

## ORIGINAL ARTICLE

# The influence of calculative (“hard”) and collaborative (“soft”) HRM on the layoff-performance relationship in high performance workplaces

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## Abstract

We investigate the effect of employment systems on the layoff-performance relationship. We construct a typology of two types of HPWS (Calculative or “hard” HRM and Collaborative or “soft” HRM) and two non-high performance systems (Traditional HRM and Low HRM). We use attribution theory as a framework from which to draw hypotheses. We examine survey responses from two waves of panel data. We employ cluster analysis to identify distinctive configurations of employment practices used in UK workplaces. We use the cluster outcomes as explanatory variables in moderator regression analysis. Following layoffs, we find that Calculative workplaces experience lower subsequent performance than Collaborative workplaces. Over the next five years, Calculative and Collaborative workplaces experience equivalent amounts of performance change but Calculative workplaces fail to make a full recovery.

## KEYWORDS

attribution theory, cluster analysis, collaborative and calculative HRM, high performance work systems, layoff-performance relationship, mutual gains, soft and hard HRM

## 1 | INTRODUCTION

In recent decades, a management strategy of large-scale layoffs has become the norm in many countries, causing upheaval and stress to countless thousands of employees, their families and local communities (De Meuse & Dai, 2012; Goyer, Clark, & Bhankaraully, 2016; Munoz-Bullon & Sanchez-Bueno, 2014). In the three months prior to June 2019 in the UK, a monthly average of 101,000 people was laid off and quarterly redundancy figures had rarely fallen below this level in the previous two decades (Office for National Statistics, 2018). Managers frequently justify this activity by arguing that a "leaner and meaner" structure will ensure that the organisation maintains its competitive edge (Datta, Guthrie, Basuil, & Pandey, 2010). Brockner and colleagues provide extensive evidence that layoff survivors respond vicariously to the treatment of co-workers (e.g., Brockner et al., 2004; Brockner, DeWitt, Grover, & Reed, 1990; Brockner, Grover, Reed, Dewitt, & O'Malley, 1987). Their findings suggest that survivors perceive unfair treatment and often react with lowered motivation and effort. Other research shows that employee reactions are not universal and the influence of layoffs on company performance is therefore uncertain (Schenkel & Teigland, 2017; for reviews, see Datta et al., 2010; Datta, Basuil, & Radeva, 2012). Such differences in survivor performance have been associated with different contexts or employment systems (Luan, Tien, & Chi, 2013).

We focus on employment systems in UK workplaces that consist of configurations of HRM practices which seek to engender high commitment and involvement from employees. These practices form part of a broader high performance work system (HPWS) that may also include other practices such as work design. In this article, we use the term HPWS with reference to high performance HRM practices. In an HPWS workplace, management aims to achieve the internal fit of its HRM practices as part of a Strategic HRM strategy. It establishes these practices to elicit employee investment in company skills, proactivity, and innovation by offering long-term employment with high wages (Wood & Wall, 2007). As employees in such workplaces are prompted to contribute by promises of ongoing future rewards, following layoffs, survivors might be the most demotivated of employees. Yet while HPWS has been extensively examined in relation to performance outcomes, there is scant evidence of its influence on the layoff-performance relationship. Further, there are two major types of high performance HRM that may be associated with different employee responses to layoffs. Calculative ("hard") HRM emphasises financial employee motivation or incentive practices, while Collaborative ("soft") HRM emphasises humanising motivation practices (e.g., Gooderham & Nordhaug, 2011). No major study has examined whether, following layoffs, these different types of HPWS are associated with different performance outcomes.

Our primary aim, therefore, is to compare the layoff-performance relationship in both Calculative and Collaborative contexts. We investigate the following research question: "are different types of HPWS associated with different layoff-performance relationships?" In recent years, researchers have applied attribution theory in studies of business organisations (e.g., Harvey, Madison, Martinko, Crook, & Crook, 2014). Using attribution theory, we develop a framework in which to hypothesise the influence of layoff severity on workplace performance in the context of different employment systems both in the short term and over a longer period. In order to capture the severity of layoffs, we measure the proportion of employees who are laid off (Trevor & Nyberg, 2008). In most countries, one type of HRM tends to predominate but a stream of studies has identified the co-existence of Calculative and Collaborative HRM as a long-term distinguishing feature of the UK (e.g., Cook, MacKenzie, & Forde, 2016; Gooderham, Nordhaug, & Ringdal, 1999; Jenkins & Delbridge, 2013; Legge, 2005; Machin & Wood, 2005; Storey, 1989). "The British regime appears to be unique in that both Calculative and Collaborative practices are widespread" (Gooderham et al., 1999:p. 526). Thus, to make our comparison, we conduct analyses of UK datasets, in the form of two Workplace Employment Relations Surveys (WERS1998 and WERS2004).

We begin by employing cluster analysis to sort the entire range of major employment practices used in UK workplaces in 1998 into distinctive configurations, that is, employment systems. We use layoffs and the employment system outcomes of the clustering process as explanatory variables in the regression analyses. First, we examine the association of layoffs and employment systems with subsequent or short-term performance in 1998. Initially, we examine layoffs and employment systems as main effects. Then our contribution is to combine these variables as

interaction terms to examine the moderating influence of employment systems on the layoff–performance relationship. Second, we examine the moderating influence of the same employment systems on the relationship between the layoffs and performance change over the following five years, 1999–2004.

## 2 | LAYOFFS, EMPLOYMENT SYSTEMS, AND SUBSEQUENT WORKPLACE PERFORMANCE

### 2.1 | Layoffs and performance

Attribution theory is based on Heider's premise (1958) that people act as “naïve psychologists” seeking to determine causation for behaviours and events (for a review, see Hewett, Shantz, Mundy, & Alfes, 2018). Once attributions are made by an individual, they influence the person's subsequent attitudes, motivating responses to the perceived purpose or cause. If a person makes a certain attribution, “it is not unreasonable to expect that he/she will then think, act, or feel in certain ways” (Kelley & Michela, 1980:p. 489). Attribution theory is often concerned with sources of blame, especially following a negative event (Weiner, 1986). A negative event triggers information-processing in individuals, resulting in attribution of responsibility (Kelley & Michela, 1980). In turn, this attribution may change an individual's future responses (Weiner, 1986). Attribution theory has been employed to investigate individual survivors' responses to a negative event in the form of layoffs of fellow workers (Hareli & Tzafrir, 2006).

Most attribution studies of individual responses to negative events have focused on two attribution types (derived from Heider, 1958): internal attribution (the event was caused by the traits or motivation of a person affected by the event) and external attribution (some other force caused the event). If the severity of layoffs in a workplace is low, survivors may allocate responsibility internally, for example, to the characteristics of workers who have been laid off (“poor performers” or “troublemakers”); if the severity of layoffs is high, survivors are more likely to allocate responsibility externally, that is, to management or the economy (Datta et al., 2010). Where attribution of failure is external, employees perceive they can do little to improve matters and performance quality is reduced (Bazarova & Hancock, 2012). Survivors become less likely to exert effort (Eberly, Holley, Johnson, & Mitchell, 2011). In consequence, the higher the severity of layoffs in a workplace, the lower the efforts of survivors.

**Hypothesis 1** *The greater the severity of layoffs, the lower the workplace's subsequent performance.*

### 2.2 | HPWS and performance

An increasing number of studies have employed attribution theory in relation to *group* attributions (Bazarova & Hancock, 2012; Martinko, Harvey, & Dasborough, 2011). Bowen and Ostroff developed group-based attribution theory to explain workforce perceptions of management expectations and rewards (Bowen & Ostroff, 2004; Ostroff & Bowen, 2016). Their perspective has been used to examine the links between HRM practices, employee attitudes and behaviour, and performance outcomes (Sanders & Yang, 2016).

