

## **THE IMPACT OF MOTIVATION, EMPOWERMENT, AND SKILL-ENHANCING PRACTICES ON AGGREGATE VOLUNTARY TURNOVER: THE MEDIATING EFFECT OF COLLECTIVE AFFECTIVE COMMITMENT**

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This study advances research on macro human resource management by examining collective commitment as a mediator of motivation, empowerment, and skill-enhancing practices and aggregate voluntary turnover. Findings from 20 top HR managers and 1,748 employees in 93 different job groups suggest collective affective commitment independently mediates the negative relationships between motivation and empowerment-enhancing practices and aggregate voluntary turnover. Human resource practices functioning to enhance the knowledge, skills, and abilities of the workforce are positively associated with voluntary turnover but are not mediated by collective affective commitment. Functionally, this paper resolves the divergent thinking of 4 streams of research regarding HR practices, collective commitment and aggregate turnover. The implications for macro-HRM theory and practice are discussed.

After thousands of published studies, voluntary turnover remains a relevant and interesting topic of study for organizational scholars. Although the vast majority of these studies examine the question of why individuals voluntarily leave organizations (Maertz & Campion, 2004), another, less studied approach treats turnover as a collective rather than individual phenomenon (Shaw, Duffy, Johnson, & Lockhart, 2005). In addition to individual turnover decisions, managers are also interested in reducing the aggregate turnover rates of the groups, business units, and organizations they manage (Boorstin, 2005). In fact, aggregate voluntary turnover rates

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Lisa M. Moynihan passed away on October 7, 2007. She was a fantastic colleague, a friend to all, and is sorely missed.

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have become metrics executives track on a par with productivity, customer satisfaction, and shrinkage as measures of overall organizational effectiveness (Glebbeck & Bax, 2004; Shaw et al., 2005).

The macro human resource management research stream was born out of the belief that how an organization manages its people is linked to its performance. A growing body of empirical evidence built on increasingly rigorous methodology suggests human resource systems affect individual, group, and organizational outcomes (Combs, Liu, Hall, & Ketchen, 2006). One of the key assumptions of this research stream is that because organizations cannot “own” human capital like they can exert ownership control over other assets (Coff, 1997), the main way firms can use human resource systems to gain a competitive advantage is to reduce voluntary turnover (Delery & Shaw, 2001). Thus this study, by focusing on aggregate voluntary turnover, provides insights into how firms manage a critically important performance outcome.

#### *HR Practices and Aggregate Voluntary Turnover*

The relationship between HR practices and voluntary turnover has been a topic of interest for a number of researchers. Although a cursory examination of this literature suggests that consensus exists regarding the nature of this relationship, a more detailed analysis reveals significant disagreement. Four prominent research streams draw four very different conclusions about the association between HR practices and aggregate voluntary turnover. One camp asserts the relationship is direct and unmediated (Becker & Huselid, 1998; Dyer & Reeves, 1995; Huselid, 1995). A second stream of work suggests that collective commitment mediates the relationship between HR systems and aggregate turnover but does not theoretically develop or test the assertion (Way, 2002; Wilson & Peel, 1991). The third camp includes papers that advance the idea that “commitment-based” (Arthur, 1994, p. 672) or “commitment-inducing” (Batt, 2002, p. 589) HR practices increase employee commitment and thus reduce aggregate turnover but formally hypothesize and test only the unmediated association between HR practices and aggregate turnover. Finally, a fourth group of papers, grounded in efficiency wage theory (Schlicht, 1978), suggest that employees stay when HR practices increase utility and depart when utility is decreased (Batt, Colvin, & Keefe, 2002; Leonard, 1987; Shaw, Delery, Jenkins, & Gupta, 1998) but do not test the mediating mechanisms.

This dissensus leads to different conclusions and limits theoretical development within this research space. The “direct effect” and “undeveloped mediation” streams (first and second streams above) suggest that greater use of HR practices monotonically leads to a reduction in aggregate voluntary turnover, whereas the “commitment-enhancing practices” and

“efficiency wage theory” streams (third and fourth streams above) suggest that, depending on their commitment/utility composition, bundles of HR practices may be positively, negatively, or not associated with turnover. The “direct effect” stream encourages succeeding researchers to explore only the moderators of the HR-voluntary turnover relationship while the remaining three streams suggest the possibility of more complex mediating effects. The studies in which mediation is proposed but not tested (second and third streams) can mislead scholars into thinking mediation has been empirically established. Both Way (2002) and Arthur (1994) have been cited as demonstrating that commitment acts as a mediator at least once each (Coff, 1997, p. 389; Pare & Tremblay, 2007, p. 333). Finally, none of these research streams fulfill two of the principal aims of mediation theorizing and analysis: (a) explaining and demonstrating the process by which HR practices influence aggregate voluntary turnover, and (b) strengthening statistical conclusion validity that the observed association between the independent and dependent variables is not merely spurious (MacKinnon, Fairchild, & Fritz, 2007).

An analysis of the concept of “HR practices” adds to this potential confusion. For instance, a number of specific practices such as retention bonuses, golden handcuffs, and so on specifically aim to reduce turnover, whereas HR practices such as early retirement incentives, performance management, and forced distribution performance appraisals seek to increase voluntary turnover among individuals or groups of employees. Although these specific practices aim to address particular temporary problems (e.g., fleeing of talent after a merger or reducing the workforce under challenging economic conditions), the general system of HR practices as usually assessed by measures of high performance work systems reflects the more common experiences that employees have with the HR system and that may shape their general attitudes and behaviors toward the organization.

#### *The Link Between Collective Affective Commitment and Aggregate Voluntary Turnover*

Organizational commitment, particularly affective commitment, is understood as a “psychological bond” an employee has with his or her employer (Meyer & Allen, 1997, p. 14). The psychological state of commitment encourages individuals to pursue courses of action that benefit the organization. Primarily, however, the behavioral consequence of affective commitment is continued employment with the organization (Meyer & Allen, 1997; Meyer & Herscovitch, 2001). The most recent meta-analysis estimates the population correlation for affective commitment and voluntary turnover to be  $-0.23$  (Meyer, Stanley, Herscovitch, & Topolnysky, 2002).

We ground our conception of collective commitment on Morgeson and Hofmann's (1999) notion of a collective as an interdependent and goal-directed combination of individuals. This could include a team, a department, a business unit, or an entire organization. This is consistent with Chan's (1998) description of a group as a collection of individuals with shared goals, embedded in an organizational context, interacting to perform interdependent tasks. Collective affective organizational commitment refers to a shared mindset and a shared psychological state among a delimited collective of individuals regarding their employer typified by feelings of loyalty and a desire to invest mental and physical energy in helping the organization achieve its goals (Kanter, 1968; Meyer & Allen, 1997).

The theoretical and empirical work exploring the linkage between collective attitudes and aggregate turnover is not nearly as refined as the work that has been done at the individual level (Hom & Griffeth, 1995). Nearly all aggregate turnover studies assume homology between the mechanisms linking individual attitudes and turnover and collective attitudes and aggregate turnover (e.g., Angle & Perry, 1981; Hulin, 1968; Long, 1980; Simons & Roberson, 2003). In a study of collective commitment and turnover intentions, Ostroff (1992) noted the level of analysis issues with assuming the mechanism that explains the association between individual attitudes and turnover holds at the collective level. Instead, collective commitment becomes more homogenous with repeated interactions among members. Individuals with more defined and specific levels of commitment transmit these feelings to individuals with less-defined commitment levels (Barsade, 2002; Levinson, 1965). These patterns of interaction and shared affect create norms of behavior for the group consistent with the shared attitude (Morgeson & Hofmann, 1999, p. 251; Ostroff, 1992). Thus, collective commitment affects the commitment levels of the individual group members creating a group norm of committed behavior and retention. Barsade's (2002) work, drawing on theories of group emotional contagion, documented the existence of shared affect and its impact on group outcomes and behavior. Thus we expect, given homogeneous affective commitment among group members, that the level of affective commitment will be negatively associated with aggregate voluntary turnover.

*Hypothesis 1:* Collective affective organizational commitment will be negatively associated with aggregate voluntary turnover.

