

PAY SYSTEM CHARACTERISTICS AND QUIT PATTERNS OF GOOD, AVERAGE, AND POOR PERFORMERS

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The relationship between pay dispersion and the quits patterns of good, average, and poor performers was explored among a sample of motor carriers. Results showed that under high pay system communication, pay dispersion was negatively related to good performer quits when performance-based pay increases were emphasized, and positively related when they were not. The results for seniority-based pay increases were different. Under high pay system communication, pay dispersion was negatively related to average performer quits when seniority-based pay increases were emphasized, and the relationship was attenuated when they were not. Contrary to expectation, pay dispersion was not consistently related to quit patterns when pay system communication was low. Predictions regarding quit patterns of poor performers were not supported. Implications of the research are addressed and future research directions identified.

There is general agreement in the literature that pay dispersion among key employees (horizontal or within-group pay dispersion) relates to turnover levels in organizations. This assumption goes back at least a half-century (e.g., Livernash, 1957), but theory and empirical findings to date are ambiguous about the specific nature of the relationship. Instead, existing theory and empirical results continue to offer contradictory or competing insights about the effects of pay dispersion on organizational outcomes, leading some to refer to the situation as a theoretical dilemma

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(Pfeffer & Langton, 1993). It is not surprising that, after an exhaustive review, Gerhart and Rynes (2003) argued that theoretical and empirical progress on the relationship between pay dispersion and turnover levels was a pressing need. In particular, they suggested that future researchers focus on the sorting effects of pay dispersion or how pay dispersion relates to differential retention patterns among good, average, and poor performers.

We do so here. First, we review the literature concerning the relationship between pay dispersion and turnover levels in organizations. Second, we argue that the relationship between pay dispersion and turnover levels among good, average, and poor performers is complex and contingent upon the basis-for-pay differences—performance or seniority—in the organization. Third, we incorporate a critical contextual factor—pay system communication—into our theoretical and empirical analysis of pay dispersion.

Our theory and empirical tests have the following boundary conditions. This is an organizational-level study of quit patterns *across* organizations. Our study focuses on horizontal or within-group dispersion, to the exclusion of across-group or vertical pay dispersion. We focus only on voluntary turnover or quits, to the exclusion of involuntary turnover, because voluntary and involuntary turnover have different antecedents and consequences (Shaw, Delery, Jenkins, & Gupta, 1998; Shaw, Gupta, & Delery, 2005). In developing our predictions, we focus on two bases for pay differences in organizations—performance- and seniority-based pay—that are well-suited to our theory development, although some organizations may base pay differences on skill, competencies, or other factors (Gerhart & Rynes, 2003). We conceptualize the use of performance-based pay as an organization's emphasis on pay for individual performance, regardless of which specific type of incentive practice is used (e.g., merit pay, lump-sum bonuses, etc.). A stronger emphasis on pay-for-performance increases means that a larger percentage of employees' pay is the result of performance. A weaker emphasis on performance-based pay increases means that only a small percentage (or none in an extreme case) of employees' annual pay results from performance. Similarly, a stronger emphasis on seniority-based pay means that a higher percentage of employees' pay is the result of seniority, regardless of the specifics related to an organization's plan.

Background and Theory

The sparse empirical literature on the relationship between pay dispersion and turnover indicates that the nature of this relationship is in dispute. Using tournament theory and instability arguments, Bloom and Michel (2002) predicted and found consistent positive relationships between the

degree of dispersion and individual turnover decisions and organizational turnover rates (operationalized as average tenure) among two large managerial samples. Highlighting the theoretical ambiguity, Powell, Montgomery, and Cosgrove (1994) discussed several reasons for expecting positive and negative relationships between the spread of pay and quits. First, employees could gather information enabling them to make social comparisons within their job class and causing them to become resentful if they perceive their pay as substandard. Second, the use of performance-based bonuses or raises could induce lower-performing employees to seek employment elsewhere. Third, employees could view pay dispersion through an internal career-ladder lens, inducing them to stay with the organization and reducing overall quit rates. The results of the Powell et al. (1994) study of teacher quit rates in early childhood education centers were inconclusive—pay dispersion did not significantly relate to teacher quit rates, although the direction was positive.

Perhaps the most direct evidence concerning the relationship between compensation structures and differential quit patterns by performance level can be found in the study by Lazear (1999). As an auto glass installation chain transitioned from a fixed-rate hourly pay to a piece-rate plan, Lazear (1999) tracked productivity and quit-rate changes over a 1-year period among its facilities. The study did not assess pay dispersion directly, but presumably a piece-rate plan would create more dispersion than would hourly pay. The piece-rate plan was associated with productivity gains; it was also associated with an interesting pattern of quits—among high output individuals, quit rates fell 16% in the new plan, but among “normal output” employees, quit rates rose by 15%.

The inconsistency across these studies may be attributable to the fact that they were conducted among different samples. Alternatively, inconsistencies may be attributable to implicit differences in the predictors and criteria used. The prediction of a positive dispersion/turnover relationship is premised on the assumption that dispersion is based on *performance* grounds (e.g., see Bloom & Michel, 2002); the expectation of a negative relationship is premised on the assumption that dispersion is based on *seniority* (e.g., Powell et al., 1994). In terms of criteria, tournament theory implies that winners (i.e., *better* performers) are retained and losers (i.e., *poorer* performers) leave, a pattern that is consistent with Lazear's (1999) results. In a seniority-based system, by contrast, employee retention is a function of very loosely defined performance (minimal levels to ensure retention). That is, retention of, at best, *average* performers is predicted. To understand the effects of pay dispersion comprehensively, it is imperative that the basis for dispersion (seniority, performance, etc.) as well as the target criteria (quit patterns among good, average, and poor performers) be clarified.

