dedicated at work are more likely to interact better with clients and deliver high-quality service (Harter et al., 2002; Sang et al., 2012). A possible explanation for the unexpected result is that the healthcare profession is one often characterized by high levels of vocational commitment (Truss, 2003); thus, patients may naturally have high expectations of quality care and treatment during admission to hospital. Patients might simply interpret the healthcare professionals' display of vigour and dedication as part of what is to be encountered in the healthcare system, rather than a reflection of exceptional customer service. Along these lines, one can appreciate why higher employee engagement arising from HPWP may not significantly mediate a positive HPWP–patient satisfaction relationship.

### **Strengths and limitations of study**

The main strength of the present study lies in the use of a large nationally representative survey to show how positive employee outcomes might mediate the relationship between HPWP and organizational performance. The study also considered a specific type of multilevel

mediation analysis, the 2-1-2 mediation model, which is rarely applied in examining the HPWP–employee–performance relationship. The 2-1-2 analytical design allowed us to separate measurement errors into Level-1 and Level-2 components to enhance predicting accuracy.

Despite its methodological benefits, the study has a number of limitations. The first, which is not uncommon in HRM research, concerns our use of cross-sectional data. Although our emphasis on existing theory and use of multilevel analysis may have helped to increase confidence in our findings, we advise caution in terms of interpreting our results beyond the precise context of our analysis. The present study was also constrained by coverage of relevant HRM questions in the 2012 NHS staff Survey, and therefore, a HPWP measure that may not have been entirely comprehensive. In particular, HRM practices such as compensatory rewards, selective hiring and grievance resolution have featured in previous HPWP studies (Combs et al., 2006), but were not covered in the present study due this limitation. Although our HPWP measure includes a more extensive range of HRM practices than some healthcare studies (e.g., Preuss, 2003; Sang et al., 2012), we caution researchers against replicating our HPWP measure without careful consideration of prior research.

We hope future studies will apply the 2-1-2 mediation approach described in investigating HPWP outcomes beyond job satisfaction and employee engagement. Researchers may incorporate other relevant employee outcomes such as self-efficacy, employee trust in management, organizational citizenship behaviours in examining cross-level effects of HPWP, but adopt a hierarchical research design to ensure more accurate cross-level predictions. More research is also needed to better understand the HPWP–employee–performance relationship in more context-specific work environments such as the police force, the fire service, and social services. Research in these areas would expunge unwitting assumptions about limited applicability of HPWP in the public services sector.

## **Conclusion**

The present study has shown how HPWP, a coherent bundle of HRM practices, might influence employees' job satisfaction and work engagement. The study has shown that higher job satisfaction and employee engagement resulting from HPWP might reduce levels of staff absenteeism; a result which is consistent with the mutual gains view of HRM. Employees' job satisfaction was also identified as a pathway through which HPWP might improve patient satisfaction, but no significant indirect relationship was found for the path through employee engagement. Our analysis considered the applicability of the 2-1-2 mediation model in HPWP research. Our findings cast light on avenues for improving workplace effectiveness, and illustrate the role of innovative HRM in promoting better employment relations in the context of a public healthcare organization.

## References

- Appelbaum, E., Bailey, T., Berg, P. & Kalleberg, A. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Ithaca, NY: ILR Press.
- Asparouhov, T. & Muthén, B. (2006). *Multilevel modeling of complex survey data*. Paper presented at the American Statistical Association Conference, Seattle, WA: American Statistical Association.
- Bal, P., Kooij, D., & De Jong, S. (2013). How Do Developmental and Accommodative HRM Enhance Employee Engagement and Commitment? The Role of Psychological Contract and SOC Strategies. *Journal of Management Studies*, 50, 545-572.
- Barling, J., Iverson, R., & Kelloway, K. (2003). High-quality work, job satisfaction, and occupational injuries. *Journal of Applied Psychology*, 88, 276–283
- Beltrán-Martín, I., Roca-Puig, V., Escrig-Tena, A., & Bou-Llusar, J. (2008). Human resource flexibility as a mediating variable between high performance work systems and performance. *Journal of Management*, 34, 1009-1044.
- Bliese, P. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In Klein, K. J. & Kozlowski, S. W. (Ed.) *Multilevel theory, research, and methods in organizations*, 349-381. San Francisco: Jossey-Bass.
- Bonias, D., Bartram, T., Leggat, S., & Stanton, P. (2010). Does psychological empowerment mediate the relationship between high performance work systems and patient care quality in hospitals? *Asia Pacific Journal of Human Resources*, 48, 319–337.
- Boorman, S. (2009). The final report of the independent NHS health and well-being review [pdf]. Retrieved from: [www.dh.gov.uk/publications](http://www.dh.gov.uk/publications)
- Byrne, B. (2012). *Structural equation modelling with Mplus: Basic concepts, applications and programming*. New York: Taylor & Francis Group, LLC.