#### *The Link Between HR Practices and Collective Affective Commitment*

Nearly all of the macro-HR research has utilized a summed index composed of a highly varied set of HR practices to represent HR

“systems” (Delery & Shaw, 2001). For instance, Combs et al.’s (2006) meta-analysis of the relationship between HR practices and performance found tremendous variety in the practices included as components of high performance work systems across the studies they included. The common theme however, is the general tendency to treat the set of HR practices as a unidimensional index. A second common practice is to cluster *organizations* by the similarity of their HR and work practices. MacDuffie’s (1995) “MassProd,” “Transition,” and “FlexProd” and Arthur’s (1994) “Control” and “Commitment” clusters are good examples. As Delery (1998) notes, such treatments assume that the individual practices composing the indices behave in the same way relative to each outcome.

Counter to this assumption, a number of empirical and theoretical papers have suggested that HR practices affect workforce outcomes differently and can be summarized along three dimensions. These include: (a) *motivation-enhancing practices* such as regular performance feedback, individual and group incentives, and merit-based pay that motivate discretionary employee effort and behavior; (b) *empowerment-enhancing practices* such as information sharing, participation in decision making, and grievance procedures that provide opportunities for employees to contribute to organizational objectives; and (c) *skill-enhancing practices* such as recruiting, selection testing, and training that affect the type and level of the knowledge, skills, and abilities of the organization’s employees either by bringing the skills into the organization or developing the skills of current employees (Appelbaum, Bailey, Berg, & Kallenberg, 2000; Bailey, 1993; Batt, 2002; Delery & Shaw, 2001; Gerhart, 2007; Lepak, Liao, Ching, & Harden, 2006; Subramony, 2009). Instead of clustering similar organizations or summing a set of HR practices, we use the “motivation, empowerment, and skill” framework to describe sets of HR practices along the three dimensions.

Our theoretical assumption about the process by which human resource practices lead to collective affective commitment is grounded in the “composition” process of collective construct emergence. As described above, we assume that collective commitment emerges out of the interactions and shared feelings among members of a job group. The resulting collective commitment is functionally similar to the individual construct (Kozlowski & Klein, 2000).

Individuals working in organizations are exposed to various structures, events, processes, and HR management practices affecting their individual feelings, interpretations, and degree of commitment. Individuals working as part of a shared organizational structure, such as work groups, are exposed to the same stimuli and management practices resulting in a convergence of commitment levels among the groups’ members. Numerous studies over the last 60 years have documented the process by which repeated interactions and communication among group

members create a common mental model, shared affect, and commitment level (Kozlowski & Klein, 2000; Morgeson & Hofmann, 1999). We argue below that variation in the use of motivation, empowerment, and skill-enhancing practices affects the level of commitment of individuals in the job group and thus the group's level of collective commitment. Attraction-selection-attrition processes exacerbates the role of interaction among group members to further homogenize and stabilize the level of collective commitment (Schneider, 1987).

The theoretical lens that best explains the process by which greater use of motivation, empowerment, and skill-enhancing practices affect individual commitment, prior to cumulating into collective commitment, is self-determination theory (SDT; Deci & Ryan, 1985). SDT posits that people have three innate psychological needs: the need for autonomy (participation in choices and being the instigator of one's actions without outside control), competence (experiencing oneself as capable and able to affect outcomes), and the need for relatedness (feelings of belonging to and participating in a collective involving mutual respect and caring; Deci & Ryan, 1985). Factors that lead to the satisfaction of these innate needs result in intrinsic motivation, overall well-being, and positive work attitudes. As autonomy, competence, and relatedness closely match the precursive psychological processes that arouse affective commitment (Meyer & Allen, 1997, pp. 46–49; Meyer & Herscovitch, 2001), organizational practices that satisfy one or more of these basic needs will facilitate the development of affective commitment. Research supports the association between need satisfaction and work attitudes including affective organizational commitment (Greguras & Diefendorff, 2009).

Greater use of motivation-enhancing practices such as incentives and other rewards-for-performance practices satisfy competence and relatedness needs, thus resulting in increased affective commitment. Such practices signal a positive valuation of employees and their efforts by the company (Appelbaum et al., 2000; Meyer & Allen, 1997). Task and outcome performance followed by rewards convey signals of competence (Deci & Ryan, 1985). Incentive plans create feelings of group and organizational belonging that enhances intrinsic motivation to act (Tyler, 1999). Individual level meta-analytic research has shown that greater role ambiguity is associated with lower commitment (Mathieu & Zajac, 1990). Thus, incentives that direct and reward desired behaviors and outcomes will reduce such ambiguity and satisfy competence needs, thus increasing commitment (Mowday, Porter, & Steers, 1982). Appelbaum et al.'s (2000) work showed a positive relationship between motivation-enhancing practices and individual commitment. Through the emergent process described above, we expect to find this at the collective level as well.

Empowerment-enhancing practices are expected to satisfy autonomy, competence, and relatedness needs, thus facilitating the development

of affective commitment. Organizations that allow employee input into decisions, share information, and treat employees with respect strengthen shared perceptions of congruence between employee and organizational values, increase employees' identification with the firm, and enhance feelings of relatedness, autonomy, and commitment (Arthur, 1994; Long, 1980; Meyer & Herscovitch, 2001). Second, the teamwork and social interactions inherent in empowering HR practices strengthen the forces of social cohesion among group members and thus the affective commitment to the organization (Osterman, 1995). Previous work has shown a positive association between organizations' empowerment-enhancing practices and individual commitment (Appelbaum et al., 2000). Increased individual commitment is expected to aggregate to the collective level via the emergent process described above.

Finally, skill-enhancing practices are expected to have an independent influence on collective affective commitment, but the nature of this relationship is less clear. On the one hand, research suggests that training investments may increase employees' perceptions that the organization values their current and future contributions and thus their need for relatedness (Galunic & Anderson, 2000; Tannenbaum, Mathieu, Salas, & Bowers, 1991). In addition, training may increase skill mastery, reduce role confusion, and prepare employees for future promotions, thus increasing feelings of competence and commitment (Lincoln & Kalleberg, 1996; Pascale, 1985). Finally, intensive hiring and selection procedures used to ensure highly competent employees may (a) make employees feel part of a special and elite group, thus increasing commitment (Caldwell, Chatman, & O'Reilly, 1990); and (b) encourage less committed candidates to self-select out of the hiring process (Ryan, Sacco, McFarland, & Kriska, 2000). In a narrative review of studies that examined the relationship between training (one of several skill-enhancing practices) and collective attitudes, 12 of the 13 studies showed the relationship was positive and significant (Tharenou, Saks, & Moore, 2007).

On the other hand, skill-enhancing practices may, through both selection and development processes, result in a pool of employees whose knowledge, skills, and abilities are valuable to both the employing organization and outside firms. Becker's (1975) original human capital framework proposed a general/firm-specific dichotomy where specific skills provided value only to the employing organization, whereas general skills could provide value to any number of organizations. Today, skill specificity is conceptualized along a continuum of transferability from usefulness at a small number of firms to usefulness at all firms. Purely firm-specific skills, meaning useful at a single organization, are uncommon; an employee with primarily firm-specific skills, exceedingly rare; and a pool of employees with primarily firm specific skills, highly unlikely (Lepak & Snell, 1999;

Parsons, 1972; Stone, 2004, Ch. 7). A growing body of evidence suggests that the skills and abilities that are explicitly developed in-house or used as the basis of employee selection are valued by outside firms (Almeida & Kogut, 1999; Rao & Drazin, 2002). For instance, Lowenstein and Spletzer's (1999) analysis of data from the National Longitudinal Study of Youth noted that 89% of those receiving formal training at work reported half to all of what they learned would be useful at other firms. Thus, greater use of skill-enhancing practices may result in a pool of employees with transferable skills valuable to a plurality of outside firms.

With greater use of skill-enhancing practices and thus more valuable human capital, employees may recognize that they have more employment options and, despite their need satisfaction, feel less bonding to the organization, resulting in lower affective commitment. Cappelli's (1999, pp. 39–40) and Price and Mueller's (1981) work both show a negative relationship between skill levels and commitment. The determination of outside value by a few employees may then spread to the collective (Krackhardt & Porter, 1986). Although these effects (positive and negative) may compete, we ultimately suggest that the extensive theoretical and empirical evidence of a positive association between skill-enhancing practices and commitment strongly outweighs the slim theoretical and empirical evidence of a negative association. Thus we hypothesize the following:

*Hypothesis 2a:* Controlling for the use of empowerment and skill-enhancing practices, there will be a positive relationship between the use of motivation-enhancing human resource practices and collective affective commitment.

*Hypothesis 2b:* Controlling for the use of motivation and skill-enhancing practices, there will be a positive relationship between the use of empowerment-enhancing human resource practices and collective affective commitment.