For Bowen and Ostroff, HRM practices contain communications from management. A recent major meta-analysis identified three broad categories of HRM practices that potentially engender high performance: skill enhancement (including recruitment, selection, and training), opportunity to contribute (including work teams, flexibility, worker proactivity, and information sharing), and worker motivation (including incentives and rewards) (Jiang, Lepak, Hu, & Baer, 2012). However, the interconnectedness of such practices is insufficient to generate high performance: a process of group-based sense-making or interpretation of the messages embedded in the practices must also occur: “in the HRM context, employees are required to infer cause-effect attributions from these communications to determine what behaviors are important, expected, and rewarded” (Bowen & Ostroff, 2004:p. 208). Further,

group-based attribution by the workforce provides the most accurate understanding of the messages: attributional uncertainty is reduced by the development of shared interpretations of messages through the interactions of employees. Such interactions come about as co-workers share and process information about the meaning of the practices and reinforce each other's interpretation (Bowen & Ostroff, 2004). "Employees (then) respond attitudinally and behaviorally ... based on the attributions they make about management's purpose in implementing the actual HR practices" (Van de Voorde & Beijer, 2015:p. 64). In this way, group-based attributions of HRM practices develop a strong organisational climate, which fosters high performance (Bowen & Ostroff, 2004).

Although there has been a considerable diffusion of HRM activities across organisations (Poutsma, Ligthart, & Veersma, 2006), many workplaces do not establish HPWS and therefore fail to engender attributions in employees that bring about high performance. Without HPWS, shared perceptions of the messages sent by HRM practices will not develop; instead individual perceptions and responses will persist (Bowen & Ostroff, 2004; Ostroff & Bowen, 2016). In such situations, a non-HPWS will prevail (Ichniowski & Shaw, 2003).

There are two types of non-HPWS. A Traditional HRM system (Dulebohn, Ferris, & Stodd, 1995; Guest, 1995) adopts HRM practices in an unsystematic way. It describes an employment system that has not made the full transition to an HPWS. Traditional HRM has roots that lie in post-war personnel management, large-scale standardised mass-production units and union-based bargaining where workers are paid the negotiated common rate for the job (Guest, 1995; Ichniowski & Shaw, 2003; MacDuffie, 1995). Finally, Low HRM systems characterize workplaces where HRM practices and union-based bargaining practices are very limited and individual workers are paid the market rate. Management rewards are explicit and short term, concerned mainly with satisfying regulations. Low HRM systems operate in small, labour-intensive production or service industries, for example, where market size or technical limitations constrain organisational growth (Dulebohn et al., 1995; Guest, 1995).

Such employment systems do not pass on cohesive HRM messages. Group-based attributions are not well-developed in Traditional HRM workplaces with unsystematic practices. Attributions are likely to be wholly idiosyncratic in Low HRM establishments with individual employees responding to their own personal experiences.

**Hypothesis 2** *Workplaces characterised by HPWS will be more strongly associated with subsequent high performance than:*

- a. Traditional HRM workplaces.*
- b. Low HRM workplaces.*

## 2.3 | The moderating influence of HPWS on the layoff-performance relationship

Layoffs have a potentially different influence on performance in different workplace contexts. In an HPWS context, layoffs are likely to be perceived by employees as a major negative event: the purpose attributed by employees to management's establishment of HRM practices is the motivation of sustained employee performance. Employees expect to be rewarded in the long term for going "the extra mile" (Guest, 1995), and working "harder and smarter" (Walton, 1985). However, HPWS can engender two different responses to layoffs, depending on the focus of the motivation or incentive practices embedded in the HRM messages.

In a Calculative context, following Weiner (1986), layoffs bring about an attribution that *changes* employee attitudes and behaviour. Calculative HRM develops a culture of risk (Baker, Gibbons, & Murphy, 2002). It is characterised by financial motivation practices, such as pay for performance, employee ownership schemes and profit-related pay (Gooderham & Nordhaug, 2011; Guest, 1995; Machin & Wood, 2005; Storey, 1989). These practices align the financial interests of individual employees with those of the company (Gooderham et al., 1999; Poutsma et al., 2006). They are associated with managerial autonomy and low levels of—or non-existent—union-based bargaining practices (Gooderham et al., 1999). Calculative HRM has high reliance on management authority

(Gooderham et al., 1999); employees are seen as an asset or “headcount resource” (Legge, 2005:p. 232). However, layoffs indicate that employee risk-taking for future financial returns (for example, by skill investment) may not pay off. In response to the magnitude of layoff severity, employees make an internal or external attribution. The fall in performance associated with severity is intensified in a Calculative context. This is because employee withdrawal of effort has greatest effect in an HPWS context where sustained high performance depends on continuing pro-activity.

In contrast, in a Collaborative context, layoffs do not bring about a change in either employee attribution or their attitudes and behaviour. Collaborative motivation practices help develop a culture of trust (Baker et al., 2002). Collaborative HRM is characterised by humanising motivation practices (Gooderham et al., 1999). These practices provide opportunities for employees to voice their suggestions by joint consultation and quality of life committees such as equal opportunity and occupational health and safety (Storey, 1989; Gooderham et al., 1999; Legge, 2005; Gooderham & Nordhaug, 2011). A philosophy develops between employees and management emphasising partnership and moral commitment (Poutsma et al., 2006). In response to layoffs, employees make a relational attribution (a third event-related attribution type, alongside internal and external attribution). Relational attribution locates the cause of an event within the relationship between parties. It can be critical in the maintenance of “positive social ties” (Eberly et al., 2011:p. 732). The trust and partnership characteristics of Collaborative HRM are likely to constrain negative reactions to layoffs. Employees make efforts to maintain performance (Bazarova & Hancock, 2012) as perceptions of fairness and justice engender constructive survivor responses (Sahdev, 2003). Research has shown that this occurs in trust-based circumstances. Survivors reacted more favourably when managers clearly conveyed the reasons behind the layoffs (Brockner et al., 1990; Sahdev, 2003) and communicated honestly and directly (Bergstrom & Arman, 2017; Feldman & Leana, 1994). Finally, the involvement of worker representatives in the layoff process improves survivor reactions. Ichniowski (1986) found that where unions were involved in layoff decisions, there was no significant change in survivors' performance. Worker representatives could facilitate the communication of redundancies, curtail the spread of negative information, and legitimise change (Bergstrom & Arman, 2017).

However, in workplaces with unsystematic HRM practices (Traditional HRM) or few or non-existent practices (Low HRM), attributions about the cause of layoffs are made in the context of few expectations of long-term rewards and little or no sunk investments in firm-specific training. Negative responses, therefore, are likely to be less pronounced. Further, the performance of workplaces that do not develop HPWS is less vulnerable to lowered efforts because employers do not rely on employee discretionary efforts or team-based skills and knowledge (Iverson & Zatzick, 2011).

**Hypothesis 3** *The greater the severity of layoffs, the weaker their subsequent association with high performance in Calculative HRM workplaces relative to:*

- a. Collaborative HRM workplaces.*
- b. Traditional HRM workplaces.*
- c. Low HRM workplaces.*

### 3 | LAYOFFS, EMPLOYMENT SYSTEMS AND CHANGE IN WORKPLACE PERFORMANCE OVER THE LONGER TERM

An increasing number of studies of large companies indicate that any negative effects of layoffs on employee efforts and performance may persist in some companies for several years after the event (e.g., De Meuse, Bergmann, Vanderheiden, & Roraff, 2004; Hillier, Marshall, McColgan, & Werema, 2007). One such study reported that, for some companies, “it will take several years before its financial health will re-emerge” (De Meuse et al., 2004:p. 174). A major review concluded that, “there likely is an initial healing period when financial results fall before companies

rebound" (De Meuse & Dai, 2012:p. 221). The findings of other research show that the higher the severity of layoffs, the greater their negative influence on long term performance (Hillier et al., 2007).

