A META-ANALYTIC INVESTIGATION OF THE RELATIONSHIP BETWEEN HRM BUNDLES AND FIRM PERFORMANCE

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Human resource management bundles consisting of multiple complementary practices are typically considered superior to individual best practices in influencing firm performance. This study investigates the relationship between three such bundles (empowerment, motivation, and skill-enhancing) and business outcomes (retention, operating performance, financial performance, and overall performance ratings). A meta-analysis of 239 effect sizes derived from 65 studies reveals that HRM bundles have significantly larger magnitudes of effects than their constituent individual practices, are positively related to business outcomes, and display effect sizes that are comparable to or larger than those of high-performance work systems. These findings reaffirm the case for firm-level investments in synergistic HRM combinations and highlight the importance of investing in complementary practices.

Keywords: HRM bundles, high-performance work systems, meta-analysis

Human resource management bundles can favorably affect the performance of business firms (Boselie, Dietz, & Boon, 2005; Ferris, Hall, Royle, & Martocchio, 2004; MacDuffie, 1995). This is because the individual practices that make up these bundles can support each other in enhancing specific workforce characteristics, thereby creating combined synergistic effects that are substantially greater than those of individual best practices (Delery, 1998; Becker & Gerhart, 1996). Several researchers have attempted to classify HRM practices on the basis of their complementary (that is, mutually supportive or reinforcing) effects on key workforce characteristics (Applebaum, Bailey, Berg, & Kalleberg, 2000; Batt, 2002; Boselie et al., 2005; Boudreau & Ramstad, 1999; Guest, Conway, & Dewe, 2004; Kalleberg, Marsden, Reynolds, & Knoke, 2006; Lepak, Liao, Chung, & Harden, 2006; Sun, Aryee, & Law, 2007). A review of these classifications suggests that most HRM practices can have synergistic and performance-enhancing effects if they are combined into empowerment-enhancing bundles that boost employee autonomy and responsibil-

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ity levels, motivation-enhancing bundles that provide employees with adequate levels of direction and inducements, and skill-enhancing bundles that augment the knowledge and skill levels of the workforce (see Table I).

Although it makes conceptual sense to categorize individual HRM practices into these bundles, there is insufficient empirical evidence regarding both their proposed synergistic properties and the magnitude of bundle effects on firm performance. I propose to bridge this gap in strategic HRM literature by investigating the relationship between empowerment, motivation, and skill bundles and various business outcomes; clarifying the synergistic properties of these bundles by comparing their effects to those of individual HRM practices; and demonstrating the usefulness of these bundles in relation to high-performance work systems (HPWSs)—that is, combinations of HRM practices aimed at simultaneously influencing all or most of the workforce characteristics related to firm performance (Huselid, 1995). To do so, I conducted a meta-analysis of 65 (239 effect sizes) empirical studies conducted from 1995 to 2008 that linked HRM practices and HPWSs with business outcomes.

The Theoretical Rationale for a Meta-Analytic Investigation

Systems theorists (e.g., Anderson, 1972; Prigogine, 1978) have provided useful insights into the processes through which various components of a system combine to create effects that exceed those of their constituents. Reviewing this literature in the physical, natural, and social sciences, Corning (1995, 1998) suggested that synergy, which refers to the pooled operation of various elements of a system, produces positive effects because of larger combined effects created by the accumulation of smaller complementary effects, and increased efficiencies created through risk-sharing among the elements of a system.

Larger Combined Effects

The accumulation of the actions of various elements can create combined effects larger than what can be expected when these elements operate in isolation (Rock & Palmer,

TABLE I The Content of HRM Bundles

Empowerment-Enhancing Bundles
Employee involvement in influencing work process/outcomes
Formal grievance procedure and complaint resolution systems
Job enrichment (skill flexibility, job variety, responsibility)
Self-managed or autonomous work groups
Employee participation in decision making
Systems to encourage feedback from employees
Motivation-Enhancing Bundles
Formal performance appraisal process
Incentive plans (bonuses, profit-sharing, gain-sharing plans)
Linking pay to performance
Opportunities for internal career mobility and promotions
Health care and other employee benefits
Skill-Enhancing Bundles
Job descriptions/requirements generated through job analysis
Job-based skill training
Recruiting to ensure availability of large applicant pools
Structured and validated tools/procedures for personnel selection

1990). Examples of this phenomenon in other fields include the accumulation of oxygen generated by anaerobic organisms over time to create an oxygenated atmosphere and the aggregation of individual investor decisions to create movement in the financial markets. Similarly, the cumulative effects of various HRM practices affecting the same work characteristic (for example, staffing and training affecting workforce skill levels) can create a net result that exceeds the effect of a single practice. For instance, employees' knowledge, skills, abilities, and other characteristics (KSAOs) can be significantly enhanced by using both structured and validated procedures along with relevant job training. These system-level effects are created through complementarities among the components of a system—that is, when the components make different contributions toward the attainment of a common outcome or influence the same outcome through different and nonconflicting routes. For instance, although performance appraisals help employees in setting performance goals and detecting discrepancies between expected and actual performance, compensation systems provide the rewards necessary to motivate and reinforce performance. Thus, neither compensation systems nor performance appraisal processes are complete without the other. Together, they motivate the workforce.

Increased Efficiencies

When two or more elements operate together to serve a common function, it is possible for the system to conserve energy and reduce risks. It can be argued that the simultaneous operation of multiple HRM practices with a common objective (that is, the enhancement of a work characteristic) increases the possibility of the attainment of this objective. For instance, firms that emphasize employee voice through upward feedback mechanisms *and* have self-managed work teams that empower their workforce are likely to increase the probability of goal attainment (i.e., empowering their workforce) even if any one of the practices does not operate at optimal levels of effectiveness (e.g., if an upward feedback survey process is canceled because of budgetary constraints). In such cases, increased efficiencies also can be gained through the sharing of physical, financial, and human resources. For example, in the case of skill-enhancing practices, a common profile of expected KSAOs can be consistently used to select and train workers, and the same staff can help implement both practices.

Therefore, it is suggested that HRM bundles consisting of different practices cooperating to influence the same workforce characteristic will exert a positive influence on various measures of firm performance. Although it is possible to inductively identify synergistic combinations of HRM practices within a sample using statistical techniques, such as cluster or sequential-tree analysis (Guest et al., 2004), this paper uses a deductive approach to combine HRM practices on the basis of an existing conceptual bundle typology that has been the starting point of various investigations in SHRM literature (e.g., Applebaum et al., 2000; Bailey, Berg, & Sandy, 2001; Boselie et al., 2005; Gardner, Moynihan, Park, & Wright, 2001). Following the view that "people perform well when they are able to do so (they can do the job because they possess the necessary knowledge and skills), they have the motivation to do so (they will do the job because they are adequately incentivized), and their work environment provides the necessary support and avenues for expression" (Kinnie, Hutchinson, Purcell, & Swart, 2006, p. 41), I aim to test the value of bundling HRM practices on the basis of their empowerment-, motivation-, and skill-enhancing effects.

The cumulative effects of various HRM practices affecting the same work characteristic (for example, staffing and training affecting workforce skill levels) can create a net result that exceeds the effect of a single practice.

Empowerment-Enhancing Bundles

Empowerment practices are aimed at delegating decision-making authority and responsibility down the hierarchy through

the use of self-managing or autonomous teams (Mathieu, Gilson, & Ruddy, 2006) and facilitating employee participation and voice using upward feedback mechanisms (Wood & Wall, 2007). Although empowerment practices also can be viewed as influencing job-related performance outcomes by enhancing the self-efficacy levels of individual employees (Conger & Kanungo, 1988), some have theorized that they affect firm-level outcomes by increasing employees' collective levels of potency (i.e., the belief that they can be successful together as a team), task meaningfulness, autonomy, and task significance or impact (Kirkman & Rosen, 1999). These collective perceptions lead employees to take increased responsibility for goal setting, task completion, and management of their own interpersonal processes (Mathieu et al., 2006), thus influencing the display of discretionary behaviors. These include demonstrating flexibility in accommodating customer needs (Peccei & Rosenthal, 2001), engaging in process improvements (Kirkman, Rosen, Tesluk, & Gibson, 2004), and solving problems creatively (Alge, Ballinger, Tangirala, & Oakley, 2006).

Some researchers suggest that empowerment practices can influence employees' beliefs regarding the extent to which the firm is interested in the welfare of its workforce (Eisenberger, Huntington, Hutchinson, & Sowa, 1986), which lead them to reciprocate by developing positive, emotional bonds with (Shore & Tetrick, 1991; Shore & Wayne, 1993) and exerting discretionary effort on behalf of the firm (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Piercy, Cravens, Lane, & Vorhies, 2006). These favorable job attitudes and behaviors are likely to result in lower levels of turnover (Harrison, Newman, & Roth, 2006), in addition to positively influencing performance outcomes, including productivity (Kirkman & Rosen, 1999; Patterson, West, & Wall, 2004), customer satisfaction (Mathieu et al., 2006), and sales performance (Ahearne, Mathieu, & Rapp, 2005), and ultimately firm-level financial performance (Banker, Potter, & Srinivasan, 2000; Helgesen, 2006).