*Hypothesis 2c:* Controlling for the use of motivation and empowerment-enhancing practices there will be a positive relationship between the use of skill-enhancing human resource practices and collective affective commitment.

*Collective Affective Commitment as a Consistent and Inconsistent Mediator of the HR-Aggregate Voluntary Turnover Relationship*

Although it is possible to hypothesize and empirically establish that a bundle of “high performance” (Way, 2002) or “commitment-enhancing” (Arthur, 1994) HR practices will have a net positive impact on aggregate



voluntary turnover, classifying HR practices into motivation, empowerment, and skill-enhancing practices requires us to propose heterogeneous relations between these dimensions and aggregate voluntary turnover. We expect to observe this heterogeneity in the form of collective affective commitment acting as a *consistent mediator* for motivation and empowerment-enhancing practices and as an *inconsistent mediator* for skill-enhancing practices.

For the *consistent mediation* hypotheses of X leads to M leads to Y, one assumes the inclusion of M in the statistical model will reduce the strength of the X–Y relationship because it is in the causal path between X and Y. The primary variable and the mediator affect the dependent variable in the same direction. In the *inconsistent mediation* hypothesis, the inclusion of the M variable increases the predictive validity of the X–Y relationship, and most importantly the direct effect of X on Y and the indirect effect of X on Y through M are opposite. Consider the following example of inconsistent mediation. Intelligence is positively associated with boredom and negatively associated with the number of errors for subjects working on a simple task. Boredom is positively associated with errors. The direct relationship between intelligence and errors is negative, the indirect relationship mediated by boredom is positive (MacKinnon, Krull, & Lockwood, 2000, pp. 174–175). Statistically, suppression and inconsistent mediation are identical. When the purpose of adding a third variable is to clarify the relationship between two variables, suppression is the appropriate term. However, when one hypothesizes a direct effect opposite of the mediating effect, inconsistent mediation is the most appropriate term (MacKinnon, 2008; MacKinnon et al., 2000).

Previous studies have found an association between motivation- (Long, 1980; Wilson & Peel, 1991) and empowerment-type practices (Spencer, 1986) as well as commitment-enhancing bundles of HR practices and aggregate voluntary turnover (Arthur, 1994; Batt, 2002; Way, 2002). Each has suggested, but not tested, the proposition that the focal practice or practices increase collective employee commitment, subsequently decreasing aggregate turnover. We rely on this extant theory to suggest that collective affective commitment will act as a consistent mediator between motivation- and empowerment-enhancing practices and aggregate voluntary turnover: meaning both the direct and indirect effect of these dimensions on voluntary turnover will be negative.

*Hypothesis 3a:* The negative relationship between the use of motivation-enhancing human resource practices and aggregate voluntary turnover will be mediated by collective affective commitment.

*Hypothesis 3b:* The negative relationship between the use of empowerment-enhancing human resource practices

and aggregate voluntary turnover will be mediated by collective affective commitment.

We expect the mediation effect for collective affective commitment to be inconsistent with respect to skill-enhancing practices. In other words, we expect skill-enhancing practices to have an indirect negative effect, via affective commitment, on voluntary turnover but a positive effect on turnover independent of affective commitment. Benson, Finegold, and Mohrman (2004) hinted at a similar inconsistent mediation process in their study of tuition reimbursement programs. They noted that company-paid tuition should lead to positive attitudes that then lead to retention; greater employee development should increase employees' ability to move from one firm to another thus increasing turnover (p. 315). Galunic and Anderson (2000, p. 2) and Baron and Kreps (1999, p. 375) both suggested (but did not test) the notion that organizational investments in employees' skills increase commitment, thus reducing turnover, while simultaneously increasing skill levels, thus increasing turnover propensity.

Given that activities functioning to increase the knowledge, skills, and abilities of current and incoming employees increase the value of these employees to both current and outside firms, it stands to reason that greater use of skill-enhancing practices will be associated with greater turnover (Coff, 1997; Pigou, 1912, p. 153). The empirical evidence that higher skill levels lead to turnover is only indirect. Price and Mueller's (1981) study concluded that greater nurse skill levels were associated with greater turnover intentions and actual turnover. Trevor (2001) proposed the concept of "movement capital" as the individual human capital factor that facilitates mobility. Holding constant pay, job satisfaction, and unemployment rate, employees with greater movement capital were more likely to voluntarily turnover. Alba-Ramirez's (1993) study of overeducated workers concluded that individuals with greater education were more likely to leave their current firm for other firms.

There are two potential mechanisms by which the use of skill-enhancing practices would lead to greater aggregate turnover. First, HR practices that function to systematically "make" and "acquire" a talent pool with greater value creation potential simultaneously create a collection of employees with skills with greater value in the external labor market and greater propensity to leave (Becker, 1975). Second, firms that use more skill-enhancing practices may become targets of rivals seeking to develop their own talent pools. General Electric is known as a source for leadership talent. Proctor and Gamble is known as a source of branding talent. Outside firms seeking to gain competitive parity are very likely to expropriate value creating resources, including carefully selected and developed human capital (Coff, 1997; Gardner, 2005; Pigou, 1912, p. 153).

The empirical evidence is mixed. Studies that aggregate a comprehensive set of HR practices into a single index consistently show a negative association with voluntary turnover (Subramony, 2009). Studies that use only skill-enhancing practices are inconclusive. Subramony's (2009) meta-analysis concluded that "skill-enhancing practices" (p. 17) were unrelated to retention. In a narrative review of 10 studies examining the relationship between organizational training programs and voluntary turnover, four were nonsignificant, five showed a negative relationship with turnover, and one showed a positive relationship with turnover (Tharenou et al., 2007). Cappelli (2008, pp. 113–114) cites a set of consulting studies showing that one of the best predictors of turnover is whether an employee has recently received training.

Nearly all the studies mentioned above were postpredictive, meaning turnover occurred prior to measuring HR practices (Wright, Gardner, Moynihan, & Allen, 2005). With few exceptions (Batt, 2002; Shaw et al., 1998), methodological issues such as distinguishing between voluntary and involuntary turnover, adequate control variables, and unreliable measures of HR practices are a serious concern. Our study overcomes these shortcomings and is a much cleaner empirical and longitudinal test of the role human capital-enhancing HR practices play in affecting aggregate turnover.

One might argue that as employers provide both firm-specific and general training the net impact of skill-enhancing practices on turnover may be negative. The best empirical evidence suggests the vast majority of employer-provided training is general rather than firm specific (Lowenstein & Spletzer, 1999). Furthermore, by definition, employers select employees based on their general competencies (Baron & Kreps, 1999). These findings and the fact that the domain of skill-enhancing practices includes formal training, tuition reimbursement, and selection practices, lead us to propose the following hypothesis.

*Hypothesis 3c:* Collective affective commitment will inconsistently mediate the relationship between skill-enhancing practices and aggregate voluntary turnover. The indirect effect of skill-enhancing practices via commitment will be negative. The effect of skill-enhancing practices independent of commitment will be positive.

### *Methods*

#### *Setting*

This study was conducted in a single company that markets and distributes food and food-related products through 62 stand-alone business units in metropolitan areas across the United States. The

management teams for the business units are entirely responsible in the local marketplace for the development and execution of their strategies. With the exception of health and retirement benefits managed from the corporate headquarters, business unit presidents are free to develop customized HRM programs. Furthermore, all business units employ approximately 500 employees. If a unit grows too large to serve one market, it is divided into two separate units to maintain an entrepreneurial spirit and customized service. Thus, the operating units are highly similar in terms of size, structure, technology, physical assets, and services provided but differ in management practices, including HR management practices. The authors were invited by the corporate HR leader to survey employees and HR managers to document and diffuse best practices across the business units.

The level of analysis for this study is the job group. There are six job groups within each business unit including sales employees, warehouse employees, delivery drivers, front-line supervisors, merchandising employees, and administrative staff. Administrative staff, a catch-all designation for HR, IT, secretarial, and miscellaneous employees that neither work together nor are managed with a common set of HR practices, does not meet our previous definition of a group and was not included in the analyses that follow. Interviews with several business-unit executives prior to administering the survey confirmed that job groups meet Chan's (1998) definition of a group: a collection of individuals interacting through meetings, training, and interdependent work; shared goals, all within a larger setting. Thus the remaining five job groups in the participating business units represent the unit of analysis in this study.