In high performance workplaces, it may take a period of time for management to strengthen configurations and maintain or increase performance (Zatzick & Iverson, 2006). However, the longer-term negative impact of layoff severity on performance is more likely to be apparent in companies that conduct Calculative HRM, rather than Collaborative HRM. In Calculative workplaces, employees take no share of the blame or responsibility for layoffs. They are not prompted to co-operate in the rebuilding of the HPWS architecture. Redevelopment, therefore, will be delayed with negative downstream performance consequences. Relative to Collaborative workplaces (characterised by relational attribution following layoffs) and Traditional HRM and Low HRM workplaces (with little or no group-based attribution and associated expectations), Calculative workplaces will experience a more pronounced negative long-term impact of layoffs on performance improvement in subsequent years, the greater the severity of layoffs.

**Hypothesis 4** *The greater the severity of layoffs, the lower the improvement in downstream performance change in Calculative HRM workplaces relative to:*

- a. Collaborative HRM workplaces.*
- b. Traditional HRM workplaces.*
- c. Low HRM workplaces.*

## 4 | METHOD

### 4.1 | Context and data

The WERS data in our study (1998 and 2004) were collected during the first two terms of Blair's New Labour governments (1997–2007). During the previous 18 years of Conservative governance (from 1979), radical anti-union legislation had been passed (House of Commons Library, 2017). The main regulations made closed shops and secondary picketing illegal, and required a secret ballot of members to support strike activity. Under New Labour's "Third Way", de-collectivisation was halted but not reversed, with the majority of Conservative trade union legislation remaining in force (Smith, 2009). There was a creation of individual rights at work, for example, statutory provisions for a minimum wage, grievances/dismissal procedures and protection from unfair dismissal (Baccaro & Howell, 2011). While union membership had reached its historical peak in 1979, it declined sharply in the 80s and early 90s before stabilising from the mid-90s under New Labour (Brownlie, 2012). As numbers of workers covered by collective bargaining arrangements declined, personnel specialists shifted their expertise from traditional industrial relations to innovative HRM activities (Gooderham et al., 1999). Faced with loss of members, some unions adopted a "new realism", seeking to work with management in a bid to maintain members' welfare (Guest, 1995; Legge, 2005). In this context, Calculative HRM in the UK was characterised by weak unions while, in contrast, Collaborative HRM was associated with union influence (Brown, Forde, Spencer, & Charlwood, 2008; Bryson, Forth, & Kirby, 2005; Machin & Wood, 2005).

We investigated 1998–2004 data because WERS2004 panel data were expressly concerned with the accurate mapping of change that had occurred since WERS1998. The use of 2004–2011 panel data would have required us to represent the change between performance assessed in each survey by a single absolute or squared difference score. However, difference scores have been highly criticised as a method of measuring change and their use is no longer recommended (Edwards, 2001). As we did not have longitudinal data from sufficient points in time to construct alternative measures, such as Bayesian slopes, we could not make use of the 2011 data for our investigation.

We used WERS98 to examine the association of layoffs that took place in a twelve-month period during 1998 with performance level at the end of that period. WERS98 consists of data from 2,191 workplaces. A total of 1,479

of these workplaces were randomly selected for re-interview. 9.7% had closed down. WERS2004 panel data consists of responses from recontact with the valid continuing workplaces. This yielded a sample of 956 cases. We excluded those that had merged with other establishments and were left with a sample of 745 workplaces. We used WERS98 cross sectional data and WERS2004 panel data to examine the influence of the same layoffs on performance change over the following 5 years (1999–2004). For both waves, we utilised responses from managers who were responsible for employee relations. Multi-level panel data that also included employee responses were unavailable.

## 4.2 | Cluster analysis

Following Huselid (1995), *factor analysis* has conventionally been used to sort employment practices into several separate sub-groups, such as skill acquisition, incentives. Most studies of employment practices and performance in the WERS datasets have followed this approach: informal grouping (WERS98); latent trait analysis (WERS98—Wood & de Menezes, 2008; WERS2004—Wood, Van Veldhoven, Croon, & de Menezes, 2012). The effect on performance is determined by measuring the impact of each factor and adding the effects. However, an “additive approach” is insufficient if theory holds that the influence of the *overall* employment system on performance is greater than “the sum of its independent dimensions” (Schulte, Ostroff, Shmulyian, & Kinicki, 2009:p. 619).

Thus, to measure the effect of employment practices in entirety, *cluster analysis* has been employed. Cluster analysis sorts *workplaces*—not practices—into groups by identifying distinct configurations or patterns across the *entire range* of practices used at the workplace. That is, it identifies employment systems or, from the perspective of attribution theory, shared perceptions of the work environment. Most cluster analyses of employment practices have used hierarchical clustering whereby the researcher examines agglomeration coefficients (e.g., MacDuffie, 1995). Most recently, hierarchical clustering has been employed by attributional theorists (e.g., Schulte et al., 2009; Toh, Morgeson, & Campion, 2008). Latent class models have also been used to produce clusters. They are estimated by maximum likelihood procedures and less judgement is required on the part of the researcher. De Menezes and Wood (2006) used WERS98 data to compare procedures and concluded that latent class was the better diagnostic tool. However, scaled indicators needed to be redefined into binary indicators, in this case, by a median split. Yet a stream of research has emphasised that dichotomisation increases Type II errors (Cohen, 1983). Thus, following the recommendations of Shore, Payne, and Ketchen (2008) and Schulte et al. (2009)—who, like us, used the output of clustering procedures as explanatory variables in subsequent regression analysis—we employed a hierarchical cluster method that allowed us to include both scaled and binary indicators.

### 4.2.1 | Clustering measures and procedures

Managers' responses were drawn from WERS98 with regard to 16 major employment practices. We used variables employed by Gooderham et al. (1999) and Poutsma et al. (2006), taking into account differences between their database (CRANET) and WERS (details available from authors). The practices from WERS98 are presented in Table 1, grouped under Jiang et al.'s categories (2012), distinguishing between Calculative and Collaborative incentives and adding union-based bargaining (Ichniowski, Shaw, & Prennushi, 1997). Managers reported whether or not a particular practice was used (1 = yes, 0 = no) or the extent to which a practice was used, responding to a scale that included absolute endpoints (0%, 100%) and a series of intermediate ranges (e.g., 1–19%, 20–39%); for these items, we used the absolute numbers (0, 100) and the range midpoints to create a continuous measure.

We employed Ward's method of hierarchical clustering and examined the agglomeration coefficients associated with 2, 3, 4, 5, 6, and 7 cluster solutions. This revealed a discontinuity between the fourth and fifth cluster solutions, suggesting four interpretable clusters. The 4-cluster solution is presented in Table 1. The figures in Columns 1–4 of Table 1 show proportions/means: for example, in Cluster A (Calculative) competence tests were represented in 66% of workplaces; 43% of employees were trained in multi-skills.