Pay Dispersion, Performance-Based Pay Increases, and Quit Patterns

Tournaments are an often-used analogy for explaining the relationship of pay dispersion and quit patterns. Tournament theory was initially developed to model competition for higher pay and promotions among executives (e.g., Rosen, 1986), but the general analogy has been applied in various contexts such as studies of lower-level management (e.g., Bloom & Michel, 2002) and short-term sporting events like car racing and professional golf (e.g., Becker & Huselid, 1992; Ehrenberg & Bognanno, 1990). According to the tournament analogy, organizations use pay differences based on performance as a tool to motivate workers (Lazear & Rosen, 1981). In addition to incentive effects that may increase overall performance levels, the paths of winners and losers in a performance-based pay system diverge substantially. Only a few employees perform well enough to win the prize of higher pay (Lazear, 1995, 1999). The winners are expected to stay in the organization to compete for additional gains. If they stay in the organization, losers must accept lower pay expectations and unfavorable relative comparisons, but they may opt to terminate their membership instead (e.g., Lawler, 1971). This analogy is useful in within-group or horizontal pay dispersion situations because in most performance-based pay systems, employees compete with one another to obtain scarce pay increases or incentives (e.g., a 3% pool in a merit-based system or other incentives based on relative performance). Given that pay raises come from a finite pool, this becomes a zero-sum game—a higher raise for one employee means a lower raise for another; a promotion for one means no promotion for another.

Predicting overall quit patterns from pay dispersion masks a more precise prediction that can be derived from the tournament analogy. In particular, this framework suggests that pay dispersion and quits will be negatively related when performance-based pay increases are emphasized, but only among “winners.” Pay dispersion and quits should be positively related among other performance groups (poor and average performers) under these conditions. The tournament analogy implies that the *overall* quit levels may be higher when pay is highly dispersed. High dispersion coupled with an emphasis on performance-based pay increases should lead to high quit levels among poor and average performers, although quit levels among good performers should be low. The negative relationship between pay dispersion and average tenure (a variable that is inversely related to turnover rates) in a managerial sample reported by Bloom and Michel (2002) probably reflects this trend. The individual-level findings of Trevor, Gerhart, and Boudreau (1997) support this idea as well. In a study of job performance and turnover, the authors found that low salary growth predicted extremely high turnover among good performers. In contrast, a

low emphasis on performance-contingent pay increases is a poor match for good performers (Leventhal, Karusa, & Fry, 1980), partly because it conveys a lower sense of control over outcomes (Shaw, Duffy, & Stark, 2001; Shaw, Gupta, & Delery, 2002). Because of this lack of control and also because their good performance is less likely to be rewarded, good performer quit levels may be higher when pay is dispersed but performance-based pay increases are not emphasized. Thus, this approach predicts a negative relationship between pay dispersion and good performer quit levels when performance-based pay increases are emphasized and a positive relationship when they are not.

We expect that pay dispersion will relate positively to average and poor performer quits when performance-based pay increases are emphasized because, in the language of tournament theory, average and poor performers are more likely to be losers in the system. Lazear's (1999) finding that quits were higher among those with average production output when a piece-rate incentive system was used is consistent with this argument. This relationship should be attenuated when pay is not performance based because average and poor performers are less likely to receive inferior pay and truncated opportunities as a result of their performance (Lambert, Larcker, & Weigelt, 1993). In short, we expect different relationships between pay dispersion and quit patterns for three groups (good, average, and poor performers) as a function of the emphasis on performance-based pay increases. Pay dispersion should be negatively related to good performer quits when performance-based pay increases are emphasized and positively related when they are not. In contrast, pay dispersion should be positively related to average and poor performer quit levels when performance-based pay increases are emphasized, but the positive relationship should be attenuated when they are not emphasized.

Pay Dispersion, Seniority-Based Pay Increases, and Quit Patterns

Pfeffer and Langton (1993) encouraged studies of pay dispersion not only under performance-based pay systems but also in the context of other legitimate pay allocation schemes such as seniority systems. Theory and empirical evidence generally suggest that the use of seniority pay policies is not effective in fostering a very high performing workforce because organizational longevity, not performance, constitutes the reward contingency. Freeman and Medoff (1984) argue that the costs of seniority-based pay increases include potential negative reactions among good performers, but the benefits include protection of more vulnerable workers, including average and poor performers.

When seniority-based pay increases are emphasized, performance in its most encompassing sense (i.e., performance that is minimally adequate

for continued retention) is sufficient to ensure increases in pay (Powell et al., 1994). The benefits of seniority-based pay increases are realized in terms of loyalty, retention, and stability (Block, 1978; Medoff & Abraham, 1980) rather than the self-selection of high-performance workers. Research on unions and organizational pay distributions (e.g., see Freeman, 1982) suggests that seniority-based pay systems have less dispersion overall than performance-based pay systems, but meaningful seniority differentials should encourage average performers to maintain their membership in the organization. The steeper the seniority earnings profile, the stronger the enticement for longevity among average performers (Powell et al., 1994; Shaw et al., 2002), whereas highly dispersed pay structures that are not contingent on seniority could create workforce instability among average performers. Seniority pay provisions may improve instrumentality judgments (or performance to reward perceptions) among average performers because their level of performance will ultimately be sufficient to ensure higher pay. High levels of pay dispersion in the absence of a seniority-based system will likely weaken instrumentality perceptions, whereas low levels of pay dispersion in a seniority-based system could, all else equal, increase the attractiveness of other job opportunities in the marketplace (e.g., seniority-based systems with greater dispersion in other organizations).

This internal pay ladder approach applies most directly to the interaction of seniority-based pay increases and pay dispersion in predicting quit patterns of average performers but is also applicable to poor performer quits. In order to receive a pay raise under a seniority-based system, performance only must meet a minimum standard. Some poor performers may not be able to meet this standard and may be discharged, but most employees can achieve a level of performance that avoids firing (e.g., see the small discharge rates reported in organizational-level research [Powell et al., 1994; Shaw et al., 1998]). Thus, pay dispersion and poor performer quits should be negatively related when seniority-based pay increases are emphasized. When seniority-based pay increases are not emphasized, the relationship of pay dispersion and poor performer quits may be attenuated because fewer alternative job opportunities exist for them in the marketplace (e.g., Trevor et al., 1997; Trevor, 2001).

As noted by Freeman and Medoff (1984), the costs of seniority-based pay systems may come at the expense of high performers in organizations because good performers probably react negatively to an emphasis on seniority-based pay increases. This implies that seniority pay and good performer quits are positively related across all levels of pay dispersion. But highly dispersed seniority-based systems may be powerful disincentives for good performers and facilitate their departure to a greater extent than less dispersed systems. Leventhal (1979) argues that reactions to reward allocation decisions are guided by self-interest and that

negative reactions are stronger when conditions fail to maximize self-interest. Higher pay dispersion in a seniority system sends a clearer signal to good performers that better alternative opportunities exist in other organizations.