- Combs, J., Liu, Y., Hall, A., & Ketchen, D. (2006). How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology, 59*, 501–528.
- Croon, M., Van Veldhoven, M., Peccei, R., & Wood, S. (2015). Researching individual well-being and performance in context: Multilevel mediational analysis for bathtub models. In M. van Veldhoven & R. Peccei (Eds.), *Well-being and performance at work: The role of context* (pp. 129-154). Hove: Psychology Press.
- Delery, J. (1998). Issues of fit in strategic human resource management: Implications for research. *Human Resource Management Review, 8*, 289-309
- Dyer, L., & Reeves, T. (1995). Human resource strategies and firm performance: what do we know and where do we need to go? *International Journal of human resource management, 6*, 656-670.
- Guerrero, S., & Barraud-Didier, V. (2004). High-involvement practices and performance of French firms. *The International Journal of Human Resource Management, 15*, 1408-1423.
- Gould-Williams, J. (2003). The importance of HR practices and workplace trust in achieving superior performance: a study of public-sector organizations. *International Journal of Human Resource Management, 14*, 28–54.
- Hackett, R. (1989). Work attitudes and employee absenteeism: A synthesis of the literature. *Journal of Occupational Psychology, 62*, 235–248.
- Hardy, G., Woods, D., & Wall, T. (2003). The impact of psychological distress on absence from work. *Journal of Applied Psychology, 88*, 306-14.
- Harter, J., Schmidt, F., & Hayes, T. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: a meta-analysis. *Journal of applied psychology, 87*, 268.

- Jiang, K., Lepak, D., & Baer, J. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55, 1264-1294.
- Kroon, B., Van de Voorde, K., & Van Veldhoven, M. (2009). Cross-level effects of high-performance work practices on burnout: Two counteracting mediating mechanisms compared. *Personnel Review*, 38, 509-525.
- Lawler, E. (1986). *High-Involvement Management*. San Francisco, CA: Jossey-Bass.
- LeBreton, J., & Senter, J. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods*, 11, 815-852.
- MacDuffie, J. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review*, 48, 197-221.
- MacKinnon, D., Fritz, M., Williams, J., & Lockwood, C. (2007). Distribution of the product confidence limits for the indirect effect: Program PRODCLIN. *Behavior Research Methods*, 39, 384-389.
- MacKinnon, D. (2008). *Introduction to Statistical Mediation Analysis*. New York, NY: Lawrence Erlbaum.
- Macky, K., & Boxall, P. (2007). The relationship between 'high performance work practices' and employee attitudes: An investigation of additive and interaction effects. *The International Journal of Human Resource Management*, 18, 537-567.
- Mohr, R., & Zoghi, C. (2008). High-Involvement Work Design and Job Satisfaction. *Industrial & Labor Relations Review*, 61, 275-296.
- Ogbonnaya, C., & Valizade, D. (2015). Participatory workplace activities, employee-level outcomes and the mediating role of work intensification. *Management Research Review*, 38, 540-588.

- Preacher, K., Zyphur, M., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods, 15*, 209-233.
- Pfeffer, J. (1994). *Competitive Advantage through People: Unleashing the power of the workforce*. Boston, MA: Harvard Business School Press.
- Preuss, G. (2003). High performance work systems and organizational outcomes: The mediating role of information quality. *Industrial and Labor Relations Review, 56*, 590-605.
- Sagie, A. (1998). Employee absenteeism, organizational commitment, and job satisfaction: Another look. *Journal of vocational behavior, 52*, 156-171.
- Sang, L., DonHee, L., & Chang-Yuil, K. (2012). The impact of high performance work systems in the health-care industry: Employee reactions, service quality, customer satisfaction, and customer loyalty. *The Service Industries Journal, 32*, 17-36.
- Schaufeli, W., & Bakker, A. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of organizational Behavior, 25*, 293-315.
- Shen, J. (2015). Principles and Applications of Multilevel Modeling in Human Resource Management Research. *Human Resource Management*. doi: 10.1002/hrm.21666.
- Sun, L., Aryee, S., & Law, K. (2007). High-performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. *Academy of Management Journal, 50*, 558-577.
- Taris, T. W., & Schreurs, P. J. (2009). Well-being and organizational performance: An organizational-level test of the happy-productive worker hypothesis. *Work & Stress, 23*, 120-136.
- Truss, C. (2003). Strategic HRM: Enablers and constraints in the NHS. *The International Journal of Public Sector Management, 16*, 48-60.