**TABLE 1** Cluster analysis

| Column number                                                 | Calculative<br>cluster A<br>1 | Collaborative<br>cluster B<br>2 | Traditional<br>cluster C<br>3 | Low HRM<br>cluster D<br>4 |
|---------------------------------------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------|
| <i>Skill enhancement</i>                                      |                               |                                 |                               |                           |
| Competence test (1/0)                                         | 66% (1/2)                     | 67% (1/2)                       | 43% (4)                       | 51% (3)                   |
| Personality test (1/0)                                        | 40% (1/2)                     | 40% (1/2)                       | 31% (3)                       | 21% (4)                   |
| Training in multiskills (%)                                   | 43% (1)                       | 33% (2)                         | 27% (3/4)                     | 26% (3/4)                 |
| Employee mgt skills training (1/0)                            | 83% (1)                       | 53% (2/3)                       | 48% (2/3)                     | 13% (4)                   |
| Induction programme (1/0)                                     | 95% (1)                       | 89% (2/3)                       | 83% (2/3)                     | 74% (4)                   |
| <i>Opportunity enhancement</i>                                |                               |                                 |                               |                           |
| Teams (%)                                                     | 88% (1/2)                     | 86% (1/2)                       | 13% (4)                       | 59% (3)                   |
| Quality circles (1/0)                                         | 58% (1/2)                     | 56% (1/2)                       | 39% (3/4)                     | 35% (3/4)                 |
| Strategic plan information (1/0)                              | 91% (1/2)                     | 92% (1/2)                       | 77% (3)                       | 70% (4)                   |
| Mgt plans information (1/0)                                   | 73% (1/2)                     | 74% (1/2)                       | 57% (3)                       | 48% (4)                   |
| <i>Humanising motivation</i>                                  |                               |                                 |                               |                           |
| Health and safety committee (1/0)                             | 57% (2)                       | 68% (1)                         | 54% (3)                       | 33% (4)                   |
| Equal opportunity committee (1/0)                             | 82% (2)                       | 93% (1)                         | 80% (3)                       | 61% (4)                   |
| Joint consultation committee (1/0)                            | 47% (2)                       | 62% (1)                         | 43% (3)                       | 26% (4)                   |
| <i>Financial motivation</i>                                   |                               |                                 |                               |                           |
| Pay-for-performance (1/0)                                     | 35% (1)                       | 28% (2/3)                       | 25% (2/3)                     | 19% (3/4)                 |
| Employee ownership program (1/0)                              | 37% (1)                       | 23% (2)                         | 28% (3)                       | 18% (4)                   |
| Profit-related pay (1/0)                                      | 58% (1)                       | 31% (4)                         | 40% (2/3)                     | 41% (2/3)                 |
| <i>Union-based bargaining practices (%)</i>                   |                               |                                 |                               |                           |
| Union-based bargaining practices (%)                          | 5% (3/4)                      | 91% (1)                         | 70% (2)                       | 4% (3/4)                  |
| Total number of firms in cluster (% of total number of firms) | 258 (14%)                     | 865 (46%)                       | 232 (12%)                     | 534 (28%)                 |

## 4.2.2 | Results

These results demonstrate that the four-cluster solution had a statistically distinctive pattern across the employment practice variables. The numbers in parentheses after each of the figures in Columns 1–4 show the ranking for that cluster's usage of employment practice among the four clusters based on calculations of statistically significant differences: for example, Cluster A was equally top-ranked (with Cluster B) for competence tests.

Details of extensive internal and external validation procedures are available from the authors. External validation showed the following relationships: Calculative and Collaborative were both associated with recent change; Calculative with union avoidance; Collaborative with consultation and union partnerships; Traditional with standardised production methods; and Low HRM with single unit workplaces.

## 4.2.3 | Interpretation of clusters

The character of each configuration can be determined by examining the patterns of the rankings and magnitude across *all* the practices (in each of Columns 1–4) in Table 1. The configuration or pattern of practices showed that

Cluster A indicated a Calculative employment system, Cluster B indicated Collaborative, Cluster C indicated Traditional HRM and Cluster D indicated Low HRM as follows.

Clusters A and B clearly demonstrated the characteristics associated with HPWS. They ranked significantly higher than both Clusters C and D with regard to 7 of the skill and opportunity enhancement practices and higher than Cluster D with regard to all 9. These clusters, however, were differentiated from each other. Cluster A demonstrated characteristics associated with Calculative HRM. It was top-ranked and significantly higher than Cluster B for all three financial motivation practices. It also had very low union-based bargaining practices. Cluster B demonstrated characteristics associated with Collaborative HRM. It was top-ranked and significantly higher than Cluster A for all three humanising motivation practices and the union-based bargaining practices.

In contrast, Clusters C and D did not represent HPWS. Neither of these clusters was top-ranked for any of the practices. Cluster C represented a Traditional HRM system that had adopted some HRM practices but had not made a full transition to HPWS. With just one exception, the cluster means for all the humanising motivation practices were all above the sample mean. Union-based bargaining practices were well above the mean. The very low representation of team-based job design (only 13%) and competence testing suggests that pre-existing work processes (for example, the assembly line and trade-based formal qualifications) prevailed.

Cluster D was bottom ranked and significantly lower than the next ranked cluster in 9 of the 16 practices, and jointly bottom-ranked in a further 4 practices. The very low incidence of HRM and union-based bargaining practices suggests that the typical Cluster D workplace represented a Low HRM employment system with neither HRM nor unions.

In summary, cluster analysis sorted each workplace into one of four statistically distinctive groups. Two types of HPWS (Calculative and Collaborative), Traditional HRM and a Low HRM system could be distinguished by the component practices of their configurations.

## 4.3 | Moderator regression

We moved on to test the hypotheses by the use of two moderator regressions. All outcome, predictor and control variables are obtained from WERS survey responses. See Table 2 for a description of the variables and their values.

### 4.3.1 | Outcome variables: Workplace performance

The outcome variables in both regressions measured managers' rating of their workplace's performance relative to others in the same industry.

The outcome variable for the first regression was a two-item measure of workplace labour productivity and financial workplace performance drawn from WERS98. Labour productivity captures the "extra mile" (Guest, 1995) of HPWS; financial performance captures "harder and smarter" (Walton, 1985). Following Combs, Yongmei, Hall, and Ketchen (2006), we took the mean of the values that represented managers' ratings of workplace labour productivity and financial performance ( $\alpha = .74$ ). Wall et al. (2004) carried out extensive validation tests for the WERS98 labour productivity and financial performance measures in samples of UK companies (1998–2001) that had the same characteristics as workplaces in the WERS datasets, demonstrating convergent, discriminant and construct validity.

The outcome variable for the second regression measured workplace change in performance 1999–2004, drawn from WERS2004 panel data. Managers were requested to specify their establishment's *main* performance indicator and were instructed to answer the survey's performance questions in relation to that main indicator. We used responses to these questions to calculate workplace change in performance as an absolute measure. See Table 2, Outcome Variable 1(b) for a description of this variable.