The Role of Pay System Communication

The arguments outlined above are premised on the assumption that employees have accurate information about the extent of pay dispersion and the contingencies for this dispersion. For the predictions to hold, organizations must communicate accurate information to employees. Many theoretical perspectives highlight the importance of pay system communication. Individual motivation theories presuppose that accurate information is critical for valid equity judgments, for accurate effort to performance expectancies, and for performance to reward instrumentalities, and so on. At the organizational level, agency theory posits that high communication facilitates the alignment of divergent interests (Hart, 1983), and labor relations research suggests that low levels of pay communication may be linked to union-organizing attempts (Freeman & Kleiner, 1990). We expect the sorting mechanisms of pay dispersion and bases for pay differences outlined above to hold only under conditions of high pay system communication. Pfeffer and Davis-Blake (1992) offer the most convincing evidence supporting this argument—the negative effects of pay dispersion on turnover behavior were less apparent in smaller groups. The authors reasoned that employees in smaller groups were better able to understand the rationale for the dispersion (the criterion for pay increases, which was merit in their study) and therefore were less likely to quit.

Regardless of an organization's emphasis on performance- or seniority-based pay increases, low levels of pay system communication weaken employees' perceptions that within-group pay differences are the result of legitimate factors. Gupta (1980) offers four arguments that can be applied to the situation of low pay system communication. First, she argues that such situations create uncertainty among the workforce and reflect greater inconsistency—factors that are viewed as key aspects of unjust procedures (Lind & Van den Bos, 2002). Second, low pay system communication may foster the belief that the pay systems are weak, although research demonstrates that the perception of strong procedures are associated with favorable reactions (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Third, by increasing ambiguity and reducing role clarity, low pay system communication may leave "the employee unable to alter behavior to meet the criterion adequately" (Gupta, 1980, p. 816). Fourth, because individuals are interested in maximizing returns, low pay system communication lowers the possibility that individuals will believe that such returns are possible.

To summarize, we expect that the predicted turnover patterns from combinations of pay dispersion and bases for pay differences (performance and seniority) will hold only when pay system communication is high. When pay system communication is low, we expect that pay dispersion will be positively related to all three types of turnover because distrust, uncertainty, and ambiguity in the workforce should increase at higher pay dispersion levels. Thus:

Hypothesis 1a: When pay system communication is high, performance-based pay increases will moderate the relationship between pay dispersion and good performer quits such that the relationship will be negative when performance-based pay increases are emphasized and positive when they are not. Pay dispersion will be positively related to good performer quits across all levels of performance-based pay when pay system communication is low.

Hypothesis 1b: When pay system communication is high, performance-based pay increases will moderate the relationship between pay dispersion and average performer quits such that the relationship will be positive when performance-based pay increases are emphasized, and the positive relationship will be attenuated when performance-based pay increases are not emphasized. Pay dispersion will be positively related to average performer quits across all levels of performance-based pay when pay system communication is low.

Hypothesis 1c: When pay system communication is high, performance-based pay will moderate the relationship between pay dispersion and poor performer quits such that the relationship will be positive when performance-based pay increases are emphasized and the positive relationship will be attenuated when performance-based pay increases are not emphasized. Pay dispersion will be positively related to poor performer quits across all levels of performance-based pay when pay system communication is low.

Hypothesis 2a: When pay system communication is high, seniority-based pay increases will moderate the relationship between pay dispersion and good performer quits such that the relationship will be positive when seniority-based pay increases are emphasized and the positive

relationship will be attenuated when seniority-based pay increases are not emphasized. Pay dispersion will be positively related to good performer quits across all levels of seniority-based pay when pay system communication is low.

Hypothesis 2b: When pay system communication is high, seniority-based pay increases will moderate the relationship between pay dispersion and average performer quits such that the relationship will be negative when seniority-based pay increases are emphasized and positive when they are not. Pay dispersion will be positively related to average performer quits across all levels of seniority-based pay when pay system communication is low.

Hypothesis 2c: When pay system communication is high, seniority-based pay increases will moderate the relationship between pay dispersion and poor performer quits such that the relationship will be negative when seniority-based pay increases are emphasized and the negative relationship will be attenuated when seniority-based pay increases are not emphasized. Pay dispersion will be positively related to poor performer quits across all levels of seniority-based pay when pay system communication is low.

Method

Sample

This study is conducted in the trucking or motor carrier industry and focuses on a core job in the industry, namely, truck drivers. The setting provides an interesting opportunity to examine the impact of pay practices and context on voluntary turnover quits. Voluntary turnover rates among drivers are high across the industry with average quit rates estimated from 30% to 70% depending on industry segment (e.g., LeMay, Taylor, & Turner, 1993; Shaw et al., 1998). Interestingly, research also indicates that driving is a career for nearly all drivers, and thus, the motive for nearly all quit decisions is that the next driving job will be better (Belman, Monaco, & Brooks, 1998). The setting is also amenable to the study of horizontal pay dispersion. Trucking companies are notoriously flat hierarchically; drivers comprise the vast majority of total employees and there is virtually no promotion ladder. Drivers, therefore, compete with one another for funds available to drivers but typically not to be promoted out of driving jobs (Ouellett, 1994). This situation highlights the importance of work

practices in general, and compensation systems in particular, because few drivers quit to change careers but do so to seek better human resource management (HRM) conditions elsewhere.

The sample for this study was drawn from the 2000 version of the *TTS Blue Book of Trucking Companies (Blue Book)*, which contains balance sheet, income statement, and other operating statistics for motor carriers during the 1999 calendar year. All Class I (annual gross revenue of \$10 million or more) and Class II (gross revenue of \$3 to \$10 million) motor carrier organizations were eligible for inclusion in the study, although several companies were eliminated because they had gone out of business or because another company bought them after the publication of the database. This process resulted in a list of 1,076 organizations. Thirty-five more organizations were eliminated because they used owner-operators exclusively. In other words, they employed no company drivers. The remaining 1,041 companies were eligible for inclusion.

