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Abstract

The authors tested the influence of thirteen human resource management practices on voluntary turnover rates the following year while controlling for workplace size, the presence of a separate human resources management unit, union density, industry, and region. Analysis of data from 4,160 workplaces in a representative distribution of Canadian industries found that employer-provided training is associated with higher turnover, whereas internal labor markets and formal dispute resolution procedures are associated with lower turnover. The findings are consistent with predictions that some human resource management practices reduce workers' desire to leave and that training may actually make their leaving easier.

THE INFLUENCE OF HUMAN RESOURCE MANAGEMENT PRACTICES ON EMPLOYEE VOLUNTARY TURNOVER RATES IN THE CANADIAN NON GOVERNMENTAL SECTOR

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The authors tested the influence of thirteen human resource management practices on voluntary turnover rates the following year while controlling for workplace size, the presence of a separate human resources management unit, union density, industry, and region. Analysis of data from 4,160 workplaces representative of Canadian industries found that employer-provided training is associated with higher turnover, whereas internal labor markets and formal dispute resolution procedures are associated with lower turnover. The findings are consistent with predictions that some human resource management practices reduce workers' desire to leave and that training may actually make their leaving easier.

Interest in the labor turnover problem increased with the publication in 1913 of the first comprehensive empirical analysis and measurement of the costs of labor turnover by General Electric employment manager Magnus Alexander (Bruce 2005). Firms that dedicate significant resources to attract, develop, and motivate qualified people do not want to see them leave soon after, especially in a tight labor market (Cascio 2000; Glebbeek and Bax 2004). The consequences of such departures are well documented, in terms of disruptions to the normal operations of an organization and lower organizational performance (see Huselid 1995; Kacmar et

al. 2006; Morrow and McElroy 2007). This is why several business leaders have designed retention programs that include generous employee benefits, flexible work arrangements, career development opportunities, and a host of other initiatives that are intended to reduce quit rates. We know little, however, of the actual turnover-reducing capacity of such practices. In fact, few organizational-level studies investigated the human resource management determinants of turnover and fewer still focused on voluntary turnover rates (Guthrie 2001; Shaw et al. 1998). Relative to the multitude of turnover studies conducted at the individual level of analysis, the number of organizational-level investigations is noticeably low. Apparently, nearly all of the available research on employee turnover attempts to understand the process through which individuals choose to quit or stay rather than to address the question of why some workplaces experience higher turnover rates than others. It seems that in turnover studies, just as in organizational commitment research (Mathieu and Zajac 1990), difficult access to organizational-level measures of aggregate-level constructs is the reason why

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so few studies have addressed organizational variables such as human resource management practices.

To provide a comprehensive view of how human resource management practices might influence workplace turnover rates, we revisited a broad and highly applicable framework developed by March and Simon (1958), who posited that ease of movement and desirability of movement predict voluntary turnover rates. Within this broad framework, we include other theoretical perspectives to support predictions about the influence of specific human resource management practices on voluntary turnover rates. The objective of our study is therefore to provide theoretical and practical clarity to the relationships between human resource management practices and voluntary turnover rates investigated at the workplace level of analysis.

Our focus here is on specific human resource management practices, many of which have seldom or have never been investigated in relation to voluntary turnover rates. Hence, rather than investigate bundles of practices (Delery and Doty 1996; MacDuffie 1995; Wright et al. 1999; Yalabik et al. 2008), the present study considers specific human resource management practices designed to (1) develop employee skills (training, internal labor markets); (2) elicit motivation and commitment (internal labor markets, relative pay, benefits, variable pay); and (3) enable employee influence and voice (participation-enhancing work designs, formal dispute resolution) (Wright and Boswell 2002). Although investigations of bundles or systems of human resource management practices may capture synergies between coherent sets of practices that generally include selective staffing, training, internal career opportunities, variable pay and self-directed work teams, they provide little information about the specific effects of any single practice on employee turnover rates. In addition, analyzing bundles of human resource management practices may be flawed since some specific practices, like employer-provided training, may actually increase turnover by making employees more attractive to other organizations. By

considering specific practices, we will be able to make further comparisons across studies in which specific practices have been investigated, thereby increasing our confidence in making generalizations about them.

We also note that past research has assessed turnover in a number of ways (Wright and Bonett 1991) and some organizational-level investigations, in fact, have made no distinction between voluntary and involuntary turnover (Arthur 1994; Guthrie 2000, 2001; Huselid 1995; Leonard 1987; Richard and Johnson 2001). Potential problems resulting from a failure to distinguish adequately between voluntary and involuntary turnover rates were noted in past research (Gerhart 1990; McEvoy and Cascio 1987; Stumpf and Dawley 1981). Considering that the determinants of voluntary and involuntary turnover are quite different (Powell et al. 1994; Shaw et al. 1998), findings from studies that do not make this distinction may be flawed. Our study makes that critical distinction and investigates voluntary turnover (such as resignations) only.

Another feature of our study is our use of a particularly rich source of data from a large multi-industry, nationally representative sample of workplaces. This stands out in stark contrast to most studies performing similar research for which data were obtained from a small number of companies within a single industry. In addition, since data were available from workplaces for two consecutive years, we were able to investigate the relationships between year 1 human resource management practices and year 2 voluntary turnover rates, thus adding a provision for temporality. This marks a clear departure from previous research in this line of inquiry, in which data collected at one point in time were analyzed for a single year, thereby limiting the strength of causal inference, especially regarding employer-provided training (in other words, does training increase turnover or does higher turnover increase training needs as new recruits join the organization?). Finally, this study focuses on the workplace level of analysis rather than on the company level, thereby avoiding the problem of significant variations in human resource management

practices between different sites of the same organization associated with company-level studies (see Becker and Gerhart 1996; Ramsay, Scholarios, and Harley 2000).