**TABLE 2** Measures used in the regression analysis

|                                                                                         |                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. OUTCOME VARIABLES</b>                                                             |                                                                                                                                                                                                                                                                                                                                                 |
| (a) <i>Workplace Performance 1998</i>                                                   | Mean of responses to two questions about workplace's labour productivity and financial performance in relation to the industry<br>(1 = a lot better than average, 2 = a little better, 3 = about average, 4 = a little below; 5 = a lot below -- reverse-scored) (alpha = .74).                                                                 |
| (b) <i>Change in Performance 1999-2004</i>                                              | Change in workplace's main performance indicator: profit, value added, sales, budget, fees, cost, expenditure, stock market indicators, or other<br>(1 = deteriorated; 2 = remained stable; 3 = improved).                                                                                                                                      |
| <b>2. PREDICTOR VARIABLES 1998</b>                                                      |                                                                                                                                                                                                                                                                                                                                                 |
| (a) <i>Layoffs: % in last 12 months</i>                                                 |                                                                                                                                                                                                                                                                                                                                                 |
| (b) <i>Employment Systems:</i>                                                          | Calculative: 1 = workplace in Cluster A, 0 = workplace in other clusters;<br>Collaborative: 1 = Cluster B, 0 = others;<br>Traditional HRM: 1 = Cluster C, 0 = others;<br>Low HRM: 1 = Cluster D, 0 = others.                                                                                                                                    |
| <b>3. CONTROL VARIABLES 1998</b>                                                        |                                                                                                                                                                                                                                                                                                                                                 |
| (a) <i>Workplace size: log of number of employees</i>                                   |                                                                                                                                                                                                                                                                                                                                                 |
| (b) <i>Industry: SIC codes (1 = manufacturing, 0 = other)</i>                           |                                                                                                                                                                                                                                                                                                                                                 |
| (c) <i>Sector: (1 = public, 0 = private)</i>                                            |                                                                                                                                                                                                                                                                                                                                                 |
| (d) <i>% females</i>                                                                    |                                                                                                                                                                                                                                                                                                                                                 |
| (e) <i>Non-conflictual workplace climate</i>                                            | (1 = poor, 2 = neither good nor bad, 3 = good, 4 = very good)                                                                                                                                                                                                                                                                                   |
| (f) <i>Restructuring: % new hires in last 12 months</i>                                 |                                                                                                                                                                                                                                                                                                                                                 |
| <b>4. CONTROL VARIABLES 1999-2004</b>                                                   |                                                                                                                                                                                                                                                                                                                                                 |
| (a) <i>Change in climate:</i>                                                           | Calculation from responses in 1998 and 2004 that measured workplace climate: 3 = improved a lot ... 0 = remained the same ... -3 deteriorated a lot                                                                                                                                                                                             |
| (b) <i>Reduction in workforce: % reduction in last 5 years relative to size in 1998</i> |                                                                                                                                                                                                                                                                                                                                                 |
| (c) <i>Change in HRM practices:</i>                                                     | Calculation of whether each employment practice had by 2004 been: 1 = added to, 0 = stayed the same. -1 = been removed from the workplace<br><br>Practices were sorted into groups, based on Jiang et al.'s categories (2012). For each of the three categories, the mean of the change in individual practices in each category was calculated |

#### 4.3.2 | Predictor variables: Layoff severity and employment systems

Following Trevor and Nyberg (2008), we constructed a severity of layoffs variable that measured layoffs as a proportion of the workforce that had been laid off during the previous year. Following Schulte et al. (2009), we constructed four dichotomous variables (coded 1/0) derived from the outcomes of the cluster analysis and used them as explanatory variables in the regression. They indicated the type of employment system in 1998 workplaces (Calculative, Collaborative, Traditional HRM and Low HRM). These variables were drawn from WERS98.

### 4.3.3 | Interactions

We centred the values for the continuous layoffs variable and created four interaction terms by multiplying each of the dichotomous 1998 employment system variables by the centred layoffs variable.

### 4.3.4 | Control variables

Finally, our analysis also included several other variables associated with high performance: large workplaces, manufacturing industry, public sector, non-conflictual industrial relations, union membership, restructuring, and proportion of females (Huselid, 1995; Legge, 2005). For both sets of regressions, we constructed controls from WERS98. For the second set of regressions, extra variables measured changes in the period between the surveys 1999–2004 in predictors: change in layoffs and changes in HRM practices. Employment systems at workplaces may have changed in character since 1998 and, although no change in employment practices occurred for the majority of all workplaces (76%), or for HPWS workplaces in particular (78%), we measured the change in the presence/absence of ten of the HRM practices—sorted by Jiang et al.'s (2012) three categories—in 2004 relative to 1998.

## 5 | RESULTS

We ran two sets of regressions. The means, SDs, and zero-order correlations for all variables included in the regression analyses are shown in Table 3. It should be noted that the percentage new hires and percentage layoffs variables include cases with values of zero.

In order to test most of our hypotheses, we needed to compare the performance effects of different employment systems. We carried this out by selecting one of the dichotomous employment systems variables to act as the reference category in each model.

### 5.1.1. | Outcome variable: Workplace performance in 1998

The results of the first set of regressions are presented in Table 4.

Control and predictor variables constructed from the 1998 survey were entered in Step 1. The public sector ( $b = -.11, p < .05$ ) was associated with lower performance, and a non-conflictual workplace climate ( $b = .26, p < .01$ ) with higher performance. We tested Hypothesis 1 (*The greater the severity of layoffs, the lower the workplace's subsequent performance*) in Step 1(a). Layoff severity had a significant negative association with performance ( $b = -.01, p < .01$ ) and Hypothesis 1 was supported.

We tested Hypothesis 2a (*Workplaces characterised by HPWS will be more strongly associated with subsequent high performance than Traditional HRM workplaces*) in Step 1(a). We entered Calculative, Collaborative and Low HRM variables and omitted the Traditional HRM variable, using it as a reference category. The Calculative and Collaborative coefficients were nonsignificant and Hypothesis 2a was not supported.

We tested Hypothesis 2b (*Workplaces characterised by HPWS will be more strongly associated with subsequent high performance than Low HRM workplaces*) in Step 1(b), using Low HRM as the reference category. Both Calculative workplaces ( $b = .19, p < .01$ ) and Collaborative workplaces ( $b = .11, p < .05$ ) had higher performance levels than Low HRM workplaces. Hypothesis 2b was supported.

We also ran regressions using Calculative and Collaborative as reference categories in turn (unreported in the tables). There were no additional significant results. In particular, there was no significant difference between the performance levels of Calculative and Collaborative ( $b = .08, p = ns$ ). In Step 2, we tested Hypotheses 3a–c, using

TABLE 3 Descriptives and correlation matrices

|                       | Mean  | SD    | 1       | 2       | 3       | 4       | 5       | 6      | 7       | 8       | 9       | 10      | 11     |
|-----------------------|-------|-------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|--------|
| 1. Log workplace size | 4.86  | 1.26  | —       |         |         |         |         |        |         |         |         |         |        |
| 2. Manufacturing      | 0.25  | 0.43  | 0.19**  | —       |         |         |         |        |         |         |         |         |        |
| 3. Public/private     | 0.26  | 0.44  | 0.05*   | −0.26** | —       |         |         |        |         |         |         |         |        |
| 4. % females          | 49.46 | 28.47 | −0.15** | −0.52** | 0.23**  | —       |         |        |         |         |         |         |        |
| 5. Climate            | 4.19  | 0.66  | −0.17** | −0.06*  | 0.01    | 0.12**  | —       |        |         |         |         |         |        |
| 6. % new hires        | 20.83 | 25.10 | −0.14** | −0.16** | −0.25** | 0.09**  | 0.03    | —      |         |         |         |         |        |
| 7. % layoffs          | 2.91  | 5.52  | −0.05** | 0.14**  | −0.21** | −0.21** | −0.11** | 0.23** | —       |         |         |         |        |
| 8. Calculative        | 0.16  | 0.36  | 0.01    | −0.07** | −0.22** | 0.04    | 0.04    | 0.13** | 0.01    | —       |         |         |        |
| 9. Collaborative      | 0.48  | 0.50  | 0.21**  | 0.11**  | 0.42**  | −0.01   | −0.03   | −0.31  | −0.10   | −0.41** | —       |         |        |
| 10. Traditional       | 0.11  | 0.31  | −0.01   | 0.05*   | −0.05*  | −0.06*  | −0.05*  | −0.01  | 0.01    | −0.15** | −0.34** | —       |        |
| 11. Low HRM           | 0.25  | 0.44  | −0.25** | −0.10** | −0.27** | −0.06*  | 0.04    | 0.25** | 0.10    | −0.25** | 0.56**  | −0.21** | —      |
| 12. Performance       | 3.64  | 0.69  | 0.01    | −0.04   | −0.03   | 0.09**  | 0.25**  | 0.03   | −0.11** | 0.09**  | 0.01    | −0.01   | −0.06* |