Following the sample selection, a series of contacts was made with the organization and ultimately with the individual identified as the top HRM official. After an encouraging letter and phone call, a 16-page questionnaire was mailed. A month to 6 weeks following the initial mailing, a second questionnaire with an encouraging letter was sent to all potential respondents who had yet to respond. Completed questionnaires were returned by respondents from 380 organizations, an initial response rate of 37% (380/1,041). One year following the administration of the initial questionnaire, informants from the 380 responding organizations were mailed a short follow-up questionnaire. In all, 263 follow-up questionnaires were returned. Thus, the overall response rate for the study is 25% (263/1,041) with a Time 2 participation rate of 69% (263/380). The independent variables used in the study were obtained from the Time 1 questionnaire and the dependent variables (quits) were obtained from the Time 2 (1-year lag) questionnaire. Missing data on study variables reduced the analysis sample to 226.

Measures—Good, Average, and Poor Performer Quits (Time 2)

Quits are typically reported by key informants in organizations, in particular by the individual reputed to be the most knowledgeable about these issues, that is, the top HRM official (Alexander, Bloom, & Nuchols, 1994; Huselid, 1995; Shaw et al., 1998). We followed the same approach. These variables were operationalized as the number of good, average, and poor performers who quit in the past year. The informant was asked first how many total quits there were in the past year, and this was followed by the question, "Of the drivers who quit, how many were poor, average, and good performers?" In the cover letter that accompanied the questionnaire, informants were prompted to make judgments about performance levels

of drivers with respect to the organization's performance appraisal system. The issue of driver voluntary turnover by performance levels is quite salient in the trucking industry. An absolute standard of performance was not set because our field research in the industry suggested that there was considerable variation across organizations in terms of how performance was defined. What constitutes good performance in one organization (e.g., few customer complaints and high on-time delivery percentage) is different from factors that are considered important in another organization (e.g., high overall engine performance and few inspection violations). Although monitoring of driver performance remains a costly and challenging task (drivers are often on the road for weeks at a time), Ouellett (1994) notes that relative performance differentials are apparent to company management (e.g., in terms of tractor performance, mechanical diagnosis and adjustment, violations, and accidents and other factors).

Measures—Independent Variables (Time 1)

Pay dispersion. This variable was measured using the coefficient of variation, a commonly used measure of pay inequality in applied psychology (e.g., Trevor & Wazeter, 2006). Coefficient of variation is defined as the standard deviation divided by the mean. Because obtaining a full pay distribution from each organization was not possible, we followed Shaw et al. (2002) and estimated pay dispersion using component estimates provided by the key informant. Respondents reported the lowest annual pay, the average annual pay, and the highest annual pay for company drivers in the organization. Respondents also reported the approximate percent of drivers earning each of these three rates. These components were used to estimate the components of the coefficient of variation (the standard deviation and the mean).

Basis-for-pay differences. We operationalized organizational emphasis on performance- and seniority-based pay increases using measures created for this study. Informants reported the percentage of driver's annual pay that was a result of seniority, performance, experience, and "other" factors. The questions were presented so that the four pay allocation bases totaled 100%. The percent reported for seniority and performance forms the measures of seniority- and performance-based pay increases, respectively.

We conducted several checks to assess the validity and reliability of these operationalizations. First, included in the follow-up questionnaire were basis-for-pay differences measures identical to those in the main questionnaire. The test-retest reliability for the seniority-based pay increase measure was .89 ($p < .05$) and for performance-based pay increase measure was .86 ($p < .01$). These estimates demonstrate considerable stability in the measurement of basis-for-pay differences. There were 97

common cases between the main data set and a trucking industry data set collected in 1998 (a similar key informant approach was used in this study as well). Using variables collected at that time, our measure of performance-based pay increases was positively related (r s = .16–.36) to a 5-item pay incentives measure (e.g., “Drivers’ pay really depends on how well they do their jobs”), to the proportion of pay due to incentives, and the extent to which pay was based on four driver performance dimensions (accidents, driver fault violations, on-time deliveries, and overall safety). The correlations between these variables and seniority-based pay increases was negative in all cases, although they reached significance only for proportion of pay due to incentives and pay based on driver fault violations. We also compared our basis-for-pay difference measures with specific performance- (e.g., merit pay) and seniority-based pay increase measures from 75 overlapping cases between the current data set and the trucking industry data set used by Shaw et al. (1998). Our performance-based pay increase measure was consistently and positively related to specific performance-based pay increase measures (e.g., merit-based pay, incentives for individual performance) and negatively related to seniority-based pay increase measures from the Shaw et al. (1998) data. The opposite pattern of relationships was found with the seniority-based pay increase measure used here.

Pay system communication. Because no measures of pay system communication were available, we adapted this measure from several items on clarity and supervisor communication from the Michigan Assessment of Organizations Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1983). Our measure was the mean of a 4-item scale with five Likert-type response options ($\alpha = .87$). The items are: “Drivers know exactly what they have to do to get pay raises;” “The pay system is clearly communicated to drivers;” “Our drivers have a clear understanding of how their pay is set;” and “We provide drivers with extensive information any time we make changes to the pay system.”

Measures—Control Variables (Time 1)

We controlled for several variables that may relate to the independent and dependent variables. Organizational size and unionization were included because these factors may influence pay dispersion, compensation practices, and voluntary turnover (Freeman & Medoff, 1984; Shaw et al., 2002). Size was operationalized as the natural log of the total number of employees in the organization and unionization as the percent of drivers covered by a collective bargaining agreement, as reported in the questionnaire. Three industry-specific controls were also included (carrier type, tractor age, and owner-operator use). We included carrier type because HRM practices and turnover vary across industry segments. In

this operationalization, truckload and specialized commodity carriers were coded 1 and less-than-truckload (LTL) carriers were coded 0. This variable was obtained from the *Blue Book*. Equipment sophistication and technology reflect differences in working conditions and may relate to voluntary turnover. We used average tractor age, as reported by the respondent, as a proxy for technology. We also controlled for the percent of hauls completed by owner-operator drivers (reported by the respondent) because use of owner-operators may relate to differences in HRM systems across firms. In addition, although our focus was on performance- and seniority-based pay increases, there are a number of other ways of determining pay levels in organizations, including experience, skill, and competencies (Gerhart & Rynes, 2003). Because pay for a given year is potentially the result of several factors, it was necessary to control for the possibility that other pay bases could influence our results. We therefore controlled for the other two categories of pay basis in our measure—"experience-based pay" and "other-based pay"—in our regression analyses. Finally, to account for overall workforce stability, we controlled for the other two forms of turnover in all equations. For example, in the good performer quit equation, we controlled for average and poor performer quits.