Theory and Hypothesis

March and Simon (1958) were interested in the decision to participate, which lies at the core of “organizational equilibrium” (Barnard 1938; Simon 1947). They argued that when a change is made in the life of an organization that explicitly alters the inducements offered to any group of participants or the contributions demanded from them, a prediction can be made regarding the effect of the change on participation (p. 88). For instance, a variable pay plan (inducement) made available to employees (participants) could reduce turnover rates (participation). More specifically, the theory of organizational equilibrium, as formulated by March and Simon (1958), predicts that participation is a function of the desirability of leaving the organization and the ease of movement from the organization. Desirability of movement reflects participants’ motivation to leave, which relates to their job satisfaction. Ease of movement reflects participants’ assessments of how easy it is to find employment in another organization, which is a function of market conditions and competencies.

Although they did not reference the work of March and Simon (1958), Shaw et al. (1998) developed a framework specific to organizational-level turnover prediction from human resource management practices. They categorized those practices as investments and inducements (see pay, benefits, job stability, procedural justice) and expectations enhancing (such as close supervision, low span of supervisory control). As such, the Shaw et al. (1998) categorization scheme only captures factors that affect the perceived desirability of leaving the organization. Expanding their framework and drawing from March and Simon (1958), we argue here that some competency-enhancing human resource management practices may actually increase ease of movement from the organization.

Human Resource Management Practices and Ease of Movement

Ease of movement is simultaneously determined by factors at the market level and human capital. General job availability, evidenced by the unemployment rate in the relevant job market, is assumed to allow or restrict ease of movement. How easily people can move within the job market is also a function of their work experience, diplomas, and task-relevant abilities, or what is sometimes referred to as their “movement capital” (Trevor 2001) or accumulated human capital (Becker 1964).

The organizational issue addressed in the turnover literature is referred to as retention of talent and not as investment in practices that foster voluntary departures. Employer-provided training, however, may have that unintended effect by increasing a person’s external marketability and ability to leave the employer. Trevor (2001) noted that this view is consistent with market signaling theory (Spence 1973) and human capital theory (Becker 1964; Lippman and McCall 1979). Task-relevant abilities developed through employer-provided training provide the market with information that indicates productivity (signaling), and they make people more “valuable” (insofar as people are considered human capital). Based on both signaling and human capital theories, a recent individual-level study found that employee participation in a tuition-reimbursement program reduces turnover while employees are still in school but increases turnover when they earn their graduate degree (see Benson, Finegold, and Mohrman 2004). Our study tests such dynamics, but at the workplace rather than at the individual level.

A more nuanced reading of human capital theory would predict that training in general skills (such as those that are easily transferable to other organizations in the marketplace) would increase voluntary turnover whereas firm-specific training would diminish voluntary turnover. In reality, however, the distinction between general-skills training and firm-specific training is not easy to make considering that “much on-the-job training is neither completely specific nor completely

general" (Becker 1964: 18), or the training consists of a mix of both firm-specific and general human capital (Baron and Kreps 1999). Further, as Spletzer noted, "one is hard pressed to come up with good examples of training that provides skills that are useful at only one employer" (1997: 730). More than half of the employers surveyed in recent studies reported, in fact, that the skills their workers possessed are easily transferable to other firms (Barron, Berger, and Black 1999; Fairris 2004). Moreover, employers do not necessarily make clear distinctions between general and specific training (Greer 2000), which means the externalities that may result from employer-provided training generally consist of both general and specific components.

Careful examination of three organizational-level studies providing unique coefficients for the relationship between employer-provided training and turnover rates reveals no evidence of a turnover reducing effect (Batt et al. 2002; Lincoln and Kalleberg 1996; Shaw et al. 1998). In a study of establishment firms employing at least 20 but fewer than 100 employees, Way (2002) found a non-significant association between training and turnover. In a more recent investigation, Fairris (2004) found a small negative relationship between the percentage of core employees that attend off-the-job training programs paid by the company and voluntary turnover rates. In that same study, however, the number of days devoted to such training was not significantly associated with turnover rates. Given the samples investigated in the above studies (for example, the telecommunications industry: Batt et al. 2002; manufacturing plants: Lincoln and Kalleberg 1996; trucking organizations: Shaw et al. 1998; small establishments: Way 2002), more research is necessary to better establish the association between training and turnover. Therefore, in the absence of clear evidence regarding the nature of the association between training and turnover and staying with the theoretically derived arguments above, we formulated the following hypothesis:

Hypothesis 1. More employer-provided training will be positively associated with voluntary turnover rates.

Human Resource Management Practices and Desirability of Movement

Although a number of motivational forces contribute to the decision to quit (Maertz and Griffeth 2004), March and Simon (1958) have argued that perceived desirability of movement is determined by job satisfaction, which is a function of a wide range of job characteristics. For instance, monetary rewards available in the workplace and participation in decision-making are likely to influence job satisfaction and thereby the desire to stay or escape a given situation. The presence of an internal labor market, as evidenced by a policy of staffing from within the organization, is likely to reduce desirability of movement through specific skill acquisition or by addressing employee preferences for advancement. In the first case, internal labor markets allow workers to acquire skills that are specific to the firm and thus provide them with an incentive to amortize their investment in these specific skills. In the second case, promoting from within may address employee preferences for advancement within their organization, thus improving job satisfaction and reducing their desire to leave the organization. This prediction is consistent with internal labor market theory, which emphasizes investment in training and long-term employment relations (Doeringer and Piore 1971). This prediction is further supported by an organizational-level study that found that a stronger emphasis on internal mobility and upward progression is associated with lower quit rates (Batt et al. 2002). A recent study, however, found the opposite—that the importance attached to internal promotions is actually associated with higher quit rates (Fairris 2004). Other findings suggest that high performance work systems that emphasize internal promotions reduce turnover rates (Guthrie, 2000, 2001; Huselid 1995). Moreover, according to March and Simon (1958) the perceived possibility of intraorganizational transfer is, along with job satisfaction, a proximal determinant of perceived desirability of movement. Given that an internal labor market allows intraorganizational transfer, the following hypothesis is consistent with their framework.

Hypothesis 2. Internal labor markets that emphasize staffing from within the organization will be negatively associated with voluntary turnover rates.