- Van De Voorde, K., Paauwe, J., & Van Veldhoven, M. (2012). Employee well-being and the HRM–organizational performance relationship: A review of quantitative studies. *International Journal of Management Reviews*, *14*, 391-407.
- Walton, R. (1985). From ‘control’ to ‘commitment’ in the workplace. *Harvard Business Review*, *63*, 77–84.
- West, M., Guthrie, J., Dawson, J., Borrill, C., & Carter, M. (2006). Reducing patient mortality in hospitals: The role of human resource management. *Journal of Organizational Behaviour*, *27*, 983-1002.
- West, M., & Dawson, J. (2012). Employee engagement and NHS performance. The King’s Fund.
- Whitener, E. (2001). Do “high commitment” human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modelling. *Journal of Management*, *27*, 515-535.
- Wood, S., van Veldhoven, M., Croon, M., & De Menezes, L. (2012). Enriched job design, high involvement management and organizational performance: The mediating roles of job satisfaction and well-being. *Human Relations*, *65*, 419-445.
- Zhang, B., & Morris, J. (2014). High-performance work systems and organizational performance: testing the mediation role of employee outcomes using evidence from PR China. *The International Journal of Human Resource Management*, *25*, 68-90.

**Table 1. Descriptive statistics, Cronbach's alphas (in parenthesis) and correlations**

Variables	Means	Standard deviation	Composite reliability	Average variance extracted	1	2	3	4	5
1 Job satisfaction	3.52	0.72	0.83	0.63	(0.86)				
2 Employee engagement	3.82	0.83	0.88	0.48	0.58**	(0.81)			
3 HPWP	2.98	0.12	0.95	0.69	0.14**	0.10**	(0.92)		
4 Staff absenteeism	0.04	0.01	-	-	-0.02**	-0.05**	-0.27**	(-)	
5 Patient satisfaction	7.32	0.40	-	-	0.03**	-0.00	0.21**	-0.08**	(0.83)

*Sample size: 101,169 employees nested within 259 NHS Trusts*

*Statistical significance: \*\*\* =  $p < .001$ , \*\* =  $p < .01$ , \* =  $p < .05$*

**Table 2. Results of Model 1***Part A* – Direct effects of HPWP on job satisfaction, staff absenteeism and patient satisfaction

<b>Variables</b>	<b>Job satisfaction</b>		<b>Staff absenteeism</b>		<b>Patient satisfaction</b>	
	<i>Coefficient</i>	<i>Errors</i>	<i>Coefficient</i>	<i>Errors</i>	<i>Coefficient</i>	<i>Errors</i>
Job satisfaction	-	-	-0.131***	0.007	0.095*	0.004
HPWP	0.148***	0.003	-0.236***	0.004	0.208***	0.003
Male	0.010	0.005	-0.097***	0.007	-0.102***	0.006
Age (16 to 20 years)	-0.001	0.008	-0.012**	0.003	-0.048***	0.002
Age (21 to 30 years)	0.001	0.007	0.056**	0.006	0.054***	0.004
Age (31 to 40 years)	0.006	0.007	-0.008*	0.006	-0.080***	0.004
Age (41 to 50 years)	0.025**	0.008	-0.058***	0.007	-0.137***	0.005
Age (51 to 65 years)	0.024	0.014	-0.076***	0.010	-0.024***	0.008
Working hours	-0.033**	0.011	-0.011**	0.009	0.125***	0.006
Have frequent contact with patients	0.005	0.017	0.039***	0.014	0.023***	0.010
Have occasional contact with patients	0.006	0.007	0.087***	0.006	-0.125***	0.004
Tenure (less than 1 year)	0.010	0.005	-0.122***	0.004	0.080***	0.004
Tenure (1 to 2 years)	-0.005	0.005	0.011**	0.005	0.041***	0.003
Tenure (3 to 5 years)	-0.007	0.005	0.072***	0.005	-0.080***	0.003
Tenure (6 to 10 years)	-0.015*	0.006	-0.070***	0.005	0.055***	0.003
Tenure (11 to 15 years)	-0.003	0.007	-0.057***	0.006	-0.067***	0.004
Allied health professionals	-0.015*	0.006	-0.009*	0.005	-0.110***	0.004
Medical and dental	-0.009	0.005	-0.048***	0.005	-0.031***	0.003
Ambulance	-0.003	0.010	-0.207***	0.008	-0.120***	0.124
Public health	0.005	0.005	-0.018*	0.005	0.030***	0.005
Commissioning	-0.010	0.004	0.159***	0.006	-0.551***	0.020