Results

Response Bias Checks and Psychometric Issues

Following Shaw et al. (1998), we used data from the *Blue Book* and logistic regressions to compare the characteristics of responding and nonresponding organizations. Two sets of logistic analyses were conducted. First, we compared characteristics of nonresponders (coded 0) with those of the 380 organizations (coded 1) who returned Time 1 questionnaires. We used an array of organizational and operating characteristics (carrier type, total fringe benefits cost, total highway miles driven, total wages paid, average haul [in miles], total insurance costs, current assets, company age, tons per mile, and average load [in tons]) available in the *Blue Book*. None of the independent variables were significant in this equation. Second, we compared nonresponders (coded 0) with the 226 organizations in the analysis sample at Time 2 (coded 1) across the same array of characteristics. Only one variable (average haul) was significant, indicating that Time 2 participants had slightly longer average haul lengths. Thus, of the 20 comparisons across the two tests, only one variable (the number expected by chance) was significant. These analyses suggest no marked differences between responders and nonresponders on the available variables.

Next, we compared those organizations that participated only at Time 1 (coded 0) with those that also participated in the follow-up (coded 1) across the same array of *Blue Book* variables. None of the characteristics

was a significant predictor in this logistic equation. We also compared Time 1 only and follow-up participants across the set of independent variables from the Time 1 questionnaire, plus good, average, and poor performer quits also collected on the Time 1 questionnaire. Only organizational size was marginally significant ($p < .10$) in this analysis, such that organizations participating at Time 2 were slightly larger; we control for organizational size in all equations. In all, there is little evidence from these tests that response bias affected our results.

Regression Results

Table 1 shows the descriptive statistics for, and correlations among, all study variables. The regression results are reported in Table 2. A hierarchical approach was used. Control variables and the four independent variables were entered on the first step. These variables plus the set of five two-way interactions were entered on the second step. The two three-way interactions (the tests of Hypotheses 1 and 2) were entered in the final step. Unstandardized regression coefficients and changes in explained variance were examined at each step.

Good performer quits. The tests of Hypotheses 1a and 2a are found in the column labeled Model 3 in the good performer quits equation. As Table 2 shows, the three-way interaction among pay dispersion, performance-based pay increases, and pay system communication is significant in predicting good performer quits ($b = -16.14, p < .01$), but the three-way interaction when the seniority-based pay increase measure is included is not significant ($b = 2.17, n.s.$). The three-way interaction step explains an additional 3% of the variance in good performer quits above and beyond the model including controls, main effects, and the two-way interactions. To support Hypothesis 1a fully, the form of the interaction should conform to our prediction. The form of the significant interaction is shown in Figure 1. The right panel in the figure shows the pay dispersion by performance-based pay increase interaction when pay system communication is high. As predicted, there is a strong negative relationship between pay dispersion and good performer quits when performance-based pay increases are emphasized and a strong positive relationship when performance-based pay increases are not emphasized. In addition, of interest is the left panel (low pay system communication). Here there is a slightly positive slope when performance-based pay increases are emphasized and a slightly negative slope when performance-based pay increases are not emphasized, although neither slope is statistically significant. Thus, in terms of good performer quits, Hypothesis 1a (performance-based pay increase prediction) receives considerable support when pay system communication is high, although there are no discernable effects

TABLE 1
Correlations and Descriptive Statistics

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Control variables															
1. Organizational size	4.77	.97													
2. Unionization	10.71	30.90	.03												
3. Carrier type	.89	.32	-.21**	-.11											
4. Tractor age	3.72	2.59	.11	.20**	-.09										
5. Owner-operator use	21.61	27.16	-.12*	-.18**	.21**	.06									
6. Experience-based pay	17.81	28.83	.13*	-.12*	.08	-.11	-.03								
7. Other-based pay	12.99	28.15	-.13*	.07	-.09	.00	.01	-.21**							
Independent variables															
8. Pay dispersion	.05	.03	-.41**	.00	.13*	.09	.08	-.09	-.05						
9. Performance-based pay increases	31.42	37.35	-.06	-.10	.03	-.02	.09	-.22**	-.31**	.18					
10. Seniority-based pay increases	36.94	37.93	.05	.14*	.01	.10	-.10	-.30**	-.34**	-.02	-.44**				
11. Pay system communication	4.19	.60	-.05	-.08	.02	-.08	-.02	.10	-.07	-.07	.04	-.05			
Dependent variables															
12. Good performer quits	8.15	10.42	.40**	-.13*	.02	-.06	.06	.09	.05	.05	-.02	-.15*	-.14*		
13. Average performer quits	17.99	23.20	.51**	-.15*	.10	-.07	.06	.07	.00	.00	.03	-.09	-.07	.63**	
14. Poor performer quits	16.26	21.53	.46**	-.16**	.02	-.15*	-.04	.16**	-.04	-.04	.00	-.11	-.06	.65**	.41**

Notes: Coefficient alpha reliability estimate of pay system communication scale is .87. $N = 226$.
* $p < .05$, ** $p < .01$.

TABLE 2
Regression Results With Good, Average, and Poor Performer Quits as Dependent Variables

	Good performer quits			Average performer quits			Poor performer quits		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Good performer quits	.01	.01	.02	1.04**	1.06**	1.06**	-.30	-.19	-.05
Average performer quits	.45**	.46**	.45**	.28**	.28**	.27**	3.48**	3.40**	3.34**
Poor performer quits	.72	-1.96	-1.43	7.35**	6.70**	7.52**	-10.41	-5.37	-4.02
Organizational size	.03	.03	.04	-.06	-.06	-.07	.29	.24	.20
Unionization	-1.85	-6.93	-6.80	8.43*	7.74*	7.55*	-43.83	-32.54	-31.74
Carrier type	-.03	.03	.43	-.31	-.25	-.11	1.56	2.10	1.85
Tractor age	-.02	.00	.00	.08	.09*	.08*	.16	.12	.08
Owner-operator use	-.19	-.18	-.18	-.18*	-.16**	-.12	-.07	-.26	-.06
Experience-based pay	-.12	-.17	-.19	-.13	-.13	-.07	.05	.08	.39
Other-based pay									
Pay dispersion	-.49	.03	-1.24	-.03	-.53	.12	23.67	19.81	23.37
Performance-based pay increases	-2.69	-4.12	-3.97	-5.13	-5.06	-3.28	-7.09	-10.64	-3.02
Seniority-based pay increases	-6.54	-7.85	-9.04	-6.29*	-6.09*	-4.61	18.00	15.22	25.02
Pay system communication	3.90	1.41	3.05	-5.26	-5.37	-5.65	11.48	14.11	10.60
Pay dispersion × performance-based pay increases	-8.05*		-10.42**		-.06	-.59		21.61	26.19
Pay dispersion × pay system communication	14.03**		-14.13		-1.09	-3.17		-23.19	-18.89
Performance-based pay increases × pay system communication	8.40**		6.41		2.16	3.05*		-15.74	-15.78
Pay dispersion × seniority-based pay increases	-.54		-.59		-1.62	-1.18		-.59	-3.13
Seniority-based pay increases × pay system communication	.94		.43		1.42	2.61*		-17.12	-12.58
Pay dispersion × performance-based pay increases × pay system communication			-16.14**			3.72		40.34	
Pay dispersion × seniority-based pay increases × pay system communication			2.17			-7.14**		17.06	
Total R ²	.52**	.56**	.59**	.71**	.73**	.75**	.41**	.42**	.42**
Δ R ²	.52**	.04**	.03**	.71**	.02	.02*	.41**	.01	.00