Although the business unit was considered as a level of analysis for this study, multiple site visits by the authors, informal discussions with employees, and formal discussions with business-unit executives and corporate HR executives convinced us that the job group was most appropriate. First, the HR practices were designed by the unit HR managers for the job groups in their facilities. One business-unit measure of HR practice usage would have unacceptably low reliability (Gerhart, Wright, McMahan, & Snell, 2000). Second, union presence varied across business units and across job groups within units with a union presence. Third, employees interact most with the other workers in their job groups, facilitating the development of homogeneous collective commitment at that level. Finally, using HR manager survey data and archival data from the corporate office (detailed below), we constructed a job group level voluntary turnover variable that would have been less reliable had the turnover rates been calculated for the entire business unit. Given the availability of statistical algorithms to control for the homogeneity of variance due to the nesting of job groups within business units, we concluded job group was the most appropriate unit of analysis.

The data for this study came from multiple sources at two points in time. At Time 1, surveys of business unit HR managers were used to measure job-group HR practices. Also at Time 1, surveys of employees in each job group were used to measure affective organizational commitment; commitment data were aggregated from the individual level to the job-group level of analysis. Twelve months later, at Time 2, survey data from the business-unit HR managers were combined with archival data from the parent corporation to construct the measure of aggregate voluntary turnover. Control variables were constructed with data from employee surveys, company archives, and the U.S. Department of Labor. The final sample consisted of 93 job groups with survey data from a total of 1,748 employees.

### *Data Collection*

Employee surveys were developed by the authors in cooperation with corporate HR staff. HR manager surveys were developed solely by the authors. Corporate HR marketed the study to the presidents of all 62 of the business units. Participation was voluntary; 33 business-unit presidents chose to participate in the employee survey during first wave of data collection (late 1999 and early 2000) for a business-unit participation rate of 53%. Of those 33 business units, HR managers of 31 (93.9%) agreed to complete a survey regarding the HR practices used to manage the different job groups in their business units. Twelve months later, all 62 business units were again invited to participate in another round of surveys. Forty-two (67.7%) of the business-unit presidents agreed to participate in the employee survey (data not used). Of these 42 business units, HR managers from 37 units (88.1%) agreed to provide data about job group turnover in the previous year; HR data were also collected but not used. Of the 37 business units participating in the second round of data collection, 20 overlapped with the 31 business units for which there was both employee and HR manager data in the first round of data collection.

There were no notable differences between the 20 business units for which there were Time 1 and Time 2 data and the 42 other units of the corporation for which these data were not available. Specifically, there was no difference in union presence between participating and nonparticipating business units. Two multivariate analyses of variance (MANOVA) comparing profitability (pretax profits as a proportion of sales), productivity (cartons of product sold per payroll dollar), and quality (cartons of product delivered per number of delivery errors) of the two groups both at Time 1 (the third and second quarter before data collection) and Time 2 (the quarter before and quarter during data collection) revealed no significant differences ( $p < 0.52$ ;  $p < 0.71$ ).

Business-unit HR managers were instructed by the corporate office to randomly select 20% or more of the employees from each of the job groups for survey participation. Employees met on company time with the HR managers who explained the purpose of the meeting and the survey process. HR managers distributed the surveys to employees, gave them time to complete them, and had the employees place the surveys into one large, sealable envelope per meeting. Employees were not asked to provide information that could directly identify them, and they were promised confidentiality by the researchers in the treatment of the information they provided. The business-unit HR managers sent the unopened envelopes directly to the researchers. The response rate for employees in these groups was 100%. A total of five surveys were returned by employees entirely incomplete. HR managers were instructed to complete and return the job-group HR practice surveys by mail to the researchers. They were informed that the data provided was for research purposes only and were also assured the information they provided would be treated confidentially.

The employee survey covered 10.4% of the population of business unit employees of the entire food service division. Although business unit HR staff were instructed to survey 20% or more of the employees from each of the job groups, the average participation rate was 28% ( $SD = 18\%$ ; range = 0% to 100%). We determined through conversations with HR managers that this variation was due to operating constraints that prevented pulling employees away from their jobs. Sixty-five employees failed to identify or identified more than one job group and were dropped. To ensure adequate reliability of the collective commitment measure, only job groups with data from four or more employees were included in the analyses; this resulted in the loss of five job groups. Data from two job groups were not included as the HR managers did not collect survey data from the groups. This reduced the final sample from 100 potential job groups to 93 with an average of 18.8 employees providing data for each group.

### *Measures*

*Affective organizational commitment.* Preferences for specific questions by the corporate HR leaders prevented the use of a published measure of affective organizational commitment, and instead we used questions from two different scales (Meyer & Allen, 1997; Porter, Steers, Mowday, & Boulin, 1974). Given this scale was constructed, we conducted a principal components exploratory factor analysis to ensure the five items composed of a single dimension. The result was a single factor with an eigenvalue of nearly four, accounting for 63.8% of the total variance. All loadings exceeded 0.70; together the items exhibited a coefficient alpha of

TABLE 1  
*Items Used to Measure Affective Organizational Commitment*

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I feel a strong sense of belonging to this organization.
I am willing to work harder than I have to in order to help this company succeed.
I am proud to be working for this company.
I find that my values and this company's values are similar.
I would turn down a job with more pay in order to stay with this company.

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0.85. The list of questions can be found in Table 1. As a step toward construct validity of our scale, we tested its relationship with other variables from the employee data set. Meyer et al.'s (2002) meta-analysis reported weighted average corrected correlations between individual affective organizational commitment and turnover intentions ( $-0.51$ ), gender ( $0.03$ ), and self-reported absenteeism ( $-0.11$ ). The correlations between our measure and these variables were  $-0.47$ ,  $0.035$ , and  $-0.10$ , respectively. This pattern of closely matching results suggests the scale represents an acceptable measure of the construct. Thus the five questions were aggregated into a scale measure of affective organizational commitment by calculating a mean for each individual.

Given that all constructs were conceptualized and analyses were conducted at the job-group level, we sought to demonstrate acceptable degrees of interrater agreement and reliability to aggregate the individual affective commitment variable to the appropriate unit of analysis. To do this we calculated the following statistics: a one-way analysis of variance (ANOVA), ICC(1), ICC(2), and  $r_{wg}$  using both the uniform distribution and the more conservative slightly skewed assumptions (LeBreton & Senter, 2008). We conducted the ANOVA with individual employee data using job-group affiliation as the fixed effect. Results indicated significant between-job-group variance:  $F(92, 1655) = 8.18$ ,  $p < 0.00001$ . ICC(1) was  $0.17$  and ICC(2) was  $0.76$ . Using the assumption of a uniform null distribution, the median  $r_{wg}$  was  $0.80$  (mean =  $0.78$ ); using the more conservative assumption of a slightly skewed distribution, the median  $r_{wg}$  was  $0.70$  (mean =  $0.68$ ). Taken together, the pattern of results provide more than sufficient justification for aggregating the individual affective commitment variable to the job-group level (LeBreton & Senter, 2008).

*Aggregate voluntary turnover.* A measure of job-group voluntary turnover was constructed from company archival data and survey data provided by the HR managers in the second survey wave. For each job group, the business-unit HR manager was asked: "In the past 12 months how many employees in each job category quit or left [company name] voluntarily?" To ensure the managers reported only voluntary terminations, a second question, not used in this study asked, "In the past 12 months,

approximately how many employees in each job category were discharged or left [company name] involuntarily?" This number was then divided by the average number of employees in the job category over the previous 12 months (provided by the corporate office). We chose 12 months as it is consistent with normative practice (Shaw, Dineen, Fang, & Vellella, 2009; Terborg & Lee, 1984). As turnover was constructed as a ratio, it violated important assumptions of OLS regression. Transformation by taking the natural logarithm of the variable is a common and well-accepted remedy for ratio variables (Hair, Anderson, Tatham, & Black, 1998, pp. 76–78). We added 1.0 to the turnover variable and took the natural log.

We conducted two different analyses to demonstrate the construct validity of the measure. First, we examined the correlation of aggregate voluntary turnover with a measure of the local unemployment rate. Consistent with previous findings (Hulin, Roznowski, & Hachiya, 1985, p. 237), our measure of voluntary turnover was moderately, negatively correlated with the regional unemployment rate ( $r = -0.25, p < 0.05$ ). Second, we used the employee survey data to construct a three-item measure of turnover intentions (e.g., "I plan to look for a job outside of this company in the next 6 months"). Interrater reliability and agreement indices suggested it was appropriate to aggregate the individual measure to a job-group measure of collective turnover intentions. The correlation between collective turnover intentions and aggregate voluntary turnover ( $r = 0.39, p < 0.001$ ) was nearly identical to the reported individual-level correlation found in Griffeth, Hom, and Gaertner's (2000) meta-analysis.