N = 1266, \**p* < .05; \*\**p* < .01

(Continues)

TABLE 3 (Continued)

|                           | Mean  | SD    | 1       | 2       | 3       | 4       | 5      | 6       | 7      | 8       | 9     | 10      | 11      | 12      | 13      | 14    |
|---------------------------|-------|-------|---------|---------|---------|---------|--------|---------|--------|---------|-------|---------|---------|---------|---------|-------|
| 1. Log workplace size     | 4.75  | 1.24  | —       |         |         |         |        |         |        |         |       |         |         |         |         |       |
| 2. Manufacturing          | 0.21  | 0.41  | 0.09*   | —       |         |         |        |         |        |         |       |         |         |         |         |       |
| 3. Public/private         | 0.43  | 0.50  | 0.05    | −0.33** | —       |         |        |         |        |         |       |         |         |         |         |       |
| 4. % females              | 51.03 | 28.11 | −0.19** | −0.52** | 0.31**  | —       |        |         |        |         |       |         |         |         |         |       |
| 5. Change in climate      | 0.05  | 0.80  | 0.01    | −0.02   | −0.02   | −0.02   | —      |         |        |         |       |         |         |         |         |       |
| 6. % reduction in size    | 11.72 | 20.14 | 0.14**  | .011**  | −0.11** | −0.07   | 0.03   | —       |        |         |       |         |         |         |         |       |
| 7. Change in opp & skill  | 0.05  | 0.24  | −0.02   | −0.03   | 0.03    | 0.06    | 0.07*  | −0.09*  | —      |         |       |         |         |         |         |       |
| 8. Change in finance      | 0.10  | 0.35  | −0.03   | −0.07*  | −0.14** | −0.07   | −0.07* | −0.10** | 0.07*  | —       |       |         |         |         |         |       |
| 9. Change in humanizing   | 0.05  | 0.27  | −0.08*  | −0.01   | −0.03   | 0.05    | 0.07*  | −0.10** | 0.08*  | 0.01    | —     |         |         |         |         |       |
| 10. % layoffs             | 2.21  | 4.58  | −0.02   | .017**  | −0.26** | −0.22** | 0.06   | −0.01   | 0.02   | 0.04    | 0.07* | —       |         |         |         |       |
| 11. Calculative           | 0.11  | 0.31  | 0.04    | 0.01    | −0.26** | 0.09*   | 0.08*  | 0.03    | −0.08* | 0.06    | −0.01 | 0.11**  | —       |         |         |       |
| 12. Collaborative         | 0.11  | 0.32  | 0.24**  | −0.02   | 0.49**  | 0.11    | −0.06  | 0.08*   | −0.09* | −0.12** | −0.06 | −0.17** | −0.37** | —       |         |       |
| 13. Traditional           | 0.12  | 0.32  | −0.03   | 0.03    | −0.05   | −0.06   | 0.01   | 0.00    | 0.14** | −0.01   | −0.01 | −0.02   | −0.13** | −0.38** | —       |       |
| 14. Low HRM               | 0.25  | 0.43  | −0.29** | 0.00    | −0.33** | −0.02   | 0.01   | −0.11** | 0.06   | 0.12**  | 0.09* | 0.14**  | −0.20** | −0.60** | −0.21** | —     |
| 15. Change in performance | 2.49  | 0.75  | 0.02    | −0.01   | 0.04    | 0.02    | 0.09*  | −0.12** | 0.06   | −0.01   | 0.06  | −0.04   | 0.01    | 0.01    | 0.01    | −0.01 |

**TABLE 4** Hierarchical moderator regression: Workplace performance 1998

|                            | Step 1(a)<br>b<br>(SE) | Step 1(b)<br>b<br>(SE) | Step 2<br>b<br>(SE) |
|----------------------------|------------------------|------------------------|---------------------|
| Constant                   | 2.42**<br>(0.16)       | 2.33**<br>(0.16)       | 2.60**<br>(0.17)    |
| <i>Controls</i>            |                        |                        |                     |
| Log workplace size         | 0.03<br>(0.02)         | 0.03<br>(0.02)         | 0.02<br>(0.02)      |
| Manufacturing              | −0.01<br>(0.05)        | −0.01<br>(0.05)        | −0.01<br>(0.05)     |
| Public/private             | −0.11*<br>(0.05)       | −0.11*<br>(0.05)       | −0.11*<br>(0.05)    |
| % females                  | 0.01<br>(0.01)         | 0.01<br>(0.01)         | 0.01<br>(0.01)      |
| Workplace climate          | 0.26**<br>(0.30)       | 0.26**<br>(0.30)       | 0.26**<br>(0.30)    |
| % new hires                | 0.01<br>(0.01)         | 0.01<br>(0.01)         | 0.01<br>(0.01)      |
| <i>Predictor variables</i> |                        |                        |                     |
| % layoffs                  | −0.01**<br>(0.01)      | −0.01**<br>(0.01)      | −0.03**<br>(0.01)   |
| <i>Employment systems</i>  |                        |                        |                     |
| Calculative                | 0.10<br>(0.07)         | 0.19**<br>(0.06)       | —<br>—              |
| Collaborative              | 0.02<br>(0.06)         | 0.11*<br>(0.06)        | −0.08<br>(0.06)     |
| Traditional                | —<br>—                 | 0.10<br>(0.07)         | −0.10<br>(0.07)     |
| Low HRM                    | −0.09<br>(0.07)        | —<br>—                 | −0.20**<br>(0.06)   |
| <i>Interactions</i>        |                        |                        |                     |
| Calculative × layoffs      |                        |                        | —<br>—              |
| Collaborative × layoffs    |                        |                        | 0.03*<br>(0.01)     |
| Traditional × layoffs      |                        |                        | 0.01<br>(0.02)      |
| Low HRM × layoffs          |                        |                        | 0.03**<br>(0.01)    |
| R square                   |                        |                        | 0.09**              |
| R square change            |                        |                        | 0.01*               |
| N = 1266                   |                        |                        |                     |

Note: Table entries are unstandardised coefficients, \* $p < .05$ ; \*\* $p < .01$ .

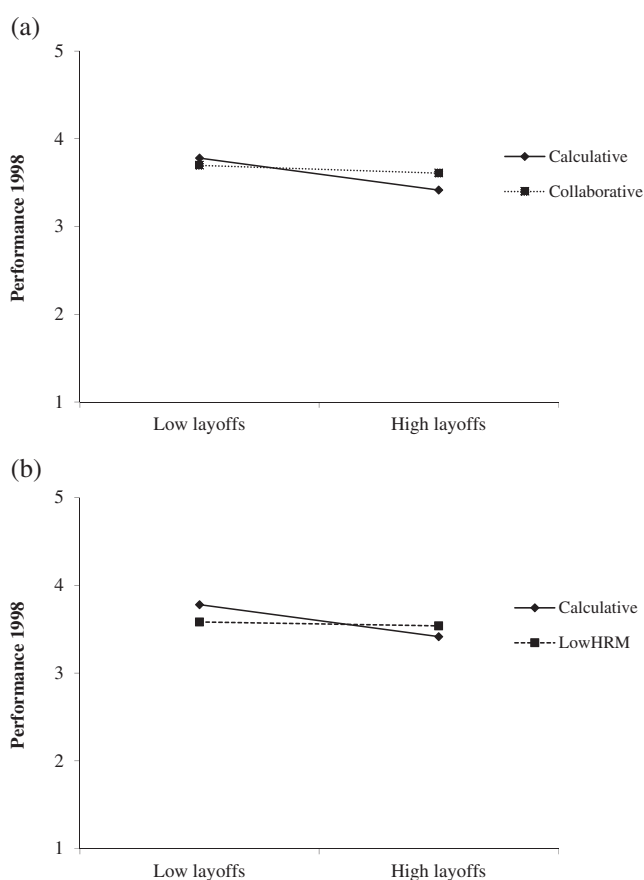


**FIGURE 1** (a) Profile plots: Calculative HRM and collaborative HRM. (b) Profile plots: Calculative HRM and low HRM

Calculative as the reference category. In relation to Hypothesis 3a (*The greater the severity of layoffs, the weaker their subsequent association with high performance in Calculative HRM workplaces relative to Collaborative*), the coefficient on the Collaborative  $\times$  layoffs interaction was significant ( $b = .03, p < .05$ ). This result demonstrated a significant difference in performance across the layoff spectrum between Calculative workplaces and Collaborative workplaces. To better understand the significant interaction, we used the macros supplied by Dawson (2013) to calculate simple slope coefficients for Calculative and Collaborative workplaces: Calculative =  $-.033, p < .01$ ; Collaborative =  $-.007, p = \text{n.s.}$  The plots are shown in Figure 1a. While there was a negative coefficient in both cases, it was significant only for Calculative and not for Collaborative. Hypothesis 3a was supported.