Notes. Unstandardized regression weights are reported. N = 226.
*p < .05, **p < .01.

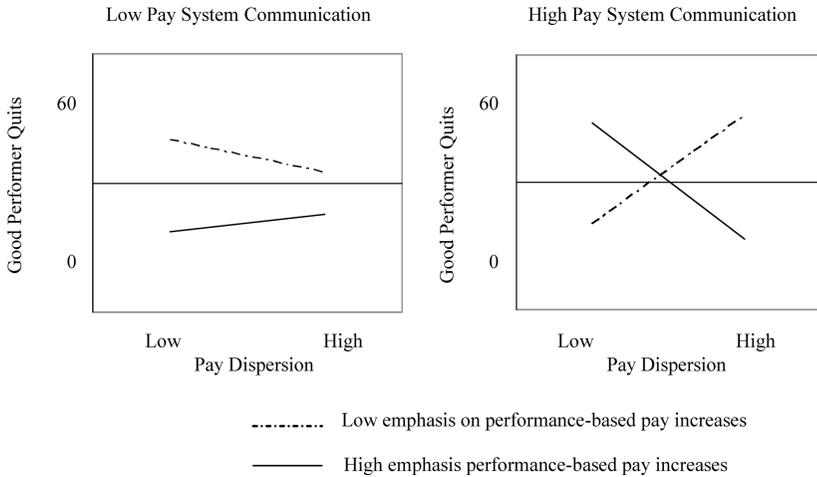


Figure 1: Three-Way Interaction Among Pay Dispersion, Performance-Based Pay Increases, and Pay System Communication in Predicting Good Performer Quits.

of pay dispersion on good performer quits when pay system communication is low. No support is found for Hypothesis 2a (seniority-based pay increase prediction).

Average performer quits. The average performer quit equations appear in the middle of Table 2 and the critical step is Model 3. As the table shows, the three-way interaction step is again significant, explaining an additional 2% of the variance above and beyond the controls, main effects, and two-way interactions. The three-way interaction including performance-based pay increases is not significant ($b = 3.72, ns$), and thus, Hypothesis 1b is not supported. The three-way interaction including the seniority-based pay increase measure is significant ($b = -7.14, p < .01$). A plot of the significant interaction is shown in Figure 2. When pay system communication is high, there is a significant negative relationship between pay dispersion and average performer quits when seniority-based pay increases are emphasized and a positive, but not significant, relationship when seniority-based pay increases are not emphasized. We expected a generally positive slope when pay system communication is low (left panel of Figure 2). The relationship is significant and positive when seniority-based pay increases are emphasized, but the slope is essentially flat when they are not. Thus, some support is found for Hypothesis 2b. In particular, there is a significant negative relationship between pay dispersion and average performer quits when seniority-based pay increases are emphasized and pay system communication is high.

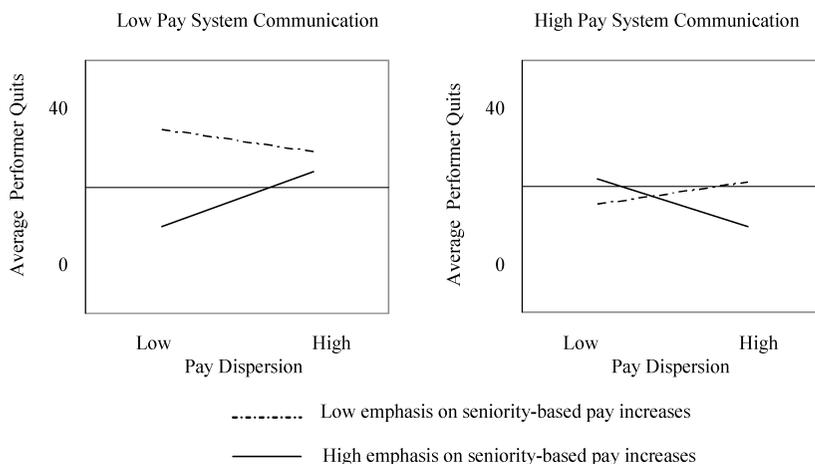


Figure 2: Three-Way Interaction Among Pay Dispersion, Seniority-Based Pay Increases, and Pay System Communication in Predicting Average Performer Quits.

Poor performer quits. The results in Table 2 also include the poor performer quit equation. No support was found for Hypotheses 1c and 2c, as the three-way interactions are not significant.

Discussion

Since Dalton and Todor's (1979) pioneering work, a paradigm shift has slowly emerged in turnover research. Earlier, voluntary turnover was virtually always viewed negatively—it increased the costs of recruitment, selection, training, and so on. But the distinction between functional and dysfunctional quits (e.g., Abelson & Baysinger, 1984; Dalton & Todor, 1979) points to the complexity of assessing turnover costs. Organizational costs, in terms of the effects on organizational performance, are expected to be much higher when better employees turn over, and the voluntary loss of poor employees may actually improve organizational functioning. It is thus imperative that quit rate dynamics be examined separately among employees at different performance levels. Unfortunately, only a handful of individual-level studies and no organizational-level studies of horizontal dispersion make this distinction (but see Park, Ofori-Dankwa, & Bishop [1994] for a test of vertical dispersion and differential quit rates). Our results demonstrate that, at least with respect to pay issues, the etiology of good, average, and poor performer quits is markedly different. This distinction is significant for future research.