Nursing assistants	0.010	0.006	0.144***	0.006	-0.094***	0.004
Social care	0.007	0.004	0.046***	0.003	-0.070***	0.022
Wider healthcare team	0.006	0.006	-0.105***	0.006	-0.014***	0.005
General management	-0.001	0.006	0.047***	0.006	-0.123***	0.005

**Part B** – Confidence intervals for indirect effects of HPWP on staff absenteeism and patient satisfaction via job satisfaction

	<b>Staff</b>		<b>Patient</b>	
	<b>absenteeism</b>		<b>satisfaction</b>	
	Lower limit	Upper limit	Lower limit	Upper limit
95% Confidence intervals from Monte Carlo method	-0.026	-0.013	0.010	0.018
95% Confidence intervals from distribution of the product method	-0.022	-0.017	0.013	0.015

*All regression coefficients and errors are standardized scores*

*Statistical significance: \*\*\* =  $p < .001$ , \*\* =  $p < .01$ , \* =  $p < .05$*

**Table 3. Results of Model 2***Part A* – Direct effects of HPWP on employee engagement, staff absenteeism and patient satisfaction

<b>Variables</b>	<b>Employee engagement</b>		<b>Staff absenteeism</b>	<b>Patient satisfaction</b>		
	<i>Coefficient</i>	<i>Errors</i>	<i>Coefficient</i>	<i>Coefficient</i>	<i>t</i>	<i>Errors</i>
Employee engagement	-	-	-0.028***	0.003	0.001	0.004
HPWP bundle	0.097***	0.004	-0.327***	0.006	0.182***	0.003
Male	-0.019*	0.006	-0.160***	0.005	-0.084***	0.006
Age (16 to 20 years)	0.003	0.010	-0.066***	0.004	0.046***	0.002
Age (21 to 30 years)	-0.016**	0.009	-0.052***	0.006	-0.006	0.004
Age (31 to 40 years)	-0.001	0.009	-0.265***	0.007	-0.009*	0.004
Age (41 to 50 years)	0.001	0.010	0.026***	0.008	0.058***	0.005
Age (51 to 65 years)	-0.007	0.016	0.173***	0.013	-0.048***	0.008
Working hours	-0.046***	0.012	0.145***	0.010	0.082***	0.006
Have frequent contact with patients	0.031	0.020	-0.025***	0.014	0.083***	0.010
Have occasional contact with patients	0.014	0.009	-0.004	0.007	0.143***	0.004
Tenure (less than 1 year)	0.020***	0.006	-0.037***	0.005	-0.043***	0.004
Tenure (1 to 2 years)	0.015**	0.006	-0.010***	0.005	-0.043***	0.003
Tenure (3 to 5 years)	0.016*	0.006	0.002	0.005	0.017**	0.003
Tenure (6 to 10 years)	0.015*	0.007	-0.130***	0.005	0.005	0.003
Tenure (11 to 15 years)	0.016*	0.008	-0.012***	0.006	-0.001	0.004
Allied health professionals	-0.029***	0.008	0.108***	0.006	-0.205***	0.004