The combination of multiple empowerment-enhancing practices, including autonomous work teams, employee participation, and upward feedback systems, is likely to be synergistic because of the potential complementarities among these practices. For instance, allowing autonomous work teams to manage the production of a component or provision of a specific service can enhance employees' sense of responsibility and autonomy within the constraints of their work role. Additionally, the provision of voice and upward feedback mechanisms can help employees view themselves as part of a larger organizational system, leading them to engage in discretionary behaviors, including suggesting improvements to the products, services, or work processes; assuming increased responsibilities; and volunteering (e.g., serving on joint management-worker task forces). Also, the presence of multiple empowerment-related practices is likely to signal a coherent organizationwide commitment to employee empowerment (Bowen & Ostroff, 2004), which is likely to result in reciprocation in the form of in-role and extra-role behaviors. Thus, it is expected that empowerment-enhancing bundles are likely to result in stronger effects on employee behavior and, consequently, business outcomes than any of these practices by itself.

Hypothesis 1: Empowerment-enhancing bundles will be positively correlated with business outcomes.

Hypothesis 1a: The correlation between empowerment-enhancing bundles and business outcomes will be significantly higher than the correlations between individual HRM practices making up these bundles and business outcomes.

Motivation-Enhancing Bundles

Motivation-enhancing bundles help direct employees' efforts toward the accomplishment of work objectives and provide them with the inducements necessary to engage in high levels of performance (Kinnie et al., 2006). These bundles include the use of such practices as "performance appraisals that

assess individual and group performance, linking these appraisals tightly with incentive compensation systems, the use of internal promotion systems that focus on employee merit, and other forms of incentives intended to align the interests of employees with those of shareholders" (Huselid, 1995, pp. 637–663).

There are at least two possible explanations why motivation-enhancing practices might affect business outcomes. First, employees are more likely to exert high levels of sustained effort when they work toward the attainment of specific goals (Locke & Latham, 1990), receive task- or behavior-based feedback (Kluger & DeNisi, 1996), and are adequately rewarded for task performance (Stajkovic & Luthans, 2003). Recently, Peterson and Luthans (2006) argued that "much of organizational or unit-level performance is indirectly influenced by the same factors that affect individual performance… [T]he incentive system is a shared experience of a group of employees, and its impact is likely reflected through shared behaviors and resulting outcomes produced by those group members" (p. 157). Thus, having a common set of inducements is likely to lead employees in the same unit to perceive their context similarly (Payne & Pugh, 1976; Hackman & Oldham, 1976) and reinforce each other's attitudes and behaviors through a circular pattern of interactions among employees (Morgeson & Hoffmann, 1999). Consistently with this argument, recent evidence links actual incentives (Peterson & Luthans, 2006) and collective perceptions of pay (Currall, Towler, Judge, & Kohn, 2005; Subramony, Krause, Norton, & Burns, 2008) with unit-level outcomes.

Second, theories based on the notion of employment as a social exchange (e.g., Blau, 1964) suggest that the availability of various inducements, such as pay, benefits, and internal mobility, can lead employees to perceive their organization as valuing their contributions (Allen, Shore, & Griffeth, 2003; Rhoades & Eisenberger, 2002) and oblige them to reciprocate by holding positive attitudes toward the firm and engaging in favorable job-specific and discretionary or citizenship behaviors (Wayne, Shore, Bommer, & Tetrick, 2002). When shared among employees, these favorable attitudes and behaviors can affect such performance outcomes as customer satisfaction, productivity, and sales (e.g., Schneider, Ehrhart, Mayer, Saltz, & Niles-Jolly, 2005). Counterproductive behaviors, such as turnover, resulting from negative employee attitudes can result in the loss of firm-specific human capital, such as knowledge of products and procedures, and ultimately lead to the loss of customer satisfaction or loyalty (e.g., Batt, 2002; Kacmar, Andrews, Van Rooy, Steilberg, & Cerrone, 2006).

There is evidence that combinations of goal setting, performance feedback, and reinforcement can exert strong influences on various performance outcomes (Balcazar, Hopkins, & Suarez, 1985; Johnson & Masotti, 1990), and a recent meta-analysis of behavioral interventions in organizations concludes that "combined reinforcers have a synergistic effect on performance… [T]hese results indicate a three-way interaction among money, feedback, and social recognition" (Stajkovic & Luthans, 2003, p. 180). Along the same lines, it can be proposed that a combination of performance appraisal (which includes goal-setting and feedback mechanisms) and compensation practices can have synergistic effects on firm performance. This is because effective appraisal systems are likely to clearly communicate organizational expectations regarding expected employee behaviors while compensation systems are likely to reinforce these behaviors, and the feedback component within the appraisal process is likely to help employees develop or maintain the behaviors that are likely to be reinforced. The rationale for synergy among these practices can be further clarified by imagining situations in which employees cannot identify the behaviors that are incentivized by the organization or where their level of performance has no bearing on the compensation they receive.

Hypothesis 2: Motivation-enhancing bundles will be positively correlated with business outcomes.

Hypothesis 2a: The correlation between motivation-enhancing bundles and business outcomes will be significantly higher than the correlations

between individual HRM practices making up these bundles and business outcomes.

Skill-Enhancing Bundles

Skill-enhancing bundles are combinations of HRM practices primarily related to staffing and training that focus on increasing the collective knowledge, ability, and skill levels (collective human capital) of the workforce (Ostroff & Bowen, 2000). Recent empirical research provides evidence for the positive relationship between human capital and firm-level outcomes (Hitt, Bierman, Shimizu, & Kochhar, 2001; Subramaniam & Youndt, 2005; Youndt, Subramaniam, & Snell, 2004). Some researchers also have suggested that human capital levels, in turn, can be enhanced through the use of such practices as recruiting large pools of applicants and selecting the ones most qualified using structured and validated selection tools, and by providing employees access to job-relevant training (see Becker & Huselid, 1998; Takeuchi, Lepak, Wang, & Takeuchi, 2007). This is because, as predicted by the Attraction-Selection-Attrition model (Schneider, 1987; Schneider, Goldstein, & Smith, 1995), selective staffing practices are likely to lead to the hiring of workers who possess desired KSAOs, and job-related training is likely to enhance these KSAOs (Arthur, Bennett, & Edens, 2003), in addition to providing the socialization necessary for integration into the organization (Autry & Wheeler, 2005). The resulting employee-organization fit has been found to be negatively related to employee turnover levels (Kristof-Brown, Zimmerman, & Johnson, 2005), and the aggregate-level of KSAOs or collective human capital at the unit level has been shown to be linked with unit performance (Stewart, 2001; Takeuchi et al., 2007).

Thus, it can be argued that the synergistic combination of selective staffing procedures and training practices will result in the creation of a highly skilled workforce by attracting and selecting employees with high levels of organization-relevant KSAOs, and by ensuring the acquisition of task-related skills and procedural knowledge necessary for high levels of performance.

Hypothesis 3: Skill-enhancing bundles will be positively correlated with business outcomes.

Hypothesis 3a: The correlation between skill-enhancing bundles and business outcomes will be significantly higher than the correlations between individual HRM practices making up these bundles and business outcomes.

HRM Bundles and HPWSs

One of the defining characteristics of SHRM research is the emphasis on HRM systems (Becker & Gerhart, 1996), which are typically measured using lists of high-performance HRM practices (HPWPs; U.S. Department of Labor, 1993), with high scores on item composites or indices indicating the simultaneous operation of a number of such practices (e.g., Huselid, 1995; Wright, Gardner, Moynihan, & Allen, 2005). Although the specific practices included in these measures often differ across studies, they typically encompass the empowerment, motivational, and skill domains (Datta, Guthrie, & Wright, 2005; Huselid, 1995; MacDuffie, 1995) and are likely to influence business outcomes by simultaneously providing employees with the opportunity to contribute to business success, motivating them to perform, and increasing workforce KSAO levels. In light of previous meta-analytical findings (Combs, Liu, Hall, & Ketchen, 2006), these high-performance work systems (HPWSs) are expected to be positively related to various business outcomes. Also, because they are likely to influence various workforce characteristics, HPWSs are expected to have stronger effects on business outcomes than the more compact HRM bundles.

Hypothesis 4: HPWSs will be positively correlated with all business outcomes.

Hypothesis 4a: HPWSs will demonstrate higher magnitudes of relationships with business outcomes than HRM bundles.

Identifying Relevant Studies

Studies relating HRM practices with business outcomes, conducted from 1995 to 2008,

were identified by searching online library databases, such as ABI/Inform Global and PsycINFO; journals, such as *Academy of Management Journal, Human Resource Management, Industrial Relations, International Journal of Human Resource Management, Journal of Management,* and *Personnel Psychology*; and working papers maintained by HR research centers, such as Cornell University's Center for Advanced Human Resource Studies. Search terms included human resource management practices, high-performance work systems, empowerment, involvement, compensation, benefits, voice, selection, training, internal labor markets, and performance. The outcome of this search was a list of studies reporting effect sizes (measures of the magnitude of a relationship between two variables) in the form of bivariate correlations (Pearson's *r*) between business outcomes and either two or more HRM practices related to one of the three bundle types or HPWSs. The final list included 188 effect sizes (*r*s) derived from 31 studies related to the three bundle types, and 50 effect sizes derived from 34 studies related to HPWSs. Thus, 239 effect sizes from 65 studies were used in the current meta-analysis (see Appendix).

Potential Moderators

In addition to testing the hypotheses proposed in the introduction, I examined the effects of two potential moderators, industry type (manufacturing vs. service) and the source providing HRM and overall performance ratings (same source vs. different source).