A systems or “bundles” approach to examining the impact of HRM practices is increasingly popular in strategic HRM research (e.g., Arthur, 1992; Delery & Doty, 1996; Huselid, 1995), including studies focused on compensation and turnover (Shaw et al., 2002; Shaw et al., 2005). This approach emphasizes the synergies and conflicts across HRM practices in determining organizational performance and attempts to unlock the “black box” between HRM systems and organizational performance. Strategic HRM research focuses on synergies *across* HRM systems, for example, selection and training systems. Our study, on the other hand, focused on a single broad HRM system, the compensation system. It shows that the synergy issues highlighted in strategic HRM research apply *within* HRM systems as well. Within a broad compensation system, it is important that the *range* of pay be congruent with the *basis-for-pay* differences and with the *information communicated* to employees about the pay system. When these intracomensation system practices converge, good employees are less likely to quit. A different but similarly meshed system of compensation practices, one that includes high levels of seniority-based pay, is necessary if retention of average employees is desirable. The retention of average performers is enhanced when high pay dispersion is matched with seniority-based pay; the relationship is not reversed, but only attenuated, when seniority-based pay is low. Thus, our results emphasize at least two major issues relevant to strategic HRM research—that synergies within HRM systems are important as well as synergies across HRM systems, and that the use of broad measures of HRM systems may mask within-system intricacies that deserve theoretical and empirical exploration.

The results with regard to the dynamics of low levels of pay system communication did not conform to our expectations. Our hypotheses were generally supported for good and average performer quits when pay system communication was high, that is, good performer quits are low in well-communicated, dispersed, performance-based pay systems and average performer quits are low in well-communicated, dispersed, seniority-based pay systems. Based on extensive research on system injustice and control, we expected that when communications are poor, any movement toward dispersed pay would be viewed negatively across performance levels. A generally positive relationship should then be observed between pay dispersion and quits. But our overall pattern of results indicates a non-significant relationship between dispersion and turnover when pay system communication is low. There are at least two possible explanations for these findings. One, in the absence of systematic communication, employees may be making idiosyncratic interpretations about quit decisions, which in effect, wash out any pay dispersion and turnover trends. Two, the weak trends may indicate employee inertia in the absence of strong dispersion cues—people may need forceful reminders of compensation

policies for action to be triggered. It would be useful to disentangle the relative validity of these arguments.

Table 2 provides some intriguing results about the dispersion/quits phenomena. Hypothesis 2a (dispersion \times seniority-based pay increases \times pay system communication) was not supported for good performer quits; Hypothesis 1b (dispersion \times performance-based pay increases \times pay system communication) was not supported for average performer quits. The absence of these predicted effects raises questions. Do legitimate pay systems (both performance-based and seniority-based pay systems are generally considered legitimate bases for dispersion), when inconsistent with employee desires, evoke at worst neutral reactions? Perhaps good performers do not necessarily quit, they just find other ways of adapting. Perhaps they adopt a "voice" or "loyalty" approach instead of an "exit" approach (Hirschman, 1970). Likewise, do average performers "tolerate" through voice, and so on, a performance-based pay system instead of exiting? Are these results anomalies or substantive? Unfortunately, these questions must remain unanswered in this study, although they are fascinating avenues for future research.

Our study points to several other fruitful areas of research. One, complex dynamics such as those we uncovered with respect to bases for pay differences and dispersion surely exist with respect to other ways of administering pay. The types of systems used in the trucking industry drove our focus on seniority and performance pay, but many other ways of administering pay (e.g., skill based) are possible and these offer potentially fruitful areas for researchers to explore. As Pfeffer and Langton (1993) note, there are many legitimate ways of increasing pay dispersion in organizations beyond individual incentives and seniority. Theory and empirical tests that incorporate predictions with regard to team-based, skill-based, and perhaps experience-based compensation systems (bases for pay differences used as controls in our analyses) and quit patterns should be useful both scientifically and practically. We would also encourage additional parallel studies of these issues at the individual level. Issues such as how individuals in dispersed systems react when they "top out" in their pay range as well as when other related issues are underexplored. Topping out is a common problem in skill-based pay systems (e.g., Gupta & Shaw, 2001) as well as other job grade-based systems and provides a potentially fruitful area for future research.

Two, we focused on internal synergies within the compensation system, but reactions to pay systems are surely derived, in part, based on the broader system of HRM practices. Thus, it is useful to extend our analyses to other HRM systems. HRM practices can be categorized into those that enhance workforce expectations and those that enhance inducements and investments (Shaw et al., 1998; Shaw et al., 2005); these affect voluntary and involuntary turnover differently. If turnover functionality is also considered,

it is likely that increased expectations have less impact on good employees than those who are struggling to maintain performance levels.

Three, research that links voluntary *and* involuntary turnover levels to organizational performance measures would also be useful and interesting. This area of research is growing rapidly in popularity. Although there are key differences among the studies, differential patterns of relationships have been observed between turnover and performance including attenuated negative (Shaw et al., 2005), inverted-U (Glebeek & Bax, 2004), negative linear (Kacmar, Andrews, Van Rooy, Steilberg, & Cerrone, 2006), and nonsignificant (Koys, 2001). One possibility for resolving these inconsistencies is to focus on voluntary turnover by performance levels because the performance effects of functional versus dysfunctional turnover are likely to be widely divergent.

Four, the weakest support for our predictions occurred with respect to poor performers. Although the sorting effects of compensation systems are often argued to relate directly to poor performer quits (e.g., Gerhart & Rynes, 2003), we found no evidence of these effects in this study. On the contrary, we found support for our predictions only when the basis-for-pay difference (performance or seniority) matched the general goals of the quitting group (good or average performers). Although good performers were retained at higher levels under the “right” compensation system match (highly dispersed and well-communicated performance-based pay) in our study, this combination had no effect on quits among poor performers. One possibility is that although poor performers are relatively disadvantaged in such a system, they have fewer opportunities on the labor market and thus their quit patterns are more difficult to predict. Understanding the tradeoffs between marketability and the sensitivity of behavior to compensation and HRM dynamics would be an interesting avenue for individual- and organizational-level research.