A number of other human resource management practices could reduce desirability of movement. For example, following efficiency wage theory, more generous compensation packages would make employees unwilling to risk obtaining less money and fewer benefits with a different employer (Campbell 1993; Katz 1986; Stiglitz 1984), thus reducing their desire to move. Consistent with this view, firm-level turnover studies generally find high pay associated with lower turnover rates (Batt et al. 2002; Delery et al. 2000; Fairris 2004; Guthrie 2001; Leonard 1987; Park et al. 1994; Powell, Montgomery, and Cosgrove 1994; Shaw et al. 1998). Our study investigates relative pay, which is the establishments' pay level relative to their industry pay level. This relationship was investigated with the following hypotheses:

Hypothesis 3. Higher relative pay will be negatively associated with voluntary turnover rates.

Generous employee benefits packages could also be highly effective in bonding employees with their organization. In fact, the prediction that more generous benefits reduce turnover rates was empirically supported by three studies—Bennett, Blum, Long, and Roman 1993; Fairris 2004; and Shaw et al. 1998. Three other studies, however, did not (see Delery et al. 2000; Park, Ofori-Dankwa, and Bishop 1994; Powell et al. 1994). Efficiency-wage theory would suggest that more generous benefits offerings reduce desirability of movement and turnover. Our measure of employee benefits, which captures both the availability and funding of seven non-wage benefits, may effectively uncover such an association more so than in past studies. We therefore suggest the following hypotheses:

Hypothesis 4. More generous employee benefits will be negatively associated with voluntary turnover rates.

The influence of variable pay on turnover rates is not clearly established. Wilson and Peel (1991), for example, found that profit-sharing and share ownership plans reduce

turnover rates. The influence of piece-rate bonuses, however, was not significant in their investigation. In the telecommunications industry, Batt et al. (2002) found that the percentage of pay of the typical core employee that is variable is positively associated with turnover rates. The researchers in that study explained that performance-based pay fosters financial uncertainty, which increases turnover. Notwithstanding the Batt et al. (2002) study, the general thrust of the literature links variable pay with high performance work systems that foster employee motivation and commitment which in turn result in lower turnover (Arthur 1994; Guthrie 2000, 2001; Huselid 1995). The same association is supported in the labor economics literature where studies have demonstrated that variable pay may reduce turnover because wages are more flexible (Azfar and Danninger 2001). More flexible wages, that is, can respond to alternative wage offers and thereby improve retention, according to one study (see Blakemore, Low, and Ormiston 1987).

Although our hypothesis is consistent with these views, we wish to point out that our measure of turnover did not provide us with an opportunity to investigate possible "sorting" effects, whereby variable pay fosters more departures among poor performers than among high performers. There is clear evidence of a negative performance-turnover relationship in individual-level studies (Bycio, Hackett, and Alvares 1990; McEvoy and Cascio 1987). More to the point, however, is evidence of a stronger negative performance-turnover relationship in organizations using performance-contingent rewards (Williams and Livingstone 1994). As high performers receive more rewards, they would ostensibly be more satisfied and less likely to quit. As low performers receive fewer rewards, they would be less satisfied and more likely to quit. Further advancing this view with organizational-level data, Park et al. (1994) found positive relationships between the availability of group incentives and dysfunctional turnover (that is, more high performers leave) and between the availability of individual incentives and functional turnover (that is, more low performers leave).

This brief review underscores the many

complexities involved in the associations between individual-collective variable pay plans and employee turnover. For the purpose of hypothesis testing in our study, one regression model will include a composite variable-pay variable, which will provide a test of whether or not more variable pay is better than less. A second regression model will include four variable pay plans. This model will indicate whether some specific forms of variable pay have a potentially greater impact than others.

Hypothesis 5. Greater use of variable pay (individual incentives, gain-sharing, profit-sharing, merit or skill-based pay) will be negatively associated with voluntary turnover rates.

Team-based work systems and other participatory work designs may provide participants with enough influence to improve their work environment and reduce their desire to move. Research conducted by Batt et al. (2002) found that the extent of employee participation in problem-solving teams (consultative participation) and in self-directed work teams (substantive participation) is associated with lower turnover rates. Wilson and Peel (1991) found that the existence of a joint job evaluation scheme and a work council are associated with lower turnover rates. Their employee-participation and span of control variables did not, however, show significant relationships with turnover rates. In another study, no support was found for the predicted relationship between employee participation in quality circles and turnover rates (Lincoln and Kalleberg 1996). Finally, Delery et al. (2000) found no relationship between employee participation and turnover rates in the trucking industry.

Taken together, these studies provide little evidence that participation-enhancing work designs are associated with lower turnover. In the few studies that are available, we identified four negative associations and four non-significant associations. This underscores the need to investigate further specific forms of employee participation mechanisms. In the present study, drawing from a broad definition of employee participation (Ledford and Lawler 1994), we examine the influence of five participation-enhancing work designs on employee voluntary turnover. These address consultative and substantive participation

as well as on- and offline participation. As such, they address a diversity of participation-enhancing work designs (Strauss 2006). For the purpose of hypothesis testing, one regression model includes a composite participation variable that tests whether or not more participation-enhancing work designs are better than fewer of them. Another regression model includes five participation-enhancing work designs, indicating whether some specific forms of participation-enhancing work designs have a potentially greater impact than others on employee voluntary turnover.

Hypothesis 6. Greater use of participation-enhancing work designs (employee suggestion program, information sharing, problem-solving teams, self-directed work groups, flexible job design) will be negatively associated with voluntary turnover rates.