*Motivation, empowerment, and skill indexes.* Drawing on MacDuffie (1995), Huselid (1995), and Bailey (1993) as well as field research at the business units, we constructed an inventory of HR practices. The HR managers reported the usage of each practice by indicating "Yes," "No," or "I don't know." The list of items can be found in Table 2. The usage of an HR practice was scored a 1 and the lack of usage was scored a 0. One question asking about the number of hours of training per year was scored 1 = 15 or more hours of training per year and 0 = fewer than 15 hours.<sup>1</sup> Questions about the frequency of communication were scored as 1 = quarterly or more frequently and 0 = annually or never. "I don't know" responses were scored as not using the practice. This may seem an inappropriate use of missing data. However, if the top HR manager

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<sup>1</sup>Fifteen hours was used as the cutoff based on a study of employer-provided training conducted by the Bureau of Labor Statistics (Frazis, Gittleman, Harrigan, & Joyce, 1998). Both employers and employees of establishments of this size in the wholesale trade industry report employees receive 16 to 24 hours of training each year. Fewer than 15 hours is well below industry averages.



TABLE 2  
*Human Resource Management Practice Questions<sup>a</sup>*

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Skill-enhancing HR practices

Applicants undergo structured interviews (job-related questions, same questions asked of all applicants, rating scales) before being hired.

Applicants for this job take formal tests (paper and pencil or work sample) before being hired.

On average how many hours of formal training do employees in this job receive each year?<sup>b</sup>

The results of the performance evaluation process are used to determine the training needs for employees in this job.

Employees in this job have the opportunity to receive tuition reimbursement for completing college classes.

Motivation-enhancing HR practices

Employees in this job regularly (at least once a year) receive a formal evaluation of their performance.

Pay raises for employees in this job are based on job performance.

Employees in this job have the opportunity to earn individual bonuses (or commissions) for productivity, performance, or other individual-performance outcomes.

Employees in this job have the opportunity to earn group bonuses (or commissions) for productivity, performance, or other group-performance outcomes.

Employees in this job have the opportunity to earn company-wide bonuses (or commissions) for productivity, performance, or other operating company-performance outcomes.

Qualified employees have the opportunity to be promoted to positions of greater pay and/or responsibility within the company.

Empowerment-enhancing HR practices

Employees in this job have a reasonable and fair complaint process.

Employees in this job are involved in formal participation processes such as quality-improvement groups, problem-solving groups, roundtable discussions, or suggestion systems.

Employees in this job communicate with people in other departments to solve problems and meet deadlines.

How often do employees in this job receive formal company communication regarding:<sup>c</sup>  
 Company goals (objectives, actions, and so on)?

Operating performance (productivity, quality, customer satisfaction, and so on)?

Financial performance (profitability, stock price, and so on)?

Competitive performance (market share, competitor strategies, and so on)?

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<sup>a</sup>With the exception of those marked, the response option for these questions was "Yes, No, I don't know."

<sup>b</sup>Response option was "Hours \_\_\_\_\_."

<sup>c</sup>Response options for these questions were: "Never, Annually, Quarterly, Monthly, Weekly, Daily."

in a mid-sized warehousing facility does not know about the usage of an HR practice, it is prudent to conclude the practice is not employed. Upon first receiving the data, the first author contacted the corporate HR staff and several business-unit HR managers to confirm this hypothesis. The

consensus was that circling “I don’t know” meant “not to my knowledge,” an alternative answer for “No.”

The decision to collect HR practice data at the job-group level is consistent with Lepak and Snell’s (2002) findings and Batt’s (2002) and Delery and Shaw’s (2001) observations that HR practices differ by occupational group and should be measured separately to maximize validity and reliability. Second, asking single informants objective questions at the job-group level in mid-sized business units is consistent with Wright et al.’s (2001) suggestion to achieve validity and reliability in the measurement of HR practices.

We chose to conceptualize the variables “use” of motivation, empowerment, and skill-enhancing practices as representing formative rather than reflective constructs. Classical test theory assumes that items of a scale are intercorrelated, imperfect *reflections* of underlying latent constructs and thus considered reflective measures. Measures sometimes do not represent reflections of latent constructs but instead combine to *form* the latent construct. Such formative measures are viewed as “causing” the latent construct; the items are not assumed to covary (MacKenzie, Podsakoff, & Jarvis, 2005). Using the criteria outlined in MacKenzie et al. (2005, pp. 712–713), these three variables may be considered formative. First, the sums of the items defined the constructs rather than being defined by them. Second, the different items representing each variable were not interchangeable but represented different portions of the motivation, empowerment, and skill-enhancing domains. Finally, there was no expectation that the items for each variable would systematically covary. Use of formative variables (indexes) was not only consistent with our conceptualization of the constructs but also with past research (Appelbaum et al., 2000; Batt, 2002; Trevor & Nyberg, 2008).

Construct validation of reflective measures is typically supported by demonstrating shared variance among construct-specific items through the use of factor analysis (Nunnally & Bernstein, 1994). As intercorrelation is not expected among items composing of formative variables, this was not an option. Batt (2002) and Appelbaum et al. (2000) utilized deduction to classify HR practices into the motivation, empowerment, and skill-enhancing domains. Subramony (2009) used a version of interrater reliability. For this paper, the three authors used deduction to narrow and classify the HR practices listed in Table 2 and verified this qualitative classification with Hinkin and Tracey’s (1999) empirical content validation procedures.

Convenience sampling was used to recruit 122 undergraduate/graduate HR students and HR practitioners to participate in the study. Using online survey methodology, each participant was randomly presented with 1 of the 18 HR practices along with one of the definitions of

the three HR policy domains<sup>2</sup>; subjects were asked to rate the congruence of the practice with the domain on a five-point Likert-type scale (*not at all consistent to completely consistent*). This presentation was randomly repeated a total of 54 times for each subject, ensuring each HR practice was rated on congruence with each of the three policy domains. Data from 14 of the respondents were cut for skipping 35 to 54 of the 54 items. Remaining subjects answered at least 53 of the items. Data for 17 respondents were cut for zero variation in ratings of congruency.

Consistent with the Hinkin and Tracey's (1999) procedure, we compared the mean ratings of congruency for each practice across the three policy domains utilizing one-way ANOVAs; Duncan's Multiple Range Test was used to reduce Type-1 error rates. If the three sets of items were consistently rated as more congruent with their a priori construct definitions they were assumed to be consistent with the construct definitions. The results showed that the five skill-enhancing, six motivation-enhancing, and seven empowerment-enhancing items were rated as more congruent with their respective definitions than with the alternative definitions ( $p < 0.05$ ). These findings support the distinctive categorization of the items into the three indexes (Hinkin & Tracey, 1999). The mean congruence scores for each item are summarized in Table 3. These findings are consistent with Lepak and associates' (2006) and Subramony's (2009) categorization of HR practices.

Because formative measures determine and are not a function of underlying constructs, it is inappropriate to use estimates of internal consistency (e.g., coefficient alpha) to test for consistency among the items (MacKenzie et al., 2005). Test-retest correlations can provide evidence of the stability of the three indexes (Trevor & Nyberg, 2008). As mentioned above, HR managers were resurveyed 12 months after the original survey. Although not used for hypothesis testing, the HR managers were again asked about the HR practices used to manage the employees in the job groups within their business units. Questions about hours of training (#3, Table 2) and company communications (#15–18, Table 2) were sufficiently different or missing in the subsequent year and were excluded. We compared the original three indexes, reconstructed without the five

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<sup>2</sup>“Skill-enhancing practices are those designed to improve the knowledge and abilities of a company's employees either by developing the skills of those already employed or by hiring the best people from the outside labor market; Motivation-enhancing practices are those designed to affect employee's desire and willingness to perform assigned work roles and go above and beyond stated expectations; Empowerment-enhancing practices are those designed to provide employees with opportunities and information to contribute to work-group and organizational success.”