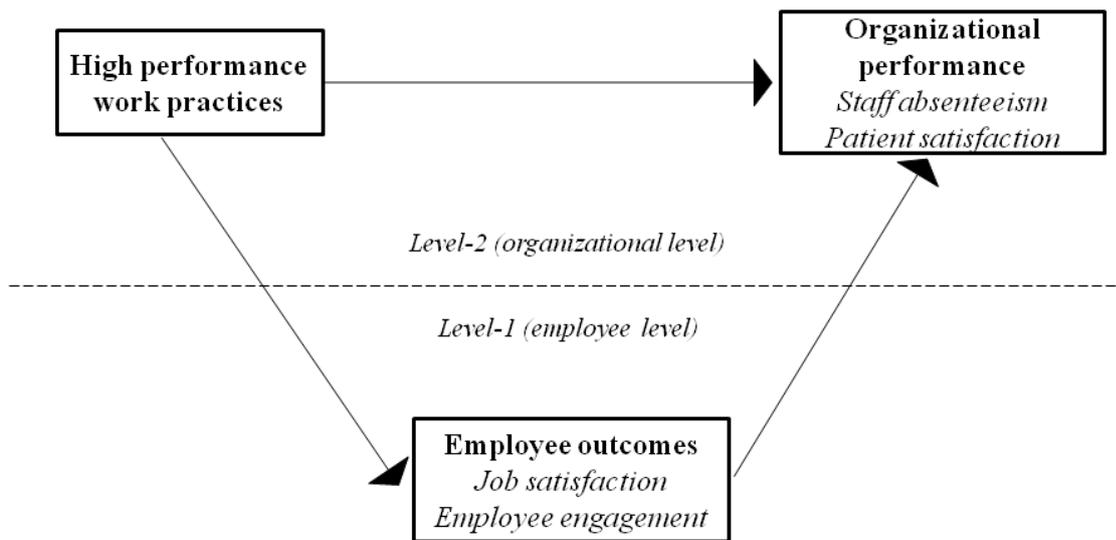
Medical and dental	-0.016*	0.006	-0.018***	0.005	-0.029***	0.003
Ambulance	0.007	0.012	-0.261***	0.009	0.249***	0.124
Public health	-0.013*	0.005	-0.072***	0.005	0.100***	0.005
Commissioning	-0.014*	0.005	0.142***	0.006	0.145***	0.020
Nursing assistants	-0.009	0.007	0.060***	0.006	-0.122***	0.004
Social care	-0.003	0.004	0.003	0.003	0.003	0.022
Wider healthcare team	-0.005	0.008	-0.056***	0.006	0.126***	0.005
General management	0.010	0.007	0.127***	0.004	-0.062***	0.005

**Part B** – Confidence intervals for indirect effects of HPWP on staff absenteeism and patient satisfaction via employee engagement

	Staff absenteeism		Patient satisfaction	
	Lower limit	Upper limit	Lower limit	Upper limit
95% Confidence intervals from Monte Carlo method	-0.005	-0.001	-0.002	0.003
95% Confidence intervals from distribution of the product method	-0.003	-0.002	-0.001	0.001

*All regression coefficients and errors are standardized scores*

*Statistical significance: \*\*\* =  $p < .001$ , \*\* =  $p < .01$ , \* =  $p < .05$*



**Figure 1. 2-1-2 Mediation Model involving HPWP, employee outcomes, and organizational performance**

## Appendix 1. Study variables

---

### *HPWP*

---

Staff training	Health and safety training Training on equality and diversity Training on how to prevent/handle violence and aggression Training on infection control Training on how to handle confidential information Training on how to deliver a good patient experience
Performance appraisal	Appraisal to improve how you do your job Appraisal to help agree clear objectives for your work Appraisal to leave you feeling that your work is valued by your organization
Supportive management	Immediate manager encourages workers to work as a team Immediate manager can be counted on to help with a difficult task Immediate manager gives clear feedback Immediate manager asks for opinion before making decisions Immediate manager is supportive in a personal crisis
Team working	Team members have a set of shared objectives Team members often meet to discuss the teams effectiveness Team members have to communicate closely with each other to achieve the teams objectives
Job design	Have clear, planned goals and objectives for my job Always know what my work responsibilities are
Job discretion	I am trusted to do my job I am able to do my job to a standard I am personally pleased with There are frequent opportunities for me to show initiative in my role I am able to make improvements happen in my area of work
Involvement in decisions	I am able to make suggestions to improve the work of my department I am involved in deciding on changes introduced that affect my work

	Senior managers here try to involve staff in important decisions
	I know who the senior managers are here
Communication	Senior managers act on staff feedback
	Communication between senior management and staff is effective

---

***Employee outcomes***

---

	Satisfaction with the recognition I get for good work.
	Satisfaction with the support I get from my immediate manager.
	Satisfaction with the freedom I have to choose my own method of working
Job satisfaction	Satisfaction with the support I get from my work colleagues
	Satisfaction with the amount of responsibility I am given.
	Satisfaction with the opportunities I have to use my skills.
	Satisfaction with the extent to which my organisation values my work
	Satisfaction with my level of pay.
	I look forward to going to work
Employee engagement	I am enthusiastic about my job
	Time passes quickly when I am working

---