The exit-voice framework (Hirschman 1970), when applied to the workplace (Freeman and Medoff 1984), considers voice as any attempt by dissatisfied employees to express their concerns rather than to escape an unsatisfactory situation by quitting. Initial applications of the exit-voice framework to employment relations was based on the assumption that unionized employees benefit from institutional protections negotiated by their union and, therefore, are more likely to voice their dissatisfaction than the non-unionized employees who are more prone to quit (Freeman and Medoff 1984). But impartial dispute-resolution procedures, like complaint, appeal, or grievance procedures, whether they are established in a union or non-union setting, allow employees to voice their dissatisfaction within their current workplace rather than to quit. In addition, such procedures provide a voice mechanism through which workers can gain more satisfying conditions of employment. From an organizational justice perspective (see Folger and Cropanzano 1998), dispute resolution procedures are expected to improve perceptions of both procedural and distributive justice, which enhance job satisfaction and reduce the desirability of movement as a result.

The current state of research clearly demonstrates the need for further investigation of such arguments. In one study, for example, the availability of a formal non-union grievance

ance procedure and non-union arbitration were not significantly associated with turnover rates (Batt et al. 2002). Only the presence of peer-review panels was associated with lower turnover rates. In another study, practices reflecting procedural justice were unrelated to turnover rates (Shaw et al. 1998). In still another study, having a formal grievance procedure was not significantly associated with turnover rates in regression equations that controlled for unionization (Delery et al. 2000). These findings may have resulted from the challenges of measuring dispute resolution procedures in specific contexts. Thus, drawing from the above theoretical frameworks, we tested the due process proposition with the following hypothesis:

Hypothesis 7. The presence of a formal dispute resolution procedure will be negatively associated with voluntary turnover rates.

Methods

Data and Sample

The data for this study were collected by Statistics Canada as part of the Workplace and Employee Survey (WES) directly from survey respondents. Data collection, data capture, preliminary editing and follow-up of non-respondents are all done in Statistics Canada Regional Offices. In 1999, workplace data were collected in person. Beginning in 2000, computer assisted telephone interviews were conducted. The overall goal of the survey was to examine the way in which employers and their employees respond to the changing competitive and technological environment. The interviews were conducted with general managers of smaller locations and with human resources managers of larger locations. Responding to this survey was mandatory.¹ For about 20 percent of the surveyed units (mostly large workplaces), more than one

respondent was required to complete the questionnaire.

The instrument was developed through various consultations with experts, such as those from the Subject Matter Advisory Group, Human Resources Development Canada, and EKOS Group. Based on their comments and suggestions, appropriate changes to the questionnaires were made. A pre-test of 50 businesses was conducted followed up later by a pilot survey.

The sampling frame is stratified by industry (14), region (7), and size (3), which is defined using estimated employment. The target population for the survey is defined as all business locations operating in Canada that have paid employees, with the following exceptions: employers in certain northern locations (Yukon, Nunavut and Northwest Territories), employers operating in crop production and animal production, fishing, hunting and trapping, private households, religious organizations and public administration. The sample comprises the same locations followed over time with rigorous data-collection procedures generating a 1999 sample of 6,322 workplaces with a response rate of 95.2 percent. The year 2000 sample included 6,068 workplaces with a response rate of 90.9 percent. Thus, 96 percent of workplaces that responded to the 1999 survey also responded to the year 2000 survey. Such high response rates limit the risk of a non-response bias.

Workplaces with fewer than 10 employees were excluded from the analysis because (a) a different data collection approach was used in those (smaller) workplaces, (b) the questionnaire for smaller workplaces did not include questions about the participation-enhancing practices included in our model, (c) the human resource management practices we investigated are likely to have different meanings in workplaces of that size. We could have further reduced our sample by including only those workplaces with 100 or more employees, but this would have hampered our ability to generalize findings to a meaningful portion of workplaces. With no theoretical or empirical basis to do so, there was no reason to further reduce sample size by setting any other minimum workplace size

¹Mandatory participation did not, however, yield a perfect response rate. Some workplaces may have felt over surveyed by such time-consuming surveys and refused participation for that reason. Although sanctions could be applied to non-responding workplaces, they are difficult to enforce.

for inclusion in the analyses. Moreover, employee turnover is a major concern in small as well as in large workplaces. Thus, the final sample was based upon 4,160 workplaces with complete data for both years and that had 10 or more employees in 1999.

These workplaces included a comprehensive spectrum of industries (forestry/mining; labor intensive tertiary manufacturing; primary product manufacturing; secondary product manufacturing; capital intensive tertiary manufacturing; construction; transportation/storage/wholesale trade; communication and other utilities; retail trade and commercial services; finance and insurance; real estate, rental, leasing operations; business services; education and health care; information and cultural industries) and broadly represented Canadian workplaces with more than 10 employees. Weights were calculated using the inverse of the probability of selection of each workplace into the stratified sample, which is a function of industry, region, and size. The weighted average number of employees per workplace of the final sample was 45.70 employees ($SD = 173.32$). As such, smaller workplaces were well represented in this study, contrasting with previous turnover studies (see Guthrie 2000, 2001; Huselid 1995). In addition, 17.36 percent ($SD = 0.38$) of the workplaces in our study were covered by a collective agreement. Other descriptive statistics are presented in the results section.

Measures

In developing our measures, we kept in mind that the unit of analysis for this study is the workplace; that is, we intended all measures to reflect the workplace level of analysis. This would seem most appropriate given that the dependent variable is workplace turnover. The dependent variable is voluntary turnover for year 2000, which was captured as a ratio of the number of employees who had resigned between April 1, 1999 and March 31, 2000, over the number of people employed at the location in the last pay period of March 2000. The weighted average year 2000 voluntary turnover rate was 21.70 percent.

The survey provided detailed information

about several human resource management practices such as employer-provided training, internal labor markets, benefits, variable pay, participation-enhancing work designs, and employee voice. Rather than combine measures into these broad categories or bundles of practices, however, we chose to emphasize specific human resource management practices. Employer-provided training coverage was a function of the total number of employees who had received training, over the number of people employed at the workplace. The survey actually included two questions that addressed this practice. The first asked the respondent, "Please estimate the number of employees who received classroom training between April 1, 1998 and March 31, 1999." The second question asked the respondent, "Please estimate the number of employees who received on-the-job training between April 1, 1998 and March 31, 1999." In each case, the response was divided by the number of employees at the workplace and the final training measure was computed as the mean of these two ratios ($\alpha = .82$).