TABLE 3  
*Summary of Means of Domain Congruency of HR Practice Items*

	Motivation enhancing	Empowerment enhancing	Skill enhancing
Structured interviews	2.92	3.18	<b>3.73</b>
Formal employment tests	2.45	2.34	<b>3.23</b>
Formal training	3.60	3.70	<b>4.15</b>
Training needs determined by performance evaluation	3.40	3.42	<b>4.04</b>
Tuition reimbursement	3.47	3.36	<b>3.97</b>
Formal performance evaluations	<b>3.98</b>	3.25	3.43
Merit pay	<b>4.13</b>	3.27*	3.66*
Individual bonuses	<b>4.49</b>	3.64	3.58
Group bonuses	<b>3.96</b>	3.52*	2.90*
Company-wide bonuses	<b>3.84</b>	3.36*	3.01*
Promotion opportunities	<b>4.45</b>	4.03*	3.67*
Complaint processes	3.38*	<b>3.91</b>	2.90*
Formal participation programs	3.92	<b>4.31</b>	3.87
Cross-department communication	3.66	<b>4.16</b>	3.58
Communicate company goals	3.89*	<b>4.27</b>	3.13*
Communicate operating performance	3.57	<b>3.97</b>	3.45
Communicate financial performance	3.35*	<b>3.80</b>	2.97*
Communicate competitive performance	3.33	<b>3.76</b>	3.13

$N = 91$ .

Boldface type indicates a significantly higher mean score relative to the other two scores using Duncan's Multiple Range Test ( $p < 0.05$ ). Unbolded items in the same row marked with an asterisk are significantly different from one another ( $p < 0.05$ ).

changed/missing questions, with the indexes constructed from data collected 1 year later. The year-to-year correlation for motivation-enhancing practices was 0.69; 0.64 for empowerment-enhancing practices; and 0.66 for skill-enhancing practices. Considering that the corporation's interest in supporting this study was the diffusion of best practices across the business units, we suggest these levels of consistency are acceptable.

The employee survey used to measure affective organizational commitment also asked employees to report on the HR practices used to manage the people in their own job group. To avoid issues with monomethod bias, these data not used for hypothesis testing. The corporate HR group would only allow us to ask the employees about a subset of the HR practice items to avoid priming them to wonder why they did not have certain practices (e.g., group bonuses). To validate the three HR practice indexes, the indexes constructed from the HR manager data were compared to similar indexes constructed from the smaller number of HR practice items using employee data. With regard to the employee reports of HR practices, the average ICC(1) for the HR practice items was 0.17; the average ICC(2)

was 0.76. ANOVA tests using job group as the fixed effect were significant for all three sets of practices at  $p < 0.01$  level or better. Median  $r_{wgS}$  for the three sets of practices ranged from 0.81 to 0.84 using the assumption of uniform distribution and 0.73 to 0.82 using the more conservative slightly skewed distribution assumption (LeBreton & Senter, 2008). This suggests an adequate degree of interrater agreement and reliability among employees in the distinct job groups regarding the usage of the three sets of HR practices to aggregate to this level (LeBreton & Senter, 2008). The correlations between the measures of motivation, empowerment, and skill-enhancing HR practices measured with employee and HR manager data were 0.64, 0.48, and 0.34 ( $N = 93$ ;  $p < 0.001$ ), respectively. The correlation between the employees' and HR managers' responses for an index of all matching HR practices was 0.63 ( $N = 93$ ;  $p < 0.001$ ). These correlations suggest the data collected from the HR managers reasonably represent the motivation-, empowerment-, and skill-enhancing practices used to manage the different job groups.

*Control variables.* Five control variables were used to reduce the power of alternative explanations of job-group voluntary turnover. Research has demonstrated unionized employees have different levels of commitment (Hammer & Avcig, 2005) and turnover (Freeman, 1980) than nonunion employees. The corporate HR group provided the union status of the different job groups within each business unit with a union presence. There is debate in the literature as to whether the proportion of women in the workplace is associated with higher turnover (Batt et al., 2002). Gender was captured in the employee survey and the proportion of women was calculated for each job group. Tenure is consistently identified as a negative predictor of voluntary turnover (Hom & Griffeth, 1995) and was calculated for each job group. Greater outside opportunities, in the form of low unemployment rates, has an impact on organizational turnover rates (Terborg & Lee, 1984). Thus local unemployment rate for each business unit between Time 1 and Time 2 was collected from U.S. Department of Labor and included in the model. Finally, employees with higher levels of education will have greater employment opportunities. Thus the average education level of the employees in each job group was calculated.

*Analytical strategy.* We used Shrout and Bolger's (2002) revision of Baron and Kenny's (1986) procedures for testing mediation hypotheses in an OLS regression framework. Given that the job groups were nested within business units, we controlled for this nesting with the use of clustered robust regression. This procedure estimates robust standard errors to compensate for the fact that observations within clusters may be correlated resulting in heteroskedastic error terms (Hofmann & Mark, 2006; Rogers, 1993; Williams, 2000). The residuals from the six clustered regressions

TABLE 4  
Results of OLS Regression Analysis

Variables	Model 1: Controls only		Model 2:		Model 3:		Model 4: Testing the mediation model	
	Turnover	Collective affective commitment	Regressing turnover on collective commitment	Regressing turnover on collective commitment on HR bundles	Regressing turnover on HR bundles	Regressing turnover on HR bundles	Regressing turnover on HR bundles and commitment	
Unemployment	-0.017** (0.006)	0.025* (0.012)	-0.014* (0.006)	0.007 (0.010)	-0.015* (0.006)	-0.014* (0.006)		
Union	0.038 (0.060)	-0.505*** (0.108)	-0.021 (0.077)	-0.345** (0.131)	0.027 (0.047)	-0.006 (0.061)		
Proportion female	-0.144* (0.084)	-0.199 (0.190)	-0.167* (0.081)	-0.326* (0.163)	-0.062 (0.073)	-0.093 (0.078)		
Education level	-0.058* (0.029)	0.250*** (0.050)	-0.029 (0.026)	0.188*** (0.050)	-0.026 (0.031)	-0.008 (0.027)		
Tenure	-0.047* (0.026)	0.008 (0.052)	-0.046* (0.024)	0.008 (0.041)	-0.058** (0.021)	-0.057** (0.020)		
Motivation HR practices				0.064* (0.034)	-0.024* (0.013)	-0.020† (0.013)		
Empowerment HR practices				0.092** (0.035)	-0.027* (0.015)	-0.018 (0.017)		
Skill HR practices				-0.002 (0.029)	0.046*** (0.011)	0.046*** (0.010)		
commitment			-0.116** (0.046)			-0.095* (0.053)		
R <sup>2</sup>	0.27**	0.45***	0.32***	0.54***	0.42***	0.45***		
Δ R <sup>2</sup>			0.05**	0.09**	0.15***	0.026*		

N = 93.

† p < 0.10 (one-tailed test), \* p < 0.05 (one-tailed test), \*\* p < 0.01 (one-tailed test), \*\*\* p < 0.001 (one-tailed test).

with robust standard error models outlined in Table 4 were normally distributed.

### *Results*

The descriptive statistics and zero-order correlations can be found in Table 5. The tests of the hypotheses can be found in Table 4. Because all seven hypotheses were directional, one-tailed tests of significance were used in the analyses reported in Table 4 and discussed below (Gravetter & Wallnau, 2009, pp. 257–258; Sproull, 1995, p. 55).

Hypothesis 1 suggests that collective affective commitment will be negatively related to job-group voluntary turnover. Model 2 in Table 4 suggests that introducing the commitment variable into the control variable model explains an additional 5% of turnover variance ( $p < 0.01$ ). The regression coefficient is, as expected, negative, supporting Hypothesis 1.

Hypotheses 2a, 2b, and 2c predict that motivation, empowerment, and skill-enhancing practices, independently, will be positively associated with collective commitment. The correlation table suggests all three sets of practices are positively related to commitment ( $p < 0.05$  or lower). Model 3 in Table 4 shows that entering motivation, empowerment, and skill-enhancing practices into the regression equation after the five control variables explains an additional 9% of the variance in collective commitment ( $p < 0.01$ ). The coefficients for motivation-enhancing and empowerment-enhancing practices are significant and, as expected, positive. Contrary to the zero-order correlation, the coefficient for skill-enhancing practices is not significant. These results support Hypotheses 2a and 2b but not 2c.