Industry Type

Consistently with the findings of Combs and his associates (2006), the bundle-outcome relationship will be stronger for studies conducted in manufacturing settings as opposed to those using service samples. This moderating effect of industry type is likely to be observed because of the synergistic relationships, or vertical alignment, between high-performance HRM practices and manufacturing initiatives, such as flexible manufacturing, total quality management, and lean production systems. The successful implementation of such initiatives is likely to require specific workplace modifications, including selective hiring, intensive training, and employee empowerment (Dean & Bowen, 1994; Womack & Jones, 1994). Because technical innovations such as lean manufacturing and TQM, which have more immediate bottom-line consequences, are likely to receive resources and managerial attention (Johns, 1993), HRM bundles that are combined with such initiatives are likely to receive managerial and financial support. Although service organizations are beginning to similarly focus on the creation of service quality or customer focus among their employees (Liao & Chuang, 2004; Schneider, White, & Paul, 1998), these initiatives are likely to be more difficult to implement in these settings. This is because the frequent turnover of service workers might not provide the firm with the opportunity to adequately influence their behaviors through the HRM practices, and the coproduction of services by customers is likely to limit the influence firms can have on service outcomes, as opposed to manufacturing settings, where employee behaviors are more important further upstream in the process.

Source of Ratings

This study also explores the influence of the source of HRM and overall performance ratings. Although objective measures of performance, such as profitability and ROA data from COMPUSTAT, are preferable to subjective or perceptual measures of business performance in SHRM research (Boselie et al., 2005), the latter are routinely used in situations where objective performance-related data might not be easily available (Delaney & Huselid, 1996). In such situations, researchers typically ask managers to report their organization's performance overall (e.g., Park, Mitsuhashi, Fey, & Bjorkman, 2003) or on specific criteria (e.g., Michie & Sheehan, 2005), often in comparison to others in the industry (e.g., Liouville & Bayad, 1998). Although there is evidence that mult-item

subjective measures can be valid sources of performance data (Wall et al., 2004), these measures often are filled out by the same individuals who provide the HRM ratings. As evident from research in organizational behavior and management, this has the potential for creating inflated correlations between the predictor (HRM ratings) and outcome (overall performance ratings) because of common-method bias (see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Although recent evidence indicates some difference between findings from studies using objective versus subjective ratings of performance (Combs et al., 2006), little is known about the differences within the studies providing these subjective ratings—that is, between studies in which both HRM and performance ratings are supplied by the same individuals, versus those in which these ratings are obtained from different sources. I examine this difference in the current study.

Coding Procedure

Two industrial/organizational (I/O) psychologists and a graduate I/O psychology student independently reviewed all the studies and came to a consensus regarding their key characteristics—that is, the relevant effect sizes, reliability of measures, and other study characteristics, such as type of outcome measure, industry type, and source of HRM ratings and outcome data. First, they categorized the outcomes reported in the studies into four types: retention (reverse coded employee turnover), operating performance (e.g., productivity, sales, quality, and customer loyalty), financial performance (e.g., profits, return on assets, and Tobin's Q), and overall performance, that is, overall estimates of performance derived from either objective data aggregated by researchers, such as sales and profits (Wright, McCormick, Sherman, & McMahan, 1999), or subjective ratings of organizational performance (e.g., Martell & Carroll, 1995). Second, they categorized the studies on the basis of industry type—manufacturing and service. Studies reporting overall performance ratings were coded as having either a common or a different rating source.

The next step in the coding procedure was the categorization of various HRM practice-outcome relationships or effect sizes into one of the three bundles. To do so, I created a list of 14 HRM practices frequently mentioned in the literature (see Table I) and provided it to five faculty members with research and teaching interests in the field of HRM and five final-year graduate students enrolled in an I/O psychology graduate program within a public university in the United States. All 10 judges were given a brief definition of empowerment-, motivation-, and skill-enhancing bundles and instructed to place each HRM practice into one of the three categories. I calculated the reliability of this categorization using Fleiss's *kappa* (Fleiss, 1971), which is an appropriate measure for assessing interrater reliability in situations where a fixed number of raters assign categorical ratings to a specified number of items. The resulting *kappa* value of $K = .80$ for this categorization can be considered high and reflects "substantial agreement between raters" (Landis & Koch, 1997). Thus, after gaining confidence regarding the robustness of the classification, I placed each effect size into one of the three bundles.

Creation of HRM Bundles

By calculating the composites of relevant effect sizes within each study, I created the empowerment, motivation, and skill bundles. For instance, if a given study provided correlations between training and productivity and selection and productivity, a single composite score was created to reflect the combined effect of both the skill-enhancing practices of training and selection on productivity (an operating performance outcome). If the study also provided correlations between selection and turnover and training and turnover, a composite score was similarly created to reflect the combined effect of selection and training on turnover. Thus, in this example, the focal study provided information to calculate two composite scores: between skill-enhancing bundles and two separate outcomes. Also, correlations between HRM practices and multiple outcomes within the

same outcome category (e.g., ROA and ROE) were combined to form a single composite score. Instead of averaging individual HRM practice-outcome effect sizes to estimate bundle-outcome effects, I calculated composite effect sizes with Hunter and Schmidt's (2004) formula 10.12 (p. 437). Simple averaging assumes that the effect sizes within a study are independent—that is, the practices are not correlated with each other—an assumption that is neither empirically nor conceptually the case for practices within a bundle. Further, if the sample size used for correcting the average correlation is the sum of the sample sizes for each correlation (as is usually the case), it results in an underestimation of the sampling error in the study. Therefore, Hunter and Schmidt (2004) recommend calculating a composite correlation to calculate total effects by taking into consideration the intercorrelations among all the predictors and outcomes within a single study. This process yielded 63 effect sizes: 20 for empowerment, 27 for motivation, and 16 for skill-enhancing bundles.

Data Analysis

Adopting the meta-analytic procedure developed by Schmidt and Hunter (1990), I corrected the raw correlations (r) for both sampling error and measurement error and used the artifact distribution method (see Combs et al., 2006) to estimate corrected population effect sizes (ρ) for the latter. In addition, I generated 95% confidence intervals (95% CIs) for the corrected effect sizes. A 95% CI that excludes zero indicates that the ρ value is distinguishable from zero and, therefore, can be generalized across studies. In addition, I estimated the statistical significance of the differences between ρ values with a Z test (Quinones, Ford, & Teachout, 1995). Finally, I used a chi-square (χ^2) test to determine whether the HRM bundle-outcome relationships were influenced by study characteristics acting as moderators, with a significant χ^2 signaling heterogeneity in the residual variance and, therefore, the possible presence of moderators (Sagie & Koslowsky, 1993).

Results of Hypotheses Testing

Hypothesis 1 predicted a positive relationship between empowerment-enhancing bundles and business outcomes. Table II reveals that empowerment bundles are, indeed, positively related to outcomes across all categories (ρ = .26; 95% CI: .21; .30). Further, the overlap between the confidence intervals for all four outcome categories (retention, operating performance, financial performance, and overall performance) suggests that empowerment bundles have similar magnitudes of relationships with different types of business outcomes. Similarly, support was found for Hypothesis 2, which predicted a positive relationship between motivation-enhancing bundles and business outcomes (ρ = .24; 95% CI: .21; .28). A review of the effect sizes for the four outcomes reveals positive and generalizable effect sizes (that is, their 95% CIs do not include zero), with motivation bundles demonstrating stronger relationships with retention (ρ = .29; 95% CI: .22; .35) and overall performance (ρ = .33; 95% CI: .26; .40) than with operating performance (ρ = .15; 95% CI: .08; .21). Finally, Hypothesis 3, which predicted a positive relationship between skill-enhancing bundles and business performance, was found to be supported across all performance outcomes (ρ = .17; 95% CI: .12; .21) except retention (ρ = .01; 95% CI: −.08; .10). These results support Hypotheses 1, 2, and 3.

Hypotheses 1a, 2a, and 3a predicted that the three HRM bundles would be more strongly correlated with business outcomes than their constituent practices. To facilitate these comparisons, I categorized empowerment practices into teams (cross-functional and autonomous teams) and participation (voice and autonomy); motivation practices into compensation, benefits, and performance appraisal; and skill practices into staffing and training. Results revealed that the mean corrected effect size for empowerment bundles (ρ = .26; 95% CI: .21; .30) was significantly higher than the effect sizes for both teams (ρ = .16; Z = 2.5; $p < .05$) and employee participation (ρ = .11; Z = 3.75; $p < .01$). Similarly, the relationship between

TABLE II HRM Bundles and Business Outcomes

Bundle Types	*N*	*k*	*r*	*P*	S^2	σ^2_ρ	95% CI	χ^2
Empowerment Enhancing								
All Outcomes	3,889	20	.20	.26	.01	.02	.21; .30	51.3**
Specific Outcomes								
Retention	2,034	6	.17	.22	.00	.01	.16; .27	10.4
Operating Performance	1,061	8	.22	.29	.01	.02	.21; .36	11.9
Financial Performance	347	2	.25	.32	.01	.02	.18; .46	4.5
Overall Performance	648	4	.24	.31	.03	.05	.21; .41	20.8**
Individual Practices								
Teams	3,896	19	.12	.16	.01	.01	.11; .20	25.3
Participation	2,378	16	.09	.11	.01	.01	.06; .16	12.6
Motivation Enhancing								
All Outcomes	5,192	27	.19	.24	.02	.04	.21; .28	119.4**
Specific Outcomes								
Retention	1,547	7	.22	.29	.03	.03	.22; .35	52.2**
Operating Performance	1,552	8	.12	.15	.01	.02	.08; .21	16.2*
Financial Performance	1,187	6	.18	.23	.00	.01	.16; .31	4.5
Overall Performance	1,251	6	.26	.33	.02	.04	.26; .40	33.2**
Individual Practices								
Compensation	9,223	44	.12	.15	.02	.03	.12; .18	154.6**
Benefits	14,749	20	.09	.12	.01	.02	.10; .14	218.1**
Performance Appraisal	3,581	14	.08	.10	.00	.01	.06; .14	16.4
Skill Enhancing								
All Outcomes	3,181	16	.13	.17	.03	.04	.12; .21	88.8**
Specific Outcomes								
Retention	802	3	.01	.01	.01	.01	-.08; .10	5.8
Operating Performance	982	6	.10	.12	.01	.02	.04; .21	11.0
Financial Performance	890	6	.12	.15	.00	.00	.06; .24	2.2
Overall Performance	708	3	.33	.43	.04	.07	.34; .52	35.6**
Individual Practices								
Staffing	4,318	17	.07	.08	.01	.02	.04; .12	41.0**
Training	4,009	19	.12	.15	.02	.04	.11; .19	90.9**