Internal labor markets exist when internal mobility opportunities are available within the organization. Thus, the survey asked how vacant positions are usually staffed. Respondents were instructed to check the most frequently used method: "From within the workplace," "From another workplace within the same legal company or business enterprise," or "From outside the company." To best capture the concept of internal labor markets, the first two response options were coded 1 and the third was coded 0. Three job categories were deemed most relevant to internal promotions, namely "managers," "professionals," and "clerical/administrative." Hiring from within is more meaningful in these three job categories because they are less likely to be entry-level positions. On the basis of the number of employees within each of these three job categories, we computed a ratio of the number of positions targeted by a policy of hiring from within the workplace. If, for example, the workplace included 10 managers, 20 professionals, and 70 clerical/administrative employees and promoting from within was the most frequently used method for professionals only, then we would have

a ratio of 20 % (20 professionals divided by the total number of employees within these three job categories in the workplace).

Compensation practices include relative pay, benefits and variable pay. First, the measure of relative pay was computed as the difference between workplace pay and the corresponding industry pay. Workplace pay was obtained by dividing total gross payroll at the workplace by the number of employees at the workplace. Industry pay was the average pay of all workplaces within each of the 14 industries. The difference between workplace and industry pay, or relative pay, indicates to what extent the pay level at each workplace is higher or lower than industry average pay. The measure of employee benefits was a function of both the availability of seven non-wage benefits and how they are funded. Second, the seven non-wage benefits listed in the questionnaire include a pension plan, life and/or disability insurance, supplemental medical, dental care, group registered retirement savings plan (RRSP), stock purchase or other savings plan, and supplements to employment insurance benefits (for example, for maternity or lay-off). A value of 0 was assigned when the benefit was not available or available but not funded by the employer, coded 1 if available and funded by both the employee and the employer, and coded 2 if available and fully funded by the employer. The scores were summed across the seven non-wage benefits to obtain an overall score. Third, the survey inquired about the presence of individual incentives (bonuses, piece-rates, commissions and stock options), productivity/quality gain-sharing and other group incentives, a profit-sharing plan, and merit- and skill-based pay. Definitions of "productivity gain-sharing," "profit-sharing plan," and "merit pay or skill-based pay" were provided in the questionnaire.² The coding of

²"Productivity gain-sharing" means benefits to employees for gains realized by increased productivity. Commonly, these benefits can be in the form of money payments in the primary industries. "Profit-sharing plan" means any plan by which employees receive a share of the profits from the workplace. "Merit pay or skill-based pay" means a reward or honor given for superior qualities, great abilities or expertise that comes from training, practice, and so on.

these variables reflected the absence (coded 0) or presence (coded 1) of each variable pay scheme within the workplace.

The five participation-enhancing work designs were the presence of an employee suggestion program, information sharing with employees, problem-solving teams, self-directed work groups, and flexible job design. The question was, "*For non-managerial employees, which of the following practices exist on a formal basis in your workplace?*" Definitions were provided³ and the presence of the practice was coded 1 (Yes) whereas the absence was coded 0 (No). The presence of a formal dispute resolution procedure was obtained with the following question: "*Does this workplace have a dispute, complaint or grievance system for employees?*" A score of 0 was assigned when no such system was in place or when only an informal procedure was available and 1 when a formal dispute resolution system was available.

A number of control variables were included in this study in order to reduce the likelihood of spurious associations. Workplace size was included because of its influence on human resource management practices and employee turnover rates (Huselid 1995; Shaw et al. 1998) and was measured by the natural logarithm of the number of employees. The presence of a separate human resources management unit staffed with more than one person in the workplace was also included as a control variable because of its influence on the adoption of human resource management practices and internal labor

³An employee suggestion program includes employee survey feedback. Information sharing with employees includes, for example, with respect to firm's performance, colleagues' wages, technological or organizational changes, and so on. This implies that employees have some feedback on policies. Problem-solving teams are teams whose responsibilities are limited to specific areas, such as quality or work flow (that is, they have a narrower range of responsibilities than those of self-directed work groups). Self-directed work groups are semi-autonomous work groups or mini-enterprise work groups that have a high level of responsibility for a wide range of decisions/issues. Flexible job design includes job rotation, job enrichment/redesign (broadened job definitions), job enrichment (increased skill variety or autonomy of work).

Table 1. Means, Standard Deviations, and Correlations^a

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. 2000 turnover	0.22	0.46																	
2. Training	0.37	0.38	.23																
3. Internal labor markets	0.21	0.34	-.05	.15															
4. Relative pay level	-2831	16060	-.04	.05	.01														
5. Benefits	3.38	2.79	-.12	.18	.16	.26													
6. Individual incentives	0.40	0.49	.04	.07	.01	.18	.21												
7. Gain sharing (group)	0.15	0.36	-.03	.10	.03	.12	.22	.29											
8. Profit-sharing	0.14	0.34	.01	.05	.06	.11	.24	.20	.22										
9. Merit & skill-based pay	0.31	0.46	-.03	.17	.03	.14	.18	.29	.32	.17									
10. Employee suggestion program	0.27	0.45	.07	.20	.10	.01	.10	.08	.05	.12	.04								
11. Information sharing	0.44	0.50	-.02	.25	.11	.07	.19	.01	.08	.18	.11	.39							
12. Problem-solving teams	0.23	0.42	-.00	.21	.14	.02	.15	.00	.08	.10	.08	.37	.40						
13. Self-directed work groups	0.09	0.29	-.05	.10	.14	.03	.14	.07	.11	.19	.12	.15	.29	.26					
14. Flexible job design	0.28	0.45	.00	.15	.09	.03	.02	.01	.09	.10	.12	.37	.42	.36	.27				
15. Formal dispute-resolution	0.24	0.43	-.12	.13	.12	.07	.28	.02	.09	.06	.03	.11	.17	.13	.16	.03			
16. Size (log of employment) ^b	45.70	173.32	-.02	.12	.16	.14	.28	.08	.02	.10	.10	.16	.18	.18	.13	-.01	.33		
17. Union density (log) ^c	14.16	120.93	-.10	.09	.11	.10	.22	-.10	-.03	-.03	-.02	.02	.08	.12	.04	-.06	.54	.48	
18. Human resource department	0.07	0.26	-.03	.11	.15	.16	.27	.08	.05	.07	.10	.06	.11	.10	.08	-.01	.24	.42	.31

^a For all correlations greater than .06, $p < .001$; for all correlations greater than .04, $p < .01$; for all correlations greater than .03, $p < .05$.