Hypotheses 3a and 3b suggest that collective affective commitment will independently mediate the relationships between motivation- and empowerment-enhancing practices and aggregate voluntary turnover. Shrout and Bolger's (2002) revision of Baron and Kenny's (1986) four-step protocol to assess mediation was used to test these hypotheses. Step 1 is to ensure the mediator (commitment) is associated with the dependent variable (turnover). The results for Hypothesis 1 supported this relationship. Step 2 involves testing for a relationship between the main variables (motivation and empowerment-enhancing practices) and the mediating variable (commitment). The results for Hypotheses 2a and 2b support the association of motivation and empowerment-enhancing practices with commitment. Step 3 is to test for an association between the main variables and the dependent variable. Model 4a in Table 4 shows that the inclusion of the three HR practice variables explains an additional 15% ( $p < 0.001$ ) of the turnover variance. As expected, motivation and

TABLE 5  
*Descriptive Statistics and Zero-Order Correlations*

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
Log of turnover	0.17	0.16									
Collective affective commitment	3.68	0.40	-0.41***								
Motivation HR practices	3.67	1.49	-0.40***	0.57***							
Empowerment HR practices	3.73	1.25	-0.32**	0.51***	0.38***						
Skill HR practices	2.81	1.38	0.20*	0.21*	0.23*	0.26*					
Unemployment rate	3.87	1.78	-0.25*	0.17	0.21*	0.23*	0.17				
Union status	0.15	0.36	0.26*	-0.57***	-0.66***	-0.34***	-0.29**	-0.13			
Proportion female	0.19	0.22	-0.36***	0.25*	0.44***	0.32**	-0.03	0.04	-0.33**		
Education level	3.04	0.64	-0.37***	0.51***	0.50***	0.34**	-0.01	0.02	-0.36***	0.52***	
Tenure	3.78	0.65	-0.26*	0.09	0.13	0.06	0.15	0.21*	-0.07	0.09	0.07

$N = 93$ .

\* $p < 0.05$  (two-tailed test), \*\* $p < 0.01$  (two-tailed test), \*\*\* $p < 0.001$  (two-tailed test).



empowerment-enhancing practices are negatively associated with voluntary turnover ( $p < 0.05$ ). The greater use of these sets of practices the lower the aggregate turnover among the job-group employees. Model 4b in Table 4 illustrates the first part of Step 4 of the Shrout and Bolger (2002) protocol. The inclusion of the commitment variable in the model that includes the control variables and the three HR practice variables explains an additional 2.6% of the variance ( $p < 0.05$ ) of turnover. The commitment coefficient is, as expected, negative and significant ( $p < 0.05$ ). The regression coefficients for motivation- and empowerment-enhancing practices decreased ( $-0.004$  and  $-0.009$ , respectively), providing an initial estimate of the indirect mediating effect of commitment for these two variables.

The final step is to estimate the statistical significance of the indirect mediating effects. Numerous authors have criticized the original Baron and Kenny (1986) protocol for estimating the statistical significance of observed mediation effects. The bootstrap resampling method (Shrout & Bolger, 2002) requires many fewer assumptions than the Baron and Kenny (1986) approach, provides tests of significance in samples as few as 20, and is widely accepted across a variety of literatures (MacKinnon, 2008; Shrout & Bolger, 2002).

The estimate of the indirect effect of variable X on Y mediated by M is simply the product of the regression coefficient describing the relationship between X and M ("a") and the regression coefficient of the relationship describing the relationship between M and Y controlling for X ("b"); or  $a \times b$ . Using Stata 9.2 we used bootstrapping with replacement to generate 1,000 samples of the entire data set accompanied by 1,000 estimates of Model 3 allowing the calculation of 1,000 estimate of the "coefficient a" for both skill ( $a_1$ ) and motivation ( $a_2$ ) enhancing practices; and 1,000 estimates of Model 4b in Table 4 allowing us to calculate 1,000 estimates of "coefficient b" the regression coefficient describing commitment's effect on turnover controlling for motivation, empowerment, and skill-enhancing practices. Multiplying our 1,000 estimates of " $a_1$ " and " $a_2$ " with our 1,000 estimates of "b" gave us 1,000 estimates of " $a_1 \cdot b$ " and " $a_2 \cdot b$ ," the estimates of the mediated effects of motivation- and empowerment-enhancing practices on aggregate voluntary turnover. Consistent with the results reported above, the mean-mediated effect for motivation-enhancing practices was  $-0.004$  with a 95% confidence interval of  $-0.0043$  to  $-0.0037$ . Also consistent with the results reported above, the mean-mediated effect for empowerment was  $-0.009$  with a 95% confidence interval of  $-0.0097$  to  $-0.00897$ . As neither of these confidence intervals included zero, the independent mediation effects were statistically significant. Dividing the estimates of the mediated effects (" $a_1 \cdot b$ " and " $a_2 \cdot b$ ") by the direct effect regression coefficients describing the relationship between

motivation and empowerment-enhancing practices estimated in Model 4a (aka  $c_1'$  &  $c_2'$ ) in Table 4 suggests collective affective commitment mediates 16.7% of the effect of motivation-enhancing practices impact on aggregate turnover (0.004/0.024) and mediates approximately 33.3% of the effect of empowerment-enhancing practices on aggregate turnover (0.009/0.027). These results support Hypotheses 3a and 3b.

The same four steps used to test for consistent mediation are used to test for inconsistent mediation (see pages 68–70 of MacKinnon [2008]). As before, commitment is associated with turnover (Step 1). In Step 2, one would expect to see a positive relationship between skill-enhancing practices and collective commitment. As can be seen in Model 3 of Table 4, skill-enhancing practices are not associated with commitment. Step 3, assessing for a relationship between skill-enhancing practices and voluntary turnover, is confirmed. As can be seen in Model 4a in Table 4, skill-enhancing practices are, as expected, independently positively associated with voluntary turnover. Unlike consistent mediation, where in Step 4 one expects to see a reduction in the relationship between the main variable and the dependent variable following the introduction of the mediator, one expects to see a *strengthening* of this relationship in the presence of inconsistent mediation. As can be seen in Model 4b in Table 4 this effect is not observed. Thus Hypothesis 3c predicted that skill-enhancing practices would have an indirect, negative relationship with voluntary turnover mediated by collective commitment and a positive relationship with voluntary turnover independent of commitment. Only the positive relationship between skill-enhancing practices and voluntary turnover, independent of commitment, was observed providing only partial support for Hypothesis 3c.

In summary, consistent with past research, the results of this study suggest a negative relationship between collective affective commitment and aggregate voluntary turnover. Using the results from Model 3 in Table 4, all else being equal, a one standard deviation increase in a job-group's collective affective commitment will be associated with a 4.75 percentage point reduction in the raw turnover rate.<sup>3</sup> Average turnover rate in this sample was 18.53% suggesting this finding translates into a 25.63% relative decrease in turnover (4.75/18.53). Using the results from Model 4a in Table 4, a one standard deviation increase in motivation-enhancing practices will be associated with a 3.64 percentage point reduction in raw turnover and 19.64% relative decrease in voluntary turnover.

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<sup>3</sup>To calculate this estimate, we took the inverse-log of the product of regression coefficient for commitment in Model 2 of Table 4 and the standard deviation of commitment variable from Table 5. We then subtracted 1.0 to account for integer we added to all elements of the turnover vector to allow calculation of natural log (see "Aggregate Voluntary Turnover" in Methods section).  $X = (\text{inv-ln}(.116 \cdot .40)) - 1.0$ .

Of the raw decrease in turnover, 0.61 raw percentage points (16.7%) are mediated by affective commitment and 3.03 raw percentage points are independent of affective commitment. A one standard deviation increase in empowerment-enhancing practices will be associated with a 3.43 percentage point reduction in raw turnover and a 18.51% relative decrease in voluntary turnover. Of the absolute decrease in turnover, 1.14 percentage points (33.3%) of the change in turnover is mediated by collective commitment and 2.29 raw percentage points of the raw change in turnover is independent of affective commitment. A one standard deviation increase in skill-enhancing practices will be associated with 6.55 percentage point *increase* in raw and 35.94% relative *increase* in voluntary turnover. Unexpectedly, collective affective commitment did not act as an inconsistent mediator for skill-enhancing practices and voluntary turnover.

### *Discussion*

Voluntary turnover is both an individual and an aggregate phenomenon. Individual feelings, perceptions, human capital, incidents, and behaviors all commingle resulting in an individual's discrete choice to dissolve the employment relationship. One-hundred years of empirical research has unpacked and systematized these many factors. The homogenizing effects of similar work, group context, and management practices produce regularities in employees' attitudes that result in predictable trends in aggregate turnover (Baysinger & Mobley, 1983). By drawing on research from the macro-HRM and self-determination theory literatures, these empirical results can be used to support the hypothesis that motivation- and empowerment-enhancing practices' are negatively related to aggregate turnover and that this relationship is partially mediated by collective commitment. On the other hand, consistent with the human capital tradition embedded in Trevor's (2001) reinvigoration of March and Simon's (1958) turnover framework, our results suggest skill-enhancing practices are positively associated with aggregate voluntary turnover, and this relationship is unmediated by commitment. The following sections elaborate on these findings, discuss limitations of the research, and discuss practical insights managers might use to reduce aggregate voluntary turnover.