Note. *N* = pooled sample size; *k* = number of effect sizes; *r* = sample weighted mean (bare bones) effect size; ρ = population effect size (corrected for sampling error and unreliability), S^2 = sample weighted variance; σ^2_ρ = estimated population variance; 95% CI = 95% Conf. Interval (LL; UL); significance of the χ^2 value indicates unexplained variance; *$p \leq .05$; **$p \leq .01$.

motivation bundles and business outcomes (ρ = .24; 95% CI: .21; .28) was significantly higher than the practice-outcome effects for compensation (ρ = .15; Z = 9.0, $p < .01$), benefits (ρ = .12; Z = 4.0, $p < .01$), and performance appraisal (ρ = .10; Z = 14.0, $p < .01$). Finally, there appeared to be small but significant differences between the effect sizes for skill bundles (ρ = .17; 95% CI: .12; .21) and the practices within this bundle, that is, staffing (ρ = .08; Z = 2.33; $p < .05$) and training (ρ = .15; Z = 2.22; $p < .05$). Thus, Hypotheses 1a, 2a, and 3a were supported. All individual practices included in the study were found to have positive and generalizable effect sizes; that is, their 95% CIs did not include zero, with corrected effect sizes ranging from ρ = .08 (95% CI: .04; .12) for

staffing to ρ = .16 (95% CI: .11; .20) for teams.

Additionally, to ascertain the synergistic effects of the bundles, I compared the results from studies in which multiple practices within a theorized bundle were simultaneously present with the average effect of these practices aggregated over the entire dataset. This approach was consistent with the one recommended by Stajkovic and Luthans (2003) to test for synergistic effects of bundled interventions. To implement this analysis, I began by normalizing the corrected effect sizes (ρ) from their current form (that is, as Pearson's *r*s) for the relevant individual practices by converting them into Fisher *Z*s, and then averaged these *Z*s to arrive at an average practice effect. Next, I reconverted the average effect into a Pearson's *r* and compared this average effect with the bundle effect. A comparison of the effect of the empowerment bundles on all business outcomes with the average effect of the constituent practices (ρ = .14) revealed significantly stronger bundle effects (Z = 12.0; $p < .01$). Similarly, the bundle effects were stronger for motivation bundles in comparison with the average of the individual motivation-enhancing practices (ρ = .12; Z = 4.62; $p < .01$), and skill bundles compared to the average of their constituent individual practices (ρ = .05; Z = 2.50; $p < .05$).

Comparison of HRM Bundle and HPWS Effects

Hypothesis 4 predicted a positive relationship between HPWSs and business outcomes, and 4a proposed that the HPWS-outcome relationship would be significantly stronger than the bundle-outcome relationships. I tested these hypotheses together by creating a meta-analytic summary of the bundle-outcome effects across all three bundle types and comparing it with the HPWS effects. Table III reveals that the relationship between HPWSs and business outcomes is positive and generalizable (ρ = .17; 95% CI: .15; .19). Contrary to the prediction of Hypothesis 4a, however, the HPWS-outcome relationship was found to be significantly smaller (Z = 3.53; $p < .01$) than the one between HRM bundles and business outcomes (ρ = .23; 95% CI: .21; .25). Notably, the differences between specific bundle and HPWS effects were found to be statistically significant for empowerment (ρ = .24; Z = 5.3; $p < .01$) and motivation (ρ = .24; Z = 7.0;

TABLE III Comparative Effects of HRM Bundles and HPWSs

	N	*k*	*r*	*P*	S^2	σ^2_ρ	95% CI	χ^2
All Three HRM Bundles								
All Outcomes	12,281	63	.18	.23	.02	.03	.21; .25	271.7
Specific Outcomes								
Retention	4,249	17	.16	.21	.02	.03	.18; .24	90.7**
Operating Performance	3,458	22	.14	.18	.01	.02	.14; .22	49.2**
Financial Performance	2,287	12	.18	.21	.01	.01	.16; .27	15.5
Overall Performance	2,376	12	.26	.33	.03	.04	.28; .38	70.9**
HPWS								
All Outcomes	15,223	50	.13	.17	.02	.03	.15; .19	260.1**
Specific Outcomes								
Retention	3,166	11	.15	.20	.01	.02	.15; .24	40.0**
Operating Performance	4,611	18	.11	.14	.01	.02	.10; .17	57.3**
Financial Performance	5,701	12	.08	.10	.01	.01	.07; .13	47.4**
Overall Performance	1,752	7	.32	.42	.00	.01	.36; .47	8.0

Note: *N* = pooled sample size; *k* = number of effect sizes; *r* = sample weighted mean (bare bones) effect size; ρ = population effect size (corrected for sampling error and unreliability), S^2 = sample weighted variance; σ^2_ρ = estimated population variance; 95% CI = 95% Conf. Interval (LL; UL); significance of the χ^2 value indicates unexplained variance; *$p \leq .05$; **$p \leq .01$.

$p < .01$) bundles, but not for skill-enhancing bundles ($\rho = .17$; $Z = .03$; ns).

Identification of Moderators

Across all bundle types, effect sizes related to overall performance had larger magnitudes than those related to other outcomes. These effect sizes also displayed a large amount of unexplained variance or heterogeneity as evidenced by the significant χ^2 values. To explore this finding, I coded studies with overall performance outcomes as "common rating source" versus "different rating sources," depending on whether the overall performance ratings were provided by the same individuals who also provided the HRM ratings. The combined effect of all three bundles on composite performance was then analyzed, with rating source as a moderator. This analysis, reported in Table IV, reveals that effect sizes for studies in which the predictor-outcome ratings came from the same source ($\rho = .44$; 95% CI: .39; .50) were significantly larger in magnitude ($Z = 3.43$; $p < .01$) than those in which these ratings came from separate sources ($\rho = .20$; 95% CI: .12; .28). This indicates that rating source is, indeed, a moderator of the HRM bundle-outcome relationship. In line with previous findings (e.g., Combs et al., 2006), it also appears that industry type significantly moderates this relationship ($Z = 50$; $p < .01$), with studies conducted in manufacturing samples ($\rho = .36$; 95% CI: .28; .43) providing significantly higher effect sizes than those using service samples ($\rho = .21$; 95% CI: .18; .24).

Finally, I conducted a fail-safe N test to rule out sampling bias—that is, the possibility of obtaining these results by omitting unpublished studies—by estimating the number of studies with an effect size of zero required to reduce the mean effect size to a specified low effect size (Orwin, 1983). Using a fairly conservative criterion of .06, which is one-third of the uncorrected mean correlation across all types of bundles and outcomes, I estimated that about 126 studies reporting null results would be needed to reduce the observed effect size to a third. ($k_o = k\,[r_o/r_{\text{criterion}} - 1]$, where k_o is the number of effect sizes with a value of zero needed to reduce the mean effect-size, r_o to a specified criterion of $r_{\text{criterion}}$. Using $r_o = .18$, $k = 63$, and $r_{\text{criterion}} = .06$, we obtain a k_o of 126.)

Discussion

The current study contributes to SHRM literature by providing empirical evidence linking empowerment-, motivation-, and skill-enhancing bundles with various business outcomes. Specifically, a meta-analysis of 239 effect sizes derived from 64 studies reveals that all three bundles are positively related to business outcomes, have stronger relationships with business outcomes than their constituent individual HRM practices, and are related to business outcomes more strongly than (in the case of empowerment and motivation bundles) or as strongly as (for skill bundles) HPWSs. In addition, the findings provide further evidence that bundle-outcome relationships are moderated by

TABLE IV Moderators of the Relationship Between HRM Bundles and Business Outcomes

	N	*k*	*R*	*P*	S^2	σ^2_ρ	95% CI	χ^2
Industry Type								
Service	5,677	24	.17	.21	.02	.03	.18; .24	92.5*
Manufacturing	1,021	11	.28	.36	.02	.03	.28; .43	17.5
Source of HRM and Overall Performance Ratings								
Common Rating Source	1,504	8	.35	.44	.04	.06	.39; .50	69.5**
Different Rating Sources	937	5	.16	.20	.00	.01	.12; .28	4.4

Note: N = pooled sample size; k = number of effect sizes; r = sample weighted mean (bare bones) effect size; ρ = population effect size (corrected for sampling error and unreliability); S^2 = sample weighted variance; σ^2_ρ = estimated population variance; 95% CI = 95% Conf. Interval (LL; UL); significance of the χ^2 value indicates unexplained variance; *$p \le .05$; **$p \le .01$.

industry type, with stronger effect sizes observed in manufacturing settings. They also show that the relationship between HRM bundles and overall performance is stronger in studies in which HRM ratings and performance ratings are collected from the same source, as opposed to those in which these ratings are derived from different sources.