^{b,c} The descriptive statistics for these variables express their values before natural logarithms were computed. The correlation coefficients were obtained after natural logarithms were computed.

market structures (Pfeffer and Cohen 1984). In previous studies, the presence of a union was shown to influence employee turnover (see Freeman and Medoff 1984) and human resource management practices such as pay (see Fang and Verma 2002) and benefits (see Akyeamong 2002). We included union density as a control variable in this study. It was computed as the total number of employees covered by a collective agreement in the workplace over total employment in the workplace. The natural logarithm of union density was used in the analyses. Responding workplaces were assigned 1 of 14 industry stratum codes and dummy variables were created for each industry. Finally, region was included to control for market conditions that may influence ease of movement. Dummy variables were created for each of the following regions: Atlantic, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia.

Analysis and Weights

The aim of our analyses was to capture the influence of 1999 human resource management practices on year 2000 voluntary turnover rates. We used a tobit procedure because turnover rates are left-censored. A censored variable includes a large fraction of observations at the minimum or maximum. Voluntary turnover rates have a large fraction of observations at the 0 minimum. In our sample, 33.7 percent of workplaces had 0 turnover; because of this, OLS estimates of the mean and variance of the turnover variable would be biased. tobit models correct for biasing coefficient estimates of the predictors due to the truncation of the dependent variable. The tobit technique uses all observations, both those at the limit and those above it, to estimate the regression line. This technique is preferable, in general, to techniques that estimate a line only with the observations above the limit (McDonald and Moffitt 1980) and was applied in recent organizational-level analyses of employee turnover rates (see Batt 2002; Batt et al. 2002).

The sample of workplaces is based on a stratified sample design that incorporates information on employment size, industry,

and region. For the sample data to correctly represent the population from which the stratified sample of workplaces was drawn, proportional weights were assigned in the analyses. Thus, notwithstanding the above exceptions, the results of this study generalize to all Canadian workplaces of more than 10 employees in the targeted industries. Weighted data were used not only to account for the sampling design, but also because Statistics Canada will only release weighted outputs as a data confidentiality precaution. The weights were calculated using the inverse of the probability of selection of each workplace into the stratified sample, which is a function of industry, region, and size. Tobit estimation with *Stata*, however, does not allow the use of the proportional weights. Thus, we used *intreg*, a generalization of tobit, that allows proportional weights and robust variance estimates (*Stata* 2003). With the use of proportional weights in the *intreg* command and the inclusion of employment size, industry, and region as control variables in the regression models, the robust standard error estimates account for most of the complexities of the design used for the WES surveys.

Results

Table 1 presents the means, standard deviations, and correlations for all variables except the 14 dummy-coded industry variables and the seven dummy-coded region variables (full correlation results available upon request). The descriptive statistics demonstrate that some human resource practices such as individual incentive systems and information sharing were more frequent than others such as profit-sharing and self-directed work groups. There are generally weak correlations among the human resource practices (mean $r = 0.14$), suggesting that the results are not likely to suffer from multicollinearity. The correlations further show that ten of the fourteen human resource management practices are significantly associated with lower voluntary turnover rates the following year. Three practices—training, individual incentives, and an employee suggestion program—are significantly associated with higher voluntary turnover rates the following year. Amongst

Table 2. Voluntary Turnover as a Function of HR Practices^a

Variable	Model 1		Model 2		Model 3	
	z	p	z	p	z	p
Control variables						
Size (log of employment)	2.68	0.007	2.74	0.006	2.60	0.009
Union density (log)	-3.52	0.000	-1.70	0.089	-1.43	0.152
Human resource department	0.43	0.670	0.67	0.503	0.80	0.424
Industry ^b	—	—	—	—	—	—
Region ^b	—	—	—	—	—	—
HR practices						
Training			2.58	0.010	2.70	0.007
Internal labor markets			-2.14	0.032	-2.29	0.022
Relative pay level			-1.27	0.205	-1.42	0.157
Benefits			-1.75	0.079	-1.87	0.062
Variable pay			0.02	0.986		
Individual incentives					1.55	0.122
Gain sharing (group)					-1.26	0.207
Profit-sharing					1.49	0.137
Merit or skill-based pay					-1.71	0.088
Participation			-1.12	0.263		
Employee suggestion program					1.15	0.252
Information sharing					-1.66	0.096
Problem-solving teams					0.32	0.752
Self-directed work groups					-1.04	0.297
Flexible job design					-0.75	0.450
Formal dispute-resolution			-2.05	0.040	-2.10	0.036
Sample	4160		4160		4160	
Wald χ^2	50.76		66.23		71.75	
Probability χ^2		0.001		0.000		0.000

^a Unstandardized tobit-intreg estimates are reported.

^b Not included but available upon request.

the control variables, union density and the presence of a human resource department are associated with lower turnover. Regarding industry and region, we found a pattern of significant results that is consistent with other sources.

Table 2 presents the results from the multivariate analysis in which the year 2000 turnover rates are regressed on the control variables and the human resource management practices.