In relation to Hypothesis 3b (*The greater the severity of layoffs, the weaker their subsequent association with high performance in Calculative HRM workplaces relative to Traditional HRM*), the coefficient on the Traditional HRM  $\times$  layoffs interaction was nonsignificant ( $b = .01, p = \text{ns}$ ) and the hypothesis was not supported.

In relation to Hypothesis 3c (*The greater the severity of layoffs, the weaker their subsequent association with high performance in Calculative HRM workplaces relative to Low HRM*), the coefficient on the Low HRM  $\times$  layoffs interaction was significant ( $b = .03, p < .01$ ).

This result demonstrated a significant difference in performance across the layoff spectrum between Calculative workplaces and Low HRM workplaces. We calculated the simple slope coefficients: Calculative =  $-.033, p < .01$ ; Low HRM =  $-.004, p = \text{n.s.}$  The plots are shown in Figure 1b. While there was a negative coefficient in both cases, it was significant only for Calculative and not for Low HRM. Hypothesis 3c was supported.

We estimated the effect sizes of the Collaborative and Low HRM interactions. The effect size describes the proportion of total variability attributable to the interaction term: Collaborative =  $.004$ ; Low HRM =  $.005$ . Although the

**TABLE 5** Moderator regression: Change in performance 1999-2004

|                                                    | <b>b</b><br>(SE)  |
|----------------------------------------------------|-------------------|
| Constant                                           | 2.54**<br>(0.20)  |
| Log of workplace size 1998                         | 0.02<br>(0.03)    |
| Manufacturing 1998                                 | 0.07<br>(0.10)    |
| Public/private                                     | 0.05<br>(0.09)    |
| % females 1998                                     | 0.00<br>(0.01)    |
| Change in climate                                  | 0.09*<br>(0.04)   |
| % loss in employee numbers 1999-2004               | -0.01**<br>(0.01) |
| Change in opportunity & skills practices 1999-2004 | 0.13<br>(0.14)    |
| Change in financial practices 1999-2004            | 0.13<br>(0.12)    |
| Change in humanising practices 1999-2004           | -0.03<br>(0.10)   |
| % layoffs 1998                                     | -0.03*<br>(0.01)  |
| Calculative 1998                                   | —<br>—            |
| Collaborative 1998                                 | -0.09<br>(0.12)   |
| Traditional HRM 1998                               | -0.07<br>(0.14)   |
| Low HRM 1998                                       | -0.10<br>(0.12)   |
| Calculative × layoffs 1998                         | —<br>—            |
| Collaborative × layoffs 1998                       | 0.03<br>(0.02)    |
| Traditional HRM × layoffs 1998                     | 0.04<br>(0.04)    |
| Low HRM × layoffs 1998                             | 0.04*<br>(0.02)   |
| R square                                           | 0.04              |
| N = 544                                            |                   |

Note: Table entries are unstandardised coefficients, \* $p < .05$ ; \*\* $p < .01$ .

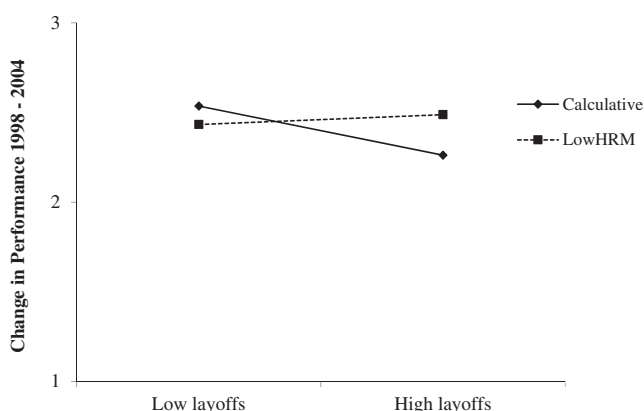


**FIGURE 2** Profile plots: Calculative HRM and Low HRM

increments are small, their size compares favourably with the observed size of other moderator effects in the management literature where the median effect size of 0.002 is held to be an appropriate point of comparison (Aguinis, Beatty, Boik, & Pierce, 2005).

We then ran (unreported) regressions using Collaborative, Traditional HRM and Low HRM as reference categories in turn. There were no additional significant relationships.

Finally, with regard to support of the hypotheses, the change in r-square between Steps 1 (main effects) and Step 2 (conditional effects) in Table 4 was significant ( $b = 0.01$ ,  $p < .05$ ). Thus, the interaction models have greater explanatory power and supersede the models confined to main effects. The results for Hypotheses 1 and 2, therefore, are discarded in favour of the results for Hypotheses 3a-c.

### 5.1.2. | Outcome variable: Change in performance, 1999–2004

The results of the second set of regressions are presented in Table 5.

We tested Hypotheses 4a-c (*The greater the severity of layoffs, the lower the improvement in downstream performance change in Calculative relative to (a) Collaborative (b) Traditional HRM and (c) Low HRM*). We repeated the previous set of regressions (once again using Calculative as the reference category), entering 1998 controls and predictors and also the extra 1999–2004 controls. Hypotheses 4a and 4b were not supported: Collaborative  $\times$  layoffs was nonsignificant ( $b = .03$ ,  $p = ns$ ) and Traditional HRM  $\times$  layoffs was nonsignificant ( $b = .04$ ,  $p = ns$ ). However, the Low HRM workplaces  $\times$  layoffs result ( $b = .04$ ,  $p < .05$ ) showed there was a significant difference in performance change across the layoff spectrum between Calculative workplaces and Low HRM workplaces. We calculated the simple slope coefficients: Calculative =  $-.030$ ,  $p < .05$ ; Low HRM =  $.005$ ,  $p = n.s$ . The plots are shown in Figure 2. The coefficient for Calculative was negative and significant but this was not the case for Low HRM. Hypothesis 4c was upheld.

Calculations produced an effect size of the Low HRM interaction = 0.007, which compares favourably with the point of comparison of 0.002 suggested by Aguinis et al. (2005).

It should be noted that the outcome variable in the Table 5 regression is *change* in performance and not *level* of performance. The profile plots in Figure 2, therefore, do not show that absolute performance falls in Calculative workplaces relative to Low HRM. Rather, they indicate that, following layoffs, net improvements in Low HRM workplaces are lower than in Calculative workplaces relative to Low HRM. However, regression results also showed that they were not significantly lower in Collaborative HRM (or Traditional) workplaces. Thus, relative to Low HRM but not to Collaborative HRM, net improvement in performance was lower in Calculative workplaces the greater the severity of previous layoffs.