Although previous meta-analytic investigations of the HRM-business outcome link have focused on individual best practices (Guzzo, Jette, & Katzell, 1985) and comprehensive HPWSs (Combs et al., 2006), this study additionally provides evidence for the efficacy of more compact bundles consisting of practices aimed at enhancing specific workforce characteristics, that is, employee empowerment, motivation, and skill levels. Several SHRM theorists have highlighted the importance of categorizing HRM practices into these bundles and called for empirical research on the utility of this categorization (e.g., Boselie et al., 2005; Wright & Boswell, 2002). This study contributes to the literature by providing empirical evidence for both synergistic effects (significantly stronger effect sizes for bundles than their constituent individual practices) and positive relationships between the HRM bundles and business outcomes. The only inconsistent finding was the small association between skill-enhancing bundles and retention (ρ = .01; 95% CI: –.08; .10). This finding might reflect the fact that highly skilled employees are also in high demand in other organizations and might be difficult to retain, especially if they possess skills that are generalizable (Becker, 1964). Providing above-market pay (Gerhart & Milkovich, 1992), internal career mobility (Benson, Finegold, & Mohrman, 2004), and supportive work conditions (Eisenberger et al., 1986) might help retain such employees.

Findings from this study also indicate that HRM bundles compare quite favorably with HPWSs in their association with business outcomes. Specifically, empowerment (ρ = .24; Z = 5.3; p < .01) and motivation (ρ = .24; Z = 7.0; p < .01) bundles demonstrate significantly higher correlations with business outcomes than do HPWSs (ρ = .17; 95% CI: .15; .19), and skill-enhancing bundles do not differ significantly from HPWSs (ρ = .17; Z = .03; ns) in their effects. These unexpected findings have at least two possible explanations.

First, because measurement of synergy necessitates some calculation of the interaction between component practices within a bundle or system, it could be argued that existing measures of HPWSs (composites formed by summing or averaging respondents' raw or standardized ratings relating to a set of HRM practices) provide substantial information about the comprehensiveness of an HRM system (to what degree a firm uses various HRM practices) but do not reflect the synergy within the system. Thus, it is possible for a firm to adopt a number of HRM practices and obtain a high score on a typical HPWS scale, but it is simultaneously possible for these practices not to be aligned with each other. For example, the compensation system might be appropriate for individuals, while the appraisal system might focus more on group output. A measurement strategy that does not incorporate the interrelationships between individual practices can end up either underestimating the true HPWS-outcome relationship (by ignoring synergistic effects) or lead to the simplistic conclusion that adopting more HRM practices can have performance-enhancing effects.

This study additionally provides evidence for the efficacy of more compact bundles consisting of practices aimed at enhancing specific workforce characteristics, that is, employee empowerment, motivation, and skill levels.

Second, it is possible that smaller HRM bundles focused on enhancing specific workforce characteristics might have some actual advantages over multiple practices aimed at improving all characteristics. As noted by others (Cappelli & Neumark, 2001; Sels et al., 2006), HPWSs have both value-creating and cost-enhancing effects. That is, the costs associated with the adoption of HPWSs (for example, labor costs emerging from higher wages and the cost of a new selection system) might diminish or even neutralize the

positive effects of these systems on business performance measures such as productivity. It is, therefore, possible that because of their smaller sizes and synergistic effects, HRM bundles might deliver similar benefits without substantially increasing costs and have a similar impact on business outcomes.

This study also reveals that the HRM bundle-business outcome link is significantly stronger in manufacturing (ρ = .36; 95% CI: .28; .43) as opposed to the service context (ρ = .21; 95% CI: .18; .24). This may be because HRM practices are more likely to receive managerial attention and financial resources in manufacturing contexts and, therefore, be implemented more effectively when they are integral parts of technical innovations aimed at improving firm performance.

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To verify this line of reasoning, I examined the studies conducted in the manufacturing context to determine whether the firms included in the study also engaged in these quality-improvement or waste-reduction initiatives. I found that three studies from which six of the effect sizes were derived (Appleyard & Brown, 2001; Chandler & McEvoy, 2000; Patterson et al., 2004) explicitly mentioned the implementation of TQM, quality control, or flexible manufacturing practices. I compared the mean corrected effect size derived from these studies (k = 6 effect sizes) mentioning the manufacturing initiatives (ρ = .50; 95% CI: .46; .54) with the effect sizes derived from studies not explicitly mentioning these initiatives (k = 5; ρ = .30; 95% CI: .28; .31) and found this difference to be statistically significant (Z = 11.76; p < .01). Though preliminary, these results point to the importance of a different type of synergy, often referred to as vertical fit or external alignment—that is, the fit or compatibility between HRM bundles and the organizational context (Delery, 1998).

Finally, this study reveals that although subjective measures of overall performance might not be undesirable in themselves, they might lead to inflated predictor-outcome correlations when both HRM and performance ratings are derived from a single source. This suggests the need for research using perceptual measures of performance to include HRM ratings from a different source. An alternate possibility is to obtain performance ratings from subjective sources (if objective performance data cannot be obtained) and objective data on HRM practices from organizational records (for example, average pay and selection ratio).

Limitations and Future Research

One limitation of this study is the absence of investigation into the moderating effects of environmental factors other than industry. This was because of the lack of a sufficient number of studies reporting these relationships (for example, two examining munificence and three reporting dynamism). Accumulation of more findings such as those reported by Datta and his associates (2005) might help in establishing the contingencies or boundary conditions for the effectiveness of HRM bundles. The lack of a sufficient number of relevant studies also did not permit me to test the issue of reverse or

reciprocal causation—that is, the question of whether firm performance influences the adoption of HRM practices. Because profitable firms are more likely to have slack or a cushion of excess resources at their disposal (Chakravarthy, 1986; Sharfman, Wolf, Chase, & Tansik, 1988), they are likely to invest part of these resources in adopting and implementing HRM practices (Hiltrop, 1999). Thus, in addition to an HRM-performance link, we should expect past financial performance to also influence the adoption of HRM practices—that is, performance → HRM (Subramony et al., 2008). Clearly, there is a need for more longitudinal or cross-lagged panel studies investigating such links (e.g., Wright, Gardner, Moynihan, & Allen, 2005).

Future studies are required to examine the synergistic relationships *between* bundles—that is, to identify the ways in which various bundles can combine to create an even larger effect. For instance, it can be argued that empowerment and motivation bundles are complementary means of achieving the common objective of enhancing workforce effort and performance levels. Although motivation bundles are focused more upon motivating employees through goal-setting and reinforcement mechanisms, empowerment bundles affect employee behaviors through the intrinsic-motivation route—that is, by enriching the work environment. Thus, their interactive effects are likely to be synergistic. A related limitation of this study was its exclusive focus on empowerment-, motivation-, and skill-enhancing bundles. It is possible that there are other bundling strategies that might be equally effective or more effective than this one. Given the preponderance of theoretical discussion regarding this categorization, and a relative lack of alternatives, however, I chose to test the current classification. Future studies ought to explore various HRM practice combinations that are likely to be effective for various performance outcomes.

Finally, studies are required to explore the mediating processes through which HRM bundles act on business outcomes. For instance, by adopting an input-process-output (IPO) framework (e.g., Mathieu et al., 2006), one could conjecture that empowerment practices indirectly influence employees' attitudes and behaviors by acting on their collective perceptions of being empowered, that is, psychological empowerment (Kirkman & Rosen, 1999). Similarly, it can be proposed that the influence of pay and other incentives on employee attitudes and behaviors is mediated by employee perceptions of the discrepancy between how much they are paid and how much they should be paid (Heneman & Judge, 2000), as well as perceived organizational support (Eisenberger et al., 1986). Testing such a mediated model is likely to attend to a key limitation in the current conceptualization of bundles—that is, demonstrating that these bundles, indeed, perform the functions they are theorized to perform (i.e., empowerment-enhancing bundles empower employees; motivation bundles motivate them).

This study reveals that although subjective measures of overall performance might not be undesirable in themselves, they might lead to inflated predictor-outcome correlations when both HRM and performance ratings are derived from a single source.

Implications for Practice

The findings from this study support the initial proposition that synergistic bundles of HRM practices are likely to be positively correlated with specific business outcomes, and that these correlations are likely to be as strong or stronger for HRM bundles than for HPWSs. These findings suggest that firms can benefit from the adoption of high-performance HRM practices, even if they are few, as long as these practices also are complementary. Thus, instead of simply increasing the number of HRM practices—that is, making HRM systems more comprehensive—firms could derive positive returns by enhancing synergy among these practices. This is not to say that firms should not adopt multiple practices. It is not enough for workers to be empowered; they also need to be provided with both sufficient training to have the capacity to perform and pay to stay motivated. Rather, it can be argued that instead of ensuring that several HPWPs be simultaneously present or

introduced together, firms might benefit from adopting a smaller number of complementary practices and then build synergies among them. The introduction of smaller HRM bundles is likely to be more cost-effective than the simultaneous adoption of several HRM practices: The introduction of a few practices can provide sufficient time for the organization to integrate these practices with each other and with other organizational initiatives, such as TQM and lean manufacturing; the demonstrated success of one bundle can help in building buy-in and acquiring resources required to adopt yet other bundles (Kotter, 1995); and it is likely to be easier to "sell" bundles of internally consistent and coherent practices focused on specific objectives, such as empowerment or skill enhancement, to stakeholders (Dutton & Ashford, 1993; Subramony, 2006).