One important theoretical contribution of this study is reconciling the conflicting streams of thought about the role of commitment in mediating the relationship between HR practices and aggregate voluntary turnover. As previously noted, researchers have offered a variety of descriptions of the relationships among HR practices, commitment, and voluntary turnover. Our finding that commitment acts as a partial mediator supports the suggestions of a mediating effect found in Arthur (1994), Batt (2002),

and Way (2002) and contradicts Huselid's (1995) assertion that the impact of HR practices on turnover is direct. These findings provide a foundation for future research seeking to better understand the causal mechanisms by which HR practices and other yet to be identified factors affect aggregate voluntary turnover. Our demonstration of a mediation effect also provides very strong evidence that the previously published findings of association between HR practices and aggregate turnover were not spurious or artifactual (MacKinnon et al., 2007).

A second contribution of this study is the particularization of the theory explaining the HR practice, collective commitment, and aggregate turnover relationship. Arthur (1994), Batt (2002), and Way (2002) were indefinite about the process by which commitment mediates the impact of HR practices on aggregate turnover. By drawing on macro-HR theories and self-determination theory (Deci & Ryan, 1985; Lepak et al., 2006), we developed a specific, robust, and testable explanation for the association between HR practices and collective commitment and between collective commitment and aggregate turnover. This is a much needed contribution to the literatures on the antecedents and consequences of collective commitment (Angle & Perry 1981; Ostroff, 1992).

In their integrated model of macro-HRM, Lepak et al. (2006) suggest (a) HR systems influence organizational climate that affects employee attributes, behaviors, and organizational outcomes; and (b) HR systems directly affect employees' collective abilities (human capital), opportunity to perform, and thus collective job performance. This paper is the first to provide support for both segments of this model. The pivot point of the first segment is the connection between HR practices, shared beliefs/affect, and collective behavior. Our paper ties these three constructs together giving greater insight into mechanisms by which HR systems affect employee and organizational outcomes. At least part of the impact of two of the HR bundles (motivation and empowerment) on voluntary turnover was indirect, through their impact on affective commitment.

We also found support for Lepak et al.'s (2006) hypothesis of direct impact of HR systems on employee attributes and behaviors, in the finding that skill-enhancing practices are positively associated with aggregate turnover, independent of collective commitment. In this study, we are limited, like March and Simon (1958, p. 92), to interpreting voluntary turnover as a form of aggregate "performance." We are also limited to presuming that skill-enhancing practices' impact on voluntary turnover is mediated by an increase in collective abilities and movement capital. Despite these limitations, this study still provides a contribution to this framework due to the minimal past research examining the connection among HR practices, employee human capital, and collective job performance. Tharenou et al.'s (2007) meta-analysis identified only one study

of the impact of training on collective job performance, and the results were nonsignificant (Horgan & Muhlau, 2006). Our findings strongly suggest the value of examining the link between skill-enhancing practices, collective abilities, and collective job performance outcomes.

Finally, our study provides empirical support for the efficacy of examining the different bundles of HR practices as opposed to an overall index. Subramony (2009) found that all three bundles of HR practices (skill, motivation, and empowerment) were positively related to most organizational performance measures. However, he found that although the motivation and empowerment bundles were positively related to retention, the analysis of three studies showed the skill bundle was unrelated. The former two have common psychological processes to explain their relationship with the entire range of outcomes. However, skill-enhancing practices elicit a host of labor market processes that may lead to different (from motivation and empowerment) relationships with any particular outcome, and even inconsistent (or contingent) relationships across different outcomes. This suggests that future research can seek to better tease out how skill-enhancing practices may relate to a number of important outcomes.

Future research should also test the more complete model of the connection between skill, motivation, and empowerment-enhancing practices, collective attitudes, aggregate turnover, and accounting, operational, and financial market. Huselid (1995) comes closest to testing all of these steps in one study. The methodological and statistical advances used in this study can serve as a foundation for such research. One of the first steps should be to explore the role of collective turnover intentions. Hom and Griffeth's integrated model of turnover (1995, p. 108) suggests withdraw cognitions both directly affect turnover decisions and start a chain of job search leading to turnover. We recommend the first step be the development of a theoretical foundation to conceptualize these cognitions at multiple levels of analysis before attempting to find simple single-level associations between collective turnover intentions and aggregate voluntary turnover.

There are several limitations to this study that need to be considered in evaluating the results reported. First, we did not include a measure of pay level as a component of one of the functional HR bundles or as a control. Despite the popular press emphasis on the importance of pay, we feel this is only a minor omission. Hom and Griffeth's (1995) meta-analysis concluded that pay level and turnover were only correlated at  $-0.06$  at the individual level. In a meta-analysis of seven studies that included 1,645 firms and business units, the population estimate of the correlation between pay level and aggregate turnover rate was  $-0.11$ , but the 90% confidence interval included zero (Bradley, 2005).

Second, measuring the presence/absence of the HR practices prior to combining them into the three indexes is less than optimal. Although we feel that using this type of measure is acceptable when studying multiple job groups in autonomous business units, it would be inappropriate in most other settings. Future researchers should attempt to document the relevance and scope of practices at the business unit or job-group level (Delery, 1998).

Third, we did not have a financial criterion to which we could demonstrate the impact of voluntary turnover rates. However, we believe that with the plethora of research linking HR practices to financial performance, this research filled an important gap by examining more proximal outcomes that theoretically mediate the HR performance relationship. Fourth, we were unable to distinguish between the turnover of high and low performers (Shaw et al., 2009). Certainly, this is an area for future research.

Finally, the results of this study may not be generalizable to settings outside of service or even the food service industry. We believe that the complex nature of food service warehousing, delivery, and sales makes this study generalizable to a large portion of the U.S. economy but additional studies in other industries or multiindustry studies may be needed.

On the positive side, however, this study provided a solid test of the issues we explored. This study used a true longitudinal design as opposed to a retrospective longitudinal design (asking HR managers to estimate HR practices or employees to estimate their commitment in the distant past) or a postpredictive design (measuring a metric like turnover that has taken place in the past at the same time current attitudes or HR practices are measured). Voluntary turnover as opposed to total turnover was measured. Common method bias was nearly a nonissue as collective commitment and HR practices were measured using different sources; HR practices and collective commitment were measured 12 months prior to aggregate voluntary turnover. We used an established set of control variables that controlled for human capital (gender, education, tenure) and contextual factors (unionization and local unemployment rates) that might have explained variation in aggregate turnover rates. Human resource practices were measured at the job-group as opposed to the business-unit level, allowing much more accuracy in measuring the use of the practices (Gerhart et al., 2000). Finally, clustered regression with robust standard errors allowed us to estimate parameter coefficients while controlling for the homogeneity resulting from job groups being nested within business units.

This paper provides insights for managers seeking to control aggregate turnover. Cappelli's (1999) book, *The New Deal at Work*, mapped the challenges of building a pool of talented employees through the use of

lateral hiring and training investments as employees' willingness and ability to freely move across organizational boundaries dramatically increased. On one level, this study provides support for his assertion that investments in talent are portable. More importantly, these findings provide a template for reducing the increased turnover associated with improved hiring and training investments. In the broadest sense, tactics that increase the affective commitment of the focal workforce may offset the increased turnover from the use of skill-enhancing practices. Takeuchi, Chen, & Lepak (2009) make a strong theoretical and empirical case that organizations that develop a climate of concern for employees (perceived organizational support) can improve individual affective commitment. Our results specifically point to the role motivation- and empowerment-enhancing practices play in improving collective commitment and thus reducing aggregate turnover. Motivation-enhancing practices such as merit pay, promotion opportunities, and individual, group, and organizational incentives may increase commitment and reduce turnover and decrease aggregate turnover in a process not mediated by commitment. Similarly, managers may wish to implement or enhance their use of such empowerment-enhancing practices as information sharing, formal grievance procedures, and participation programs. Overall, our findings point to the importance of the varying effects of different HR practices and the importance of supplementing skill-enhancing practices with motivation-enhancing practices to reduce turnover and potentially capture the performance benefits of a better workforce.

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