We ran (unreported) regressions using Collaborative, Traditional HRM, and Low HRM as reference categories in turn. There were no additional significant relationships. Unlike Calculative, Collaborative was not significantly different from Low HRM.

## 6 | DISCUSSION AND CONCLUSIONS

Our findings shed light on HPWS and the layoff-performance relationship. The results of the cluster analysis demonstrate that HRM is capable of creating two distinct HPWS. Consistent with quantitative empirical studies (Gooderham et al., 1999; Poutsma et al., 2006), we identified two types (Calculative and Collaborative). The presence of union influence in the Collaborative type supports other UK studies (Brown et al., 2008; Bryson et al., 2005; Machin & Wood, 2005). We also identified a Traditional and a Low HRM system. The identification of these four distinct configurations offers strong support to Guest's (1995) well-known taxonomy of UK employment systems and Ichniowski et al.'s (1997) findings in US unionised steelmills.

The regression results for the main effects are as follows. In the short term, as expected, layoff severity was negatively associated with performance, and workplaces with HPWS of either type—Collaborative or Calculative—experienced higher performance than Low HRM workplaces. However, the contribution of our article was to investigate the influence of the interaction of layoffs and employment systems and these models proved to have better explanatory power. The findings provide answers to our research question: “are different types of HPWS associated with different layoff-performance relationships?”

First, they showed that layoff severity was associated with lower subsequent performance in Calculative—but not Collaborative—workplaces. The implication is that, in Calculative workplaces, the efforts of surviving employees immediately diminish. This finding suggests that, in Calculative workplaces, employees may “blame” managers for large-scale layoffs through risk-based external attribution (De Meuse & Dai, 2012). It also provides support to an increasing number of recent studies, which demonstrate that, where employment practices engender trust-based employment relationships, employees are more likely to retain positive attitudes following management failure (Bergstrom & Arman, 2017; Dulac, Coyle-Shapiro, Henderson, & Wayne, 2008; Iverson & Zatzick, 2011; Sahdev, 2003).

Second, in the longer term, there was no difference in the influence of the severity of layoffs on performance *change* between Calculative and Collaborative. This result suggests that the short-term negative influence of withdrawal of effort in non-trust-based HPWS workplaces relative to Collaborative workplaces did not persist over time. However, there was also a negative effect on performance change for Calculative—but not Collaborative—in relation to Low HRM. Low HRM can be seen as a no-change benchmark. In tandem, these findings suggest that performance change in Calculative workplaces was not enough for full recovery. These results support previous research, which shows it can take several years for recovery to occur in some companies (Hillier et al., 2007).

### 6.1 | Theoretical implications

Attribution theory allowed us to predict such employee responses to the severity of layoffs (a negative event) by a move from internal to external attribution. The development of a third attributional type—in the form of relational attribution in Collaborative workplaces—allowed us to contribute to attribution theory by predicting that responses to layoff severity might not result in a reduction in efforts but, instead, in a maintenance of efforts. It would be valuable to directly examine internal, external and relational attributional types with regard to their relationship with HRM practices. The 1998–2004 panel dataset, while valuable for its focus on change, relied on a single informant, in the form of the manager responsible for employment relations. While such people are likely to have access to key

information, it is useful to also elicit information from employees. Investigations of multi-level panel data would allow a more direct test of attribution theory—especially in relation to group attributions—by investigations of measures of employee responses within workplaces.

## 6.2 | Limitations and strengths

This research focused on HR managers' self-reports and such data may artificially inflate the size of relevant relationships due to common method bias. However, factual data are less likely than attitudinal data to suffer from such problems (Crampton & Wagner, 1994): layoff severity, HRM practices, and financial performance were verifiable measures and unlikely to be biased by HR manager motivations for self-enhancement. Endogeneity may be a feature of any cross sectional study and details of tests carried out to demonstrate lack of endogeneity in this research may be obtained from the authors. Further, measures of change in labour productivity and level of performance 2004 were not available in WERS2004 panel data. To address some of these issues, we urge researchers to utilise several waves of longitudinal data. We recommend the collection of data that allows event analysis of an ongoing longitudinal record of the timing of the occurrence of layoff events alongside performance measures. It would also be useful to investigate a performance measure that allows a comparison over time and across all workplaces. Finally, the use of official data makes it difficult to identify all variables needed to investigate fully specified models. Nevertheless, our study limitations are balanced by the very considerable advantages of investigating the large, detailed datasets that comprise part of the sequence of WERS surveys.

## 6.3 | Practical implications

Overall, our research shows that layoffs can harm organisations. Taking all our findings into account, the results of this study suggest that it would benefit HPWS employers to invest in Collaborative employment systems. They offer the potential for high performance but, following layoffs, avoid the Calculative short term fall in performance and the longer term Calculative lag. It should be noted that, although *change* in performance in Low HRM workplaces was no different from that in Collaborative workplaces and less than that in Calculative workplaces, the low *level* of performance of Low HRM means that either HPWS system is preferable to Low HRM.

Nevertheless, evidence shows that HPWS workplaces in the UK are increasingly characterised by Calculative practices. In our study, we took into account the existence of non-HPWS workplaces and found that, in 1998, there were four distinctive groupings, the largest being Collaborative. Yet an analysis of WERS2011 showed that, over a decade later, only three distinctive clusters were identifiable: Calculative, Collaborative and Low HRM. Calculative HRM had become the largest grouping and Traditional HRM was no longer apparent. A recent study in the UK provides some explanation for this change, showing that companies dealing with retrenchments were likely to develop “hard” HRM and that “soft” practices had declined in the 2008 recession and its aftermath (Cook et al., 2016). Our regression findings lead us to strongly question the wisdom of such a strategy. They suggest that, faced with economic uncertainty, and following US trends, Collaborative HRM has declined as management's goals develop a Calculative HPWS approach. In contrast, Guest (2017) recommended a set of HRM practices, many of which are identified in the Collaborative configuration of this study, that offer a path to “mutual gains” for both managers and employees. Our study lends support to a mutual gains approach by showing that Collaborative HRM may benefit both management and employees by constraining a negative effect to layoffs in the short term.

Since the 1980s, restructuring accompanied by “draconian downsizing” has become a conscious management strategy with repeated downsizings in many businesses (Cappelli et al., 1997:64). Managers in Calculative workplaces should be aware of the short term negative performance effect resulting from layoffs and also recognise that this performance loss is unlikely to be fully redressed by performance improvements over the next five years. We note

that, although the effect sizes of the interactions in our study compared well with other findings, in absolute terms they are small. Nevertheless, Aguinis et al. (2005) concluded that even a small effect size can be of high practical importance, for example, in terms of the numbers of people affected. In the UK, huge numbers of employees are made redundant annually as a matter of course and through no fault of their own. Many more survivors are affected. Our investigation shows that the small statistical effect of selecting a set of employment practices with humanising incentives allows surviving employees to work in a perceived culture of trust and mutual support following layoffs. These practices benefit organisational performance and also help reduce the stress of countless employees who are "working scared" (Cappelli et al., 1997:58). The implications of our results may become increasingly important in the UK's current climate of uncertainty.

There is a strong caveat to our findings. While Collaborative HRM protects management's interests, it may simultaneously expose its employees to exploitation. If future layoffs are not averted, its motivation practices may bind survivors to a relationship of unfair exchange. Employees could react with anger, causing greater negative consequences than those resulting from a short term withdrawal of effort (Cregan, Kulik, Metz, & Brown, 2019). Managers in both Calculative and Collaborative workplaces, therefore, should carefully consider all possible consequences before conducting layoffs, especially when they are large-scale. While HPWS has the potential to increase performance, it brings about employee attributions that might cause a withdrawal of survivor effort with long term consequences if management implements layoffs.

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## CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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