In conclusion, this study helps highlight the value of investing in bundles of complementary HRM practices. It has been noted that "the behavior of large and complex aggregates … is not to be understood in terms of a simple extrapolation of the properties of a few … instead, at each level of complexity entirely new properties appear" (Anderson, 1972, p. 393). Likewise, this study suggests that bundling together complementary HRM practices can help create situations where more is different.

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References

Studies used in the meta-analysis are marked with an asterisk*.

Ahearne, M., Mathieu, J., & Rapp, A. (2005). To empower or not to empower your sales force? An empirical examination of the influence of leadership empowerment behavior on customer satisfaction and performance. Journal of Applied Psychology, 90, 945–955.

Alge, B., Ballinger, G., Tangirala, S., & Oakley, J. (2006). Information privacy in organizations: Empowering creative and extrarole performance. Journal of Applied Psychology, 91, 221–232.

Allen, D. G., Shore, L. M., & Griffeth, R. W. (2003). The role of perceived organizational support and supportive human resource practices in the turnover process. Journal of Management, 29(1), 99–118.

Anderson, P. W. (1972). More is different. Science, 177(4047), 393–396.

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2000). Manufacturing advantage: Why high performance work systems pay off. Ithaca, NY: Cornell University Press.

*Appleyard, M., & Brown, C. (2001). Employment practices and semiconductor manufacturing performance. Industrial Relations, 40, 436–471.

Arthur, W., Bennett, W., & Edens, P. S. (2003). Effectivness of training in organizations: A meta-analysis of design and evaluation features. Journal of Applied Psychology, 88(2), 234–245.

Autry, C. W., & Wheeler, A. R. (2005). Post-hire human resource management practices and person-organization fit: A study of blue-collar employees. Journal of Management Issues, 17(1), 58–75.

*Bae, J., Chen, S., Wan, T., Lawler, J., & Walumba, F. (2003). Human resource strategy and firm performance in Pacific Rim countries. International Journal of Human Resource Management, 14, 1308–1332.

*Bae, J., & Lawler, J. (2000). Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy. Academy of Management Journal, 43, 502–517.

Bailey, T., Berg, P., & Sandy, C. (2001). The effect of high-performance work practices on employee earning in the steel, apparel, and medical electronics and imaging industries. Industrial & Labor Relations Review, 54, 525–543.

Balcazar, F., Hopkins, B., & Suarez, Y. (1985). A critical, objective review of performance feedback. Journal of Organizational Behavior Management, 7(3), 65–89.

Banker, R., Potter, G., & Srinivasan, D. (2000). An empirical investigation of an incentive plan that includes nonfinancial performance measures. Accounting Review, 75, 65.

*Batt, R. (2002). Managing customer services: Human resource practices, quit rates, and sales growth. Academy of Management Journal, 45, 587–597.

*Batt, R., Colvin, A., & Keefe, J. (2002). Employee voice, human resource practices, and quit rates: Evidence from the telecommunications industry. Industrial and Labor Relations Review, 55, 573–594.

Bayo-Moriones, A., & Merino-Díaz de Cerio, J. (2001). Quality management and high performance work practices: Do they coexist? International Journal of Production Economics, 73, 251–259.

Becker, B., & Gerhart, B. (1996). The impact of human resource management on organizational performance: Progress and prospects. Academy of Management Journal, 39(4), 779–801.

Becker, B., & Huselid, M. (1998). High performance work systems and firm performance: A synthesis of research and managerial implications. Research in Personnel and Human Resources, 16, 53–101.

Becker, G. S. (1964). Human capital. New York: Columbia University Press.

Benson, G., Finegold, D., & Mohrman, S. (2004). You paid for the skills, now keep them: Tuition reimbursement and voluntary turnover. Academy of Management Journal, 47, 315–331.

Berg, P., Appelbaum, E., Bailey, T., & Kalleberg, A. (2000). Modular production: Improving performance in the apparel industry. The American workplace: Skills, compensation, and employee involvement. Cambridge: Cambridge University Press.

*Bjorkman, I., & Xiucheng, F. (2002). Human resource management and the performance of Western firms in China. International Journal of Human Resource Management, 13, 853–864.

Blau, P. M. (1964). Exchange and power in social life. New York: John Wiley.

Boselie, P., Dietz, G., & Boone, C. (2005). Commonalities and contradictions in HRM and performance research. Human Resource Management Journal, 15(3), 67–94.

Boudreau, J. W., & Ramstad, P. M. (2003). Strategic I/O psychology and the role of utility analysis models. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), Handbook of psychology: Vol. 12. Industrial and organizational psychology (pp. 193–221). Hoboken, NJ: John Wiley.

Bowen, E. D., & Ostroff, C. (2004). Understanding HRM-firm performance linkages: The role of the "strength" of the system. Academy of Management Review, 29, 203–221.

Cappelli, P., & Neumark, D. (2001). Do "high-performance" work practices improve establishment-level outcomes? Industrial & Labor Relations Review, 54, 737–775.

Chakravarthy, B. (1986). Measuring strategic performance. Strategic Management Journal, 7(5), 437–458.

*Chan, L., Shaffer, M., & Snape, E. (2004). In search of sustained competitive advantage: The impact of organizational culture, competitive strategy and human resource management practices on firm performance. International Journal of Human Resource Management, 15, 17–35.

*Chandler, G., & McEvoy, G. (2000). Human resource management, TQM, and firm performance in small and medium-size enterprises. Entrepreneurship Theory and Practice, 25, 43–57.

*Collins, C., & Clark, K. (2003). Strategic human resource practices, top management team social networks, and firm performance: The role of human resource practices in creating organizational competitive advantage. Academy of Management Journal, 46, 740–751.

*Collins, C., Smith, K. G., & Stevens, C. K. (2001). Human resource practices, knowledge creating capability and performance in high technology firms. Working Paper (WP01-02). Ithaca, NY: Cornell University, Center for Advanced Human Resource Studies.

*Colvin, A. J. S., Batt, R., & Keefe, J. (2005). The impact of employee voice and compliance mechanisms on

absenteeism, discipline, and turnover. Working Paper (WP01-04). Ithaca, NY: Cornell University, Center for Advanced Human Resource Studies.

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.

Conger, J., & Kanungo, R. (1988). The empowerment process: Integrating theory and practice. Academy of Management Review, 13, 471–482.

Corning, P. A. (1995). Synergy and self organization in the evolution of complex systems. Systems Research, 12, 89–121.

Corning, P. A. (1998). The synergism hypothesis: On the concept of synergy and its role in the evolution of complex systems. Journal of Social and Evolutionary Systems, 21, 133–172.

Currall, S., Towler, A., Judge, T., & Kohn, L. (2005). Pay satisfaction and organizational outcomes. Personnel Psychology, 58, 613–640.

*Datta, D., Guthrie, J., & Wright, P. (2005). Human resource management and labor productivity: Does industry matter? Academy of Management Journal, 48, 135–145.

Dean, J. W., & Bowen, D. E. (1994). Management theory and total quality: Improving research and practice through development. Academy of Management Review, 19(3), 392–418.

*Delaney, J., & Huselid, M. (1996). The impact of human resource management practices on perceptions of organizational performance. Academy of Management Journal, 39, 949–969.

Delery, J. E. (1998). Issues of fit in human resource management: Implications for research. Human Resource Management Review, 8, 289–310.

*Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency and configurational performance predictions. Academy of Management Journal, 39, 802–835.

*Delery, J. E., Gupta, N., Shaw, J. D., Jenkins, G. D., & Ganster, M. L. (2000). Unionization, compensation, and voice effects on quits and retention. Industrial Relations, 39, 625–645.

Dutton, J., & Ashford, S. (1993). Selling issues to top management. Academy of Management Review, 18, 397–428.

Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. Journal of Applied Psychology, 86(1), 42–51.

Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. Journal of Applied Psychology, 71, 500–507.

*Faems, D., Sels, L., De Winne, S., & Maes, J. (2005). The effect of individual HR domains on financial performance: Evidence from Belgian small business. International Journal of Human Resource Management, 16, 676–700.

Ferris, G. R., Hall, A. T., Royle, M. T., & Martocchio, J. J. (2004). Theoretical development in the field of human resource management: Issues and challenges. Organizational Analysis, 12, 231–254.

*Fey, C., & Bjorkman, I. (2001). The effect of human resource management practices on MNC subsidiary performance in Russia. Journal of International Business Studies, 32, 59–75.

Fleiss, J. L. (1971). Measuring normal scale agreement among many raters. Psychological Bulletin, 76(5), 378–382.

*Gardner, T. M., Moynihan, L. M., Park, H. J., & Wright, P. M. (2001). Beginning to unlock the black box in the HR firm performance relationship: The impact of HR practices on employee attitudes and employee outcomes. Working Paper (WP01-12). Ithaca, NY: Cornell University, Center for Advanced Human Resource Studies.

Gerhart, B., & Milkovich, G. T. (1992). Employee compensation: Research and practice. In M. D. Dunnette & L. M. Hough (Eds.), Handbook of industrial and organizational psychology (Vol. 3, pp. 481–569). Palo Alto, CA: Consulting Psychologists Press.