The results reveal associations between human resource practices and voluntary turnover rates while controlling for workplace size, presence of a separate human resource department, union density, industry, and region. What should be noted first is the positive association between workplace size and turnover as well as the negative association between union density and turnover in Model 1. Our analysis of data from 4,160

workplaces in a wide array of industries found that employer-provided training is associated with higher turnover whereas internal labor markets, or a greater emphasis on staffing from within, is associated with lower turnover. The presence of a formal dispute resolution procedure is related to lower turnover rates the following year. As such, hypotheses 1, 2, and 7 received support in regression models that controlled for workplace size, the presence of a human resource department, union density, industry, region, and other human resource management practices.

Using the procedure outlined by Batt (2002) to estimate the effect sizes of coefficients in tobit models,⁴ a one-standard-devi-

⁴Indeed, according to the procedure described by Batt (2002: 592) in a similar study, "to estimate the effect sizes of coefficients in tobit models, the coefficients must be decomposed into changes in the probability

ation increase in employer-provided training is associated with a voluntary turnover rate that is 1.38 (0.51 x 2.70) percentage points higher; a one-standard-deviation increase in hiring from within is associated with a turnover rate that is 1.17 percentage points lower; and a one-standard-deviation increase in the presence of a formal dispute resolution procedure is associated with a turnover rate that is 1.07 (0.51 x - 2.10) percentage points lower.

Associations between other human resource management practices and turnover are either marginally significant ($p < .10$) or not significant at all. Relative pay is not significantly associated with turnover (Hypothesis 3). The negative association between more generous employee benefits and turnover is only marginally significant (Hypothesis 4). Variable pay, as measured by a composite variable (Model 2), is not significantly related to turnover (Hypothesis 5). The negative relationship between merit and skill-based pay and turnover (Model 3), however, is marginally significant. Participation-enhancing work designs, as measured by a composite variable (Model 2), are not significantly associated with turnover (Hypothesis 6). Of the five participation-enhancing work designs (Model 3), only the negative association between information sharing and turnover was significant, but marginally.

In sum, although the correlations provide almost full support for all of the hypotheses, the regression models that controlled for third factors (such as workplace size, the presence of a human resource department, union density, industry, and region) provided full support for hypotheses 1, 2, and 7, and little or no support for the other hypotheses. Nonetheless, it is quite clear from these analyses that some specific human resource management practices are significantly associated with voluntary turnover rates.

Discussion

Drawing from an extensive nationally representative sample of workplaces, our aim has been to develop a comprehensive view of how various human resource management practices influence voluntary turnover rates. While controlling for critical contextual variables, our findings provide support for predictions derived from the March and Simon (1958) framework. A significant positive association between employer-provided training coverage and voluntary turnover rates suggests that greater investments in human capital may provide greater ease of movement, resulting in employee departures. Conversely, significant negative associations between internal labor markets, employee benefits, dispute-resolution procedures, merit- and skill-based pay, information sharing and lower turnover rates are consistent with desirability of movement predictions.

In the context of specific human resource management practices, our findings clearly indicate that employer-provided training may actually increase voluntary turnover rates (Batt et al. 2002; Lincoln and Kalleberg 1996; Shaw et al. 1998). Using a measure that included estimates of the number of employees involved in on-the-job and classroom training, the relationships we observed suggest that employer-provided training is associated with higher turnover the year following the training. Thus, the ease of movement explanation (March and Simon 1958) seems more applicable than the organizational commitment argument (Lincoln and Kalleberg 1996) to account for the influence of employer-provided training on voluntary turnover. However, in Canada, as in the United States, employee training may consist more of portable technical skills than of socialization in a particular corporate culture, such as in Japanese firms (Lincoln and Kalleberg 1996), and our study did not distinguish initial training from ongoing training. Our findings, therefore, may not generalize to organizations that make training an integral part of their socialization process. Thus, the question remains: All things being equal, why invest in human capital if that human capital can be poached by competitors? (see Forrier

of observing an outcome above the left limit, the latter of which provides an interpretation equivalent to OLS estimates (McDonald and Moffitt 1980). In this case, the effect sizes of the tobit coefficients are equal to 0.51 of the OLS coefficients."

and Sels 2003). The alternatives that involve reductions in training investments or hiring talent from competitors may have worse consequences still. For instance, the workplace may stagnate or experience retaliation from competitors (Gardner 2005). Clearly, more research is needed to understand the specific association between employer-provided training and turnover.

In both theory and practice, there exists a strong positive association between employer-provided training and voluntary turnover rates, suggesting that it may be appropriate to think about the turnover-reducing functions of human resource management practices in terms of the March and Simon (1958) framework. In practice, this implies that more attention must be paid to how different human resource management practices may reduce turnover. Investing in some practices, such as formal dispute-resolution procedures, may reduce turnover and thereby cancel out the potential losses associated with significant investments in training. Knowing the specific effects of such practices may guide organizations that cannot otherwise dedicate sufficient resources to implement comprehensive systems of human resource management practices.

Our study found strong evidence that internal labor markets are associated with lower turnover rates in a way that is consistent with internal labor market theory (Doeringer and Piore 1971). Such evidence is also consistent with reports that high performance work systems that include an emphasis on internal promotions reduce turnover rates (Guthrie 2000, 2001; Huselid 1995). It is especially consistent with the finding that more internal mobility opportunities are associated with lower quit rates (Batt et al. 2002). Meta-analyses of research in organizational behavior also support internal labor market predictions (see Cotton and Tuttle 1986; Hom and Griffeth 1995). The implications for practice are straightforward: Organizations wishing to control or reduce voluntary turnover would be well advised to hire from within and offer vertical (promotions) and lateral (transfers) opportunities. Staffing policies that emphasize hiring from within provide participants with the opportunity to

move into the firm's more desirable jobs and may help build a strong corporate culture that is conducive to employee retention.