*Gibson, C., Porath, C., Benson, G., & Lawler, E. (2007). What results when firms implement practices: The differential relationship between specific practices, firm financial performance, customer service, and quality. Journal of Applied Psychology, 92, 1467–1480.

*Guerrero, S., & Barraud-Didier, V. (2004). High-involvement practices and performance of French firms. International Journal of Human Resource Management, 15, 1408–1423.

Guest, D., Conway, N., & Dewe, P (2004). Using sequential tree analysis to search for "bundles" of HR practices. Human Resource Management Journal, 14(1), 79–96.

*Guest, D., Michie, J., Conway, N., & Sheehan, M. (2003). Human resource management and corporate performance in the UK. British Journal of Industrial Relations, 41, 291–314.

*Guthrie, J. (2000). Alternative pay practices and employee turnover: An organization economics perspective. Group and Organization Management, 25, 419–439.

*Guthrie, J. (2001). High-involvement work practices, turnover, and productivity: Evidence from New Zealand. Academy of Management Journal, 44, 180–190.

Guzzo, R., Jette, R., & Katzell, R. (1985). The effects of psychologically based intervention programs on worker productivity: A meta-analysis. Personnel Psychology, 38, 275–291.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. Organizational Behavior and Human Performance, 16(2), 250–279.

*Harel, G., Tzafrir, S., & Baruch, Y. (2003). Achieving organizational effectiveness through promotion of women into managerial positions: HRM practice focus. International Journal of Human Resource Management, 14, 247–263.

Harrison, D., Newman, D., & Roth, P. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and sequences. Academy of Management Journal, 49, 305–325.

*Hartog, D., & Verburg, R. (2004). High performance work systems, organizational culture and firm effectiveness. Human Resource Management Journal, 14, 55–79.

Helgesen, Ø. (2006). Are loyal customers profitable? Customer satisfaction, customer (action) loyalty and customer profitability at the individual level. Journal of Marketing Management, 22, 245–266.

Heneman, H. G., III, & Judge, T. A. (2000). Compensation attitudes. In S. L. Rynes & B. Gerhart (Eds.), Compensation in organizations (pp. 61–103). San Francisco: Jossey-Bass

Hiltrop, J. (1999). The quest for the best: Human resource practices to attract and retain talent. European Management Journal, 17, 422.

Hitt, M., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. Academy of Management Journal, 44, 13–28.

Hunter, J. E., & Schmidt, F. L. (2004). Methods of meta-analysis (2nd ed.). Thousand Oaks, CA: Sage.

*Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. Academy of Management Journal, 38, 635–672.

Johnson, C. M., & Masotti, R. (1990). Suggestive selling by waitstaff in family-style restaurants: An experiment and multisetting observations. Journal of Organizational Behavior Management, 11(1), 35–54.

Kacmar, M. K., Andrews, M. C., Van Rooy, D. L., Steilberg, R., & Cerrone, S. (2006). Sure everyone can be replaced … but at what cost? Turnover as a predictor of unit-level performance. Academy of Management Journal, 49(1), 133–144.

Kalleberg, A. L., Marsden, P. V., Reynolds, J., & Knoke, D. (2006). Beyond profit? Sectoral differences in high-performance work practices. Work and Occupations, 33(3), 271–302.

*Khatri, N. (2000). Managing human resource for competitive advantage: A study of companies in Singapore. International Journal of Human Resource Management, 11, 336–365.

Kinnie, N., Hutchinson, S., Purcell, J., & Swart, J. (2006). Human resource management and organizational performance. In T. Edman & A. Wilkinson (Eds.), Contemporary human resource management: Texts and cases (2nd ed., pp. 26–64). London: Prentice Hall.

*Kintana, M., Alonso, A., & Olaverri, C. (2006). High-performance work systems and firms' operational performance: The moderating role of technology. International Journal of Human Resource Management, 17(1), 70–85.

*Kirkman, B., & Rosen, B. (1999). Beyond self-management: Antecedents and consequences of team empowerment. Academy of Management Journal, 42, 58–74.

Kirkman, B., Rosen, B., Tesluk, P., & Gibson, C. (2004). The impact of team empowerment on virtual team performance: The moderating role of face-to-face interaction. Academy of Management Journal, 47, 175–192.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. Psychological Bulletin, 119, 254–284.

Kotter, J. (1995). Leading change. Boston: Harvard Business School Press.

Kristof-Brown, A., Zimmerman, R., & Johnson, E. (2005). Consequences of individuals fit at work: A meta-analysis of person-job, person-organization, and person-supervisor fit. Personnel Psychology, 58, 281–342.

*Lam, L., & White, L. (1998). Human resource orientation and corporate performance. Human Resource Development Quarterly, 9, 351–364.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. Biometrics, 33, 159–174.

*Lee, J., & Miller, D. (1999). People matter: Commitment to employees, strategy and performance in Korean firms. Strategic Management Journal, 20, 579–594.

Lepak, D. P., Liao, H., Chung, Y., & Harden, E. E. (2006). A conceptual review of human resource management systems in strategic human resource management research. In J. J. Martocchio (Ed.), Research in personnel and human resources management (Vol. 25, pp. 217–271).

*Liao, H., & Chuang, A. (2004). A multilevel investigation of factors influencing employee service performance and customer outcomes. Academy of Management Journal, 47, 41–58.

*Liouville, J., & Bayad, M. (1998). Human resource management and performances: Proposition and test of a causal model. Human Systems Management, 17, 183–193.

Locke, E., & Latham, G. (1990). Work motivation and satisfaction: Light at the end of the tunnel. Psychological Science, 1, 240–246.

*Luthans, W. K., & Sommer, M. S. (2005). The impact of high performance work on industry-level outcomes. Journal of Managerial Issues, 17, 327–345.

*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.

*Martell, K., & Carroll, S. (1995). Which executive human resource management practices for the top management team are associated with higher firm performance? Human Resource Management, 34, 497–512.

*Mathieu, J., Gilson, L., & Ruddy, T. (2006). Empowerment and team effectiveness: An empirical test of an integrated model. Journal of Applied Psychology, 91, 97–108.

*Michie, J., & Sheehan, M. (2005). Business strategy, human resources, labour market flexibility and competitive advantage. International Journal of Human Resource Management, 16, 445–464.

Morgeson, F. P., & Hoffmann, D. A. (1999). The structure and function of collective constructs: Implications for multilevel research and theory development. Academy of Management Review, 24(2), 249–265.

*Neal, A., West, M., & Patterson, M. (2005). Do organizational climate and competitive strategy moderate the relationship between human resource management and productivity? Journal of Management, 31, 492–512.

*Ngo, H., Turban, D., Lau, C., & Lui, S. (1998). Human resource practices and firm performance of multinational corporations: Influences of country origin. International Journal of Human Resource Management, 9, 632–652.

Orwin, R. G. (1983). A fail-safe N for effect size in meta-analysis. Journal of Educational Statistics, 8, 157–159.

Ostroff, C. (1993). Comparing correlations based on individual-level and aggregated data. Journal of Applied Psychology, 78, 569–582.

Ostroff, C., & Bowen, D. E. (2000). Moving HR to a higher level. In K. J. Klein & S. W. Kozlowski (Eds.), Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions (pp. 211–266). San Francisco: Jossey-Bass.

*Park, H., Mitsuhashi, H., Fey, C., & Bjorkman, I. (2003). The effect of human resource management practices on Japanese MNC subsidiary performance: A partial mediating model. International Journal of Human Resource Management, 14, 1391–1406.

*Patterson, M. G., West, M. A., & Wall, T. D. (2004). Integrated manufacturing, empowerment, and company performance. Journal of Organizational Behavior, 25, 641–665.

*Paul, A., & Anantharaman, R. (2003). Impact of people management practices on organizational performance: Analysis of a causal model. International Journal of Human Resource Management, 14, 1246–1266.

Payne, R. L., & Pugh, D. S. (1976). Organizational structure and climate. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1125–1173). Chicago: Rand-McNally.

Peccei, R., & Rosenthal, P. (2001). Delivering customer-oriented behavior through empowerment: An empirical test of HRM assumptions. Journal of Management Studies, 38, 831–857.

Peterson, S. J., & Luthans, F. (2006). The impact of financial and nonfinancial incentives on business-unit outcomes over time. Journal of Applied Psychology, 91, 156–165.

Piercy, N. F., Cravens, D. W., Lane, N., & Vorhies, D. W. (2006). Driving organizational citizenship behaviors and salesperson in-role behavior performance: The role of management control and perceived organi-

zational support. Journal of Academy of Marketing Science, 34(2), 244–262.

Pil, F. K., & MacDuffie, J. P. (1996). The adoption of high involvement practices. Industrial Relations, 35, 423–455.

Podsakoff, M. P., MacKenzie, B. S., Lee, Y. J., & Podsakoff, P. N. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 38, 879–903.

Prigogine, I. (1978). Times, structure, and fluctuations. Science, 201, 777–784.

Quinones, M. A., Ford, K. J., & Teachout, M. S. (1995). The relationship between work experience and job performance: A conceptual and meta-analytic review. Personnel Psychology, 48(4), 887–910.

*Rajagoplan, N. (1996). Strategic orientations, incentive plan adoptions, and firm performance: Evidence from electric utility firms. Strategic Management Journal, 18, 761–785.

Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. Journal of Applied Psychology, 87(4), 698–714.

*Richard, O., & Johnson, N. (2001). Strategic human resource management effectiveness and firm performance. International Journal of Human Resource Management, 12, 299–310.

Rock, I., & Palmer, S. (1990). The legacy of Gestalt psychology. Scientific American, 263(6), 84–90.

*Rogg, K., Schmidt, D., Shull, C., & Schmitt, N. (2001). Human resource practices, organizational climate, and customer satisfaction. Journal of Management, 27, 431–449.

Sagie, A., & Koslowsky, M. (1993). Detecting moderators with meta-analysis: An evaluation and comparison of techniques. Personnel Psychology, 46(3), 629–640.

Schmidt, F. L., & Hunter, J. E. (1990). Methods of meta-analysis. Newbury Park, CA: Sage.

Schneider, B. (1987). The people make the place. Personnel Psychology, 40(3), 437–453.

Schneider, B., Ehrhart, M., Mayer, D., Saltz, J., & Niles-Jolly, K. (2005). Understanding organization-customer links in service settings. Academy of Management Journal, 48(6), 1017–1032.

Schneider, B., Goldstein, H. W., & Smith, B. D. (1995). The ASA framework: An update. Personnel Psychology, 48(4), 747–773.

Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer perceptions of service quality: Tests of a causal model. Journal of Applied Psychology, 83(2), 150–163.

Sels, L., De Winne, S., Maes, J., Delmotte, J., Faems, D., & Forrier, A. (2006). Unravelling the HRM–performance link: Value-creating and cost-increasing effects of small business HRM. Journal of Management Studies, 43, 319–342.

Sharfman, M., Wolf, G., Chase, R., & Tansik, D. (1988). Antecedents of organizational slack. Academy of Management Review, 13, 601–614.

*Shaw, J., Delery, J., Jenkins, G., & Gupta, N. (1998). An organizational-level analysis of voluntary and involuntary turnover. Academy of Management Journal, 41, 511–525.

*Shaw, J., Gupta, N., & Delery, J. (2002). Pay dispersion and workforce performance: Moderating effects of incentives and interdependence. Strategic Management Journal, 23, 491–512.

*Shaw, J., Gupta, N., & Delery, J. (2005). Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. Academy of Management Journal, 48, 50–68.

Shore, L. M., & Tetrick, L. E. (1991). A construct validity study of the survey of perceived organizational support. Journal of Applied Psychology, 76(5), 637–643.

Shore, L. M., & Wayne, S. J. (1993). Commitment and employee behavior: Comparison of affective commitment and continuance commitment with perceived organizational support. Journal of Applied Psychology, 78(5), 774–780.

*Singh, K. (2003). Strategic HR orientation and firm performance in India. International Journal of Human Resource Management, 14, 530–543.

Stajkovic, A. D., & Luthans, F. (2003). Behavioral management and task performance in organizations: Conceptual background, meta-analysis, and test of alternative models. Personnel Psychology, 56, 155–194.

Stewart, T. A. (2001). The wealth of knowledge: Intellectual capital and the twenty-first century organization. New York: Currency.

Subramaniam, M., & Youndt, M. (2005). The influence of intellectual capital on the types of innovative capabilities. Academy of Management Journal, 48, 450–463.

Subramony, M. (2006). Why organizations adopt some human resource management practices and reject others: An exploration of rationales. Human Resource Management, 45, 195–210.

Subramony, M., Krause, N., Norton, J. A., & Burns, G. (2008). The relationship between human resource investments and organizational performance: A firm-level examination of equilibrium theory. Journal of Applied Psychology, 93, 778–788.

*Sun, L. Y., Aryee, S., & Law, K. S. (2007). High-performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. Academy of Management Journal, 50(3), 558–577.

*Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, R. (2007). An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. Journal of Applied Psychology, 92(4), 1069–1083.

U.S. Department of Labor. (1993). High performance work practices and firm performance. Washington, DC: U.S. Government Printing Office.

Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W., & West, M. (2004). On the validity of subjective measures of company performance. Personnel Psychology, 57, 95–118.

*Way, A. S. (2002). High performance work systems and intermediate indicators of firm performance within the U.S. small business sector. Journal of Management, 28, 765–785.

Wayne, S. J., Shore, L. M., Bommer, W. H., & Tetrick, L. E. (2002). The role of fair treatment and rewards in perceptions of organizational support and leader-member exchange. Journal of Applied Psychology, 87(3), 590–598.

*Welbourne, T., & Andrews, A. (1996). Predicting the performance of initial public offerings should human resource management be in the equation. Academy of Management Journal, 39, 891–919.

Womack, J., & Jones, D. (1994). From lean production to the lean enterprise. Harvard Business Review, 72(2), 93–103.

Wood, S. J., & Wall, T. D. (2007). Work enrichment and employee voice in human resource management-performance studies. International Journal of Human Resource Management, 18(7), 1335–1372.

Wright, P. M., & Boswell, W. R. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. Journal of Management, 28, 247–276.

*Wright, P., Gardner, T., Moynihan, L., & Allen, M. (2005). The relationship between HR practices and firm performance: Examining causal order. Personnel Psychology, 58, 409–446.

Wright, P., McCormick, B., Sherman, S., & McMahan, G. (1999). The role of human resource practices in petro-chemical refinery performance. The International Journal of Human Resource Management, 10, 551–571.

*Youndt, M., & Snell, S. (2004). Human resource configurations, intellectual capital, and organizational performance. Journal of Managerial Issues, 16, 337–360.

*Youndt, M., Snell, S., Dean, J., & Lepak, D. (1996). Human resource management, manufacturing strategy, and firm performance. Academy of Management Journal, 39, 836–866.

*Youndt, M., Subramaniam, M., & Snell, S. (2004). Human resource configurations, intellectual capital, and organizational performance. Journal of Managerial Issues, 16, 337–360.

*Zatzick, C., & Iverson, R. (2006). High-involvement management and workforce reduction: Competitive advantage or disadvantage? Academy of Management Journal, 49(5), 999–1015.

*Zhu, W., Chew, I. K. H., & Spangler, W. D. (2005). CEO transformational leadership and organizational outcomes: The mediating role of human capital–enhancing human resource management. The Leadership Quarterly, 16, 39–52.

APPENDIX List of Practices Included in the Three Human Resource Management Bundles

Study	Skill Bundles	Motivation Bundles	Empowerment Bundles
Appleyard & Brown (2001)			Team participation, team autonomy
Batt (2002)			Work design (discretion over work methods, teams)
Batt, Colvin, & Keefe (2002)			Voice (problem-solving groups, self-directed teams)
Chandler & McEvoy (2000)		Profit sharing, gain sharing	
Collins & Clark (2003)		Incentive pay (performance based pay, stock options, bonus)	
Collins, Smith, & Stevens (2001)	Acquisition practices (recruitment sources, selection)		
Colvin, Batt, & Keefe (2005)		Variable pay, internal promotions	Voice (grievance procedures, self-directed groups, problem-solving teams)
Delaney & Huselid (1996)	Selective staffing, training	Incentive compensation, internal labor market	Decentralized decision making, flat organizational structure
Delery & Doty (1996)		Profit sharing, performance appraisal	
Delery, Gupta, Shaw, Jenkins, & Ganster (2000)		Pay, benefits (paid days off, health & disability insurance)	Voice (grievance procedures, participation in decision making)
Faems, Sels, De Winne, & Maes (2005)	Selection, training	Compensation (performance pay, bonus, benefits), performance management (reward reviews, evaluation system, performance review)	Participation (direct, indirect, and financial participation)
Fey & Bjorkman (2001)			Employee feedback (information sharing programs, complaint resolution, surveys)
Gardner, Moynihan, Park, & Wright (2001)	Skill-enhancing practices (selection, training)	Motivation-enhancing practices (pay for performance, bonus, performance evaluation, promotions)	Empowerment-enhancing practices (complaint process, teams, communication)
Gibson, Porath, Benson, & Lawler (2007)			Information sharing, team enabling
Guerrero & Barraud-Didier (2004)		Compensation (performance-based compensation, stock ownership, fringe benefits)	Empowerment (work content, work time, teamwork)

APPENDIX Continued.

Study	Skill-Bundles	Motivation Bundles	Empowerment Bundles
Guthrie (2000)		Pay practices (merit/incentive pay, skill-based pay)	
Harel, Tzafrir, & Baruch (2003)	Selection, training		
Hartog & Verburg (2004)		Rewards (pay for performance, profit sharing), performance evaluation	Autonomy, information sharing
Khatri (2000)	Selection, training	Performance-based compensation, flexible benefits	Employee relations/participation (grievance systems, participation in decision making)
Kirkman & Rosen (1999)			Team-based HR policies (treatment as an autonomous group, e.g., autonomy in member choice, work-allocation)
Liao & Chuang (2004)			Employee involvement (influence on work process and outcomes, participation in decision making)
Mathieu et al. (2006)			Team empowerment (authority, responsibility)
Patterson et al. (2004)			Job enrichment (skill flexibility, job variety, job responsibility)
Rajagopalan (1996)		Annual bonus plan, long-term performance plan	
Rogg, Schmidt, Shull, & Schmitt (2001)	Selection, training	Performance review (standardized performance reviews, pay and promotions linked to performance)	
Shaw, Delery, Jenkins, & Gupta (1998)	Selection, training	Pay, benefits	
Shaw et al. (2002)		Pay, benefits	
Subramony et al. (2008)		Competitive pay, benefits package	
Youndt & Snell (2004)			Egalitarian HR (empowerment, flat organizational structure)
Zhu, Chew, & Spangler (2005)	Selection, training		