It is generally expected that higher wages reduce the probability that employees accept job offers from other firms. Although a negative correlation between relative pay and turnover supports this view, the association was not significant in the regressions that included control variables. Thus, our results provide little support for efficiency wage theory, which predicts that more generous wages make employees unwilling to risk obtaining less money with a different employer (Katz 1986; Stiglitz 1984). The efficiency wage theory prediction of a positive relationship between relative wage and productivity may not apply as well to organizational-level models of voluntary turnover. The prediction that more generous employee benefits reduce turnover rates, however, was marginally supported by our data ($p < .10$). Consequently, with three studies showing negative associations between benefits and turnover (Bennett, Blum, Long, and Roman 1993; Fairris 2004; Shaw et al. 1998) and three studies showing no significant associations between those variables (Delery et al. 2000; Park et al. 1994; Powell et al. 1994), our findings marginally support the turnover-reducing effect. More generous employee benefits packages, those that include more benefits financed more by the employer than by the employee, appear to be effective in bonding employees with their organization.

The data on variable pay suggests that, other than the negative and marginally significant ($p < .10$) association between merit and skill-based pay and voluntary turnover rates, performance-based pay plans generally had no significant effect on turnover. Taken together, these findings indicate that other forces are at work shaping the associations between variable pay and turnover. As Batt et al. (2002) suggested, more attention should be given to the financial uncertainty involved in some variable pay plans. Moreover, the distinction between functional and dysfunctional turnover may need to be made in future research, for variable pay may foster more departures among poor performers, an effect that we were unable to verify in this study.

Apparently, there is more at work here than mere conventional wisdom would suggest, pointing to the need to investigate financial insecurity and the functional-dysfunctional aspects of voluntary turnover.

Among the participation-enhancing work designs, information sharing was found to be marginally ($p < .10$) associated with lower turnover rates the following year. Such a practice is likely to reflect a work environment that allows participants to express their concerns rather than to want to exit the workplace. Other practices included in the participation-enhancing work designs, however, that apparently do not allow employees to voice their concerns to the same extent—employee suggestion programs, problem-solving teams, self-directed work groups, and flexible job design—are more task-focused than information sharing. Overall, the results did not reveal a clear pattern justifying meaningful distinctions between consultative and substantive participation or online and offline participation.

Like information sharing, formal dispute-resolution procedures also allow employees to voice their dissatisfaction in the workplace, and our findings clearly show that formal dispute-resolution procedures are associated with lower turnover rates the following year. This finding is consistent with both the exit-voice framework (Hirschman 1970) and the March and Simon (1958) framework. The presence of a formal procedure allows participants to voice their concerns and thereby reduce their dissatisfaction and desirability of movement rather than to quit. Interestingly, although Delery et al. (2000) found that the presence of a formal grievance procedure was not significantly associated with turnover rates in regression equations that controlled for unionization, our finding is robust even when union density is included as a control variable. As such, the presence of such a workplace procedure offers voice advantages beyond those offered by union representation.

These results need to be interpreted in light of the limitations of this study. Its design predicted associations between human resource management practices and turnover rates. According to meta-analytic evidence,

the best predictors of turnover are proximal precursors in the withdrawal process, such as job satisfaction and intentions to leave (Griffeth, Hom, and Gaertner 2000) whereas human resource management practices are more distal predictors of turnover. They may, as such, influence turnover indirectly through attitudes and perceptions of organizational justice or other more proximal constructs. For instance, individual incentives may reduce employee turnover to the extent that they improve job satisfaction. Therefore, to better understand the organizational determinants of turnover, future researchers might investigate multi-level associations between human resource management practices and more proximal predictors of turnover.

The measurement of human resource management practices could also be improved in future investigations. The measurement of training, for instance, might distinguish between initial and ongoing training. With regards to the dependent variable, it would be of great value to find a measurement approach that could distinguish functional from dysfunctional voluntary turnover. Although much theorizing draws from such a distinction, actual measures of functional or dysfunctional turnover at the organizational level of analysis are lacking.

The study is also limited in that causality cannot be inferred on the basis of a two-year panel design. For instance, our results suggest that training increases turnover rates, but high turnover rates may also increase the need for initial training of the employees hired to replace those who have left. Although a study design that assesses training and then turnover rates the following year would seem to rule out this possibility, the occurrence of employee turnover may be quite stable across years in the same workplace and high turnover this year may indicate high turnover the previous year within the same workplace. Thus, the significant positive relationship between 1999 training and year 2000 turnover rates may in fact reflect the relationship between 1999 training and 1999 or even 1998 turnover rates. Therefore, to provide an additional causality check, we conducted another regression analysis with 1999 training and year 2000 turnover rates

with 1999 turnover rates included as a control variable. The results again provided a positive significant relationship between 1999 training and year 2000 turnover rates (coefficient = 2.20; $p = 0.028$). This study, however, did not test the possible influence of interactions between training and other human resource management practices on turnover rates. Future research, we suggest, should probe the moderating influence of other human resource management practices or “self-reinforcing strategies” on the relationship between training and turnover (Dearden, Machin, Reed, and Wilkinson 1997).

Future research should also consider industry dynamics. Our study found, for example, that industry was a significant control variable. It was also a necessary control variable given our multi-industry sample. It could be argued, however, considering the centrality of industry in competitive analysis (Porter 1980), that intra-industry dynamics are just as meaningful. The policies and practices that are associated with turnover in the retail sector, for instance, might be quite different from those that have an impact in manufacturing. An industry-by-industry analysis would reveal more intra-industry specificities.

This study provides a detailed theory-based assessment of the influence of human

resource management practices on voluntary turnover rates. Our investigation tested the associations between specific of human resource management practices and voluntary turnover at the organizational-level of analysis and found a pattern of relationships that support the March and Simon (1958) framework. For people involved in human resource management decisions, our findings bring to the forefront the element of risk involved in human resource investments (Greer 2000). This study also brings to light what may be the most significant predictors of voluntary turnover rates among a host of human resource management practices. Specifically, our findings suggest that organizations need to focus upon developing policies and instituting practices that allow employees to voice their concerns and that provide opportunities for advancement within the organization. In addition, business leaders need to consider how they invest in employee training because the often-mentioned fear of losing those you invest in may not be that unreasonable. In sum, the findings we obtained from a large database of workplaces suggest a complex pattern of relationships between human resource management practices and voluntary turnover rates, one that deserves further empirical scrutiny.

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