This research should be evaluated in light of its limitations. For one, a single key informant, the highest-ranking HRM employee in the organization, provided the organizational information we used to operationalize our variables. Our use of the key informant methodology is consistent with much of the macro-literature, but the appropriateness of this technique, and in particular, the reliability of HRM system measures provided by key informants, is the subject of a growing debate (e.g., see Gerhart, Wright, McMahan, & Snell, 2000; Huselid & Becker, 2000). The reliability of single key informant judgments is particularly problematic when: (a) organization size is very large; (b) the organization is multidivisional or highly diversified; and (c) multiple intra-organizational HR systems may be in place. The organizations in our study were small and specialized, and we focused on a single job category (drivers) employed under a single HR system. Moreover, the key informant technique is considered appropriate when factual organizational information is not available archivally

(Gupta, Shaw, & Delery, 2000) and when informants have the authority and capacity (knowledge level) to respond accurately (Tomaskovic-Devey, Leiter, & Thompson, 1994). Our measurement checks indicated considerable stability in our key operationalizations and consistent associations with measures of similar constructs assessed at different time periods. Although the method has clear disadvantages, several of the more serious concerns with this method were minimized in this study.

The use of essentially a single data source raises questions about common method biases, but several factors help ameliorate this concern. First, we measured quits using data from a follow-up questionnaire with a 1-year lag from the main questionnaire. Second, several corresponding archival variables were available and correlations between these variables and the questionnaire measures were very high. Although parallel measures of our key variables were not available in the archival sources, these high associations elicit a degree of confidence in the ability of our key informants to report information accurately. Third, a key variable—pay dispersion—was calculated from component information, which lessens the likelihood of hypothesis guessing or other consistency biases. The estimates of total voluntary turnover levels provided by our key informants were also consistent in mean level and range to estimates found in the motor carrier trade literature and other survey data sets recently collected from companies in the trucking industry (e.g., Shaw et al., 1998). Fourth, the predictions were three-way interactions, and as Evans (1985) demonstrates, common method does not provide a logical explanation for confirmation of a substantive prediction across the level of a third and fourth variable.

We prompted informants to make quit judgments by performance levels. Whether or not informants could do so accurately in summary fashion is an open question and should be addressed in future research. In particular, some individuals likely quit before a formal performance evaluation could be made, and unless a significant performance event occurred during the brief tenure, informants may not have had enough information to make these judgments. Our differential predictions received some support in the good and average performer equations, but no support was found in the poor performer equation. One possibility is that quick quitters were labeled poor performers more frequently, and this source of error resulted in the weak findings. Some other key measures in our study—performance-based pay increases, seniority-based pay increases, and pay system communication—were developed for this study. The construct validity of these measures is open to question. We demonstrated that the performance- and seniority-based pay measures correlated with alternative measures of specific compensation practices found in two other data sets and showed that the measurement was stable over a 1-year period, but this limitation should be remembered as our results are interpreted. Pay system communication was adapted from related and well-validated items

from Cammann et al. (1983), but it is reasonable to question whether these items captured the practice of communication adequately. In particular, two of the items refer to employees' knowledge rather than the organizational practice. A shortened two-item measure including only the items that refer to a managerial perspective on communication produced the same patterns of findings, but improvements on the measure are warranted.

The study was conducted within a single industry and focused on a single core group of employees. Although these approaches help minimize interorganizational differences and confounds that arise across industries, it also limits the generalizability of the results. Future research that incorporates intra- and cross-industry samples is encouraged. In addition, although we provided evidence of higher-order interaction effects among our key variables, the effect sizes for our key predictions were somewhat small (the significant three-way interactions explained between 2% and 3% of the total variance in good and average performer quits). It is reasonable to question whether or not these interactions can be replicated in different settings and we encourage attempts to do so.

The results of this study have clear practical implications. They offer guidelines to managers for targeting turnover levels among different kinds of employees. The first implication is that HRM practices are likely to have their optimal desired effects when information about the practices is communicated clearly to employees—among good and average performers, the high communication predictions (right panels of Figures 1 and 2) received clear-cut support; the low communication results were more ambiguous. Thus, regardless of the basis-for-pay difference, it is important for employees to have a comprehensive understanding of pay system dynamics. A second implication is that organizations are better off designing compensation systems that specifically target particular groups of employees. Performance-based dispersion is likely to be more effective in promoting the retention of good performers, but seniority-based dispersion is more desirable for promoting retention of average employees. The strategic focus of the organization thus must dictate the kinds of employees that are needed (good or average performers) and a performance-based or seniority-based compensation system provided accordingly, depending on the kinds of employees sought. In essence, the strategic thrust of the organization must dictate the elements of the compensation system. The need to mesh strategy with HRM systems is often espoused; our results offer some empirical validation for this idea. Ultimately, perhaps the biggest practical implication of this study is that broad-brush recommendations for organizational design are less fruitful than fine-tuned ones. It is more useful to recommend that performance-based dispersed pay be used to promote the retention of good performers (but not average or poor ones) than to recommend just that pay be dispersed or compressed, or that it be performance based or not. Indeed, it is these finely tuned recommendations

that distinguish scientifically based suggestions from more “popular” or anecdotal suggestions. We urge the continuation of nuanced theoretical and empirical research over the more trendy approaches favored in the popular press. Both science and practice are promoted through nuanced examinations.

REFERENCES

- Abelson M, Baysinger B. (1984). Optimal and dysfunctional turnover: Towards an organizational level model. *Academy of Management Review*, 9, 331–341.
- Alexander JA, Bloom JR, Nuchols BA. (1994). Nursing turnover and hospital efficiency: An organization-level analysis. *Industrial Relations*, 33, 505–520.
- Arthur JB. (1992). The link between business strategy and industrial relations systems in American steel minimills. *Industrial and Labor Relations Review*, 45, 488–506.
- Becker BE, Huselid MA. (1992). The incentive effects of tournament compensation systems. *Administrative Science Quarterly*, 37, 336–351.
- Belman D, Monaco KA, Brooks TJ. (1998). *And Lord, let it be palletized: A portrait of truck drivers' work and lives*. Working paper, University of Michigan Trucking Industry Program.
- Block RN. (1978). The impact of seniority provisions on the manufacturing quit rate. *Industrial and Labor Relations Review*, 31, 474–488.
- Bloom M, Michel JG. (2002). The relationships among organizational context, pay dispersion, and managerial turnover. *Academy of Management Journal*, 45, 33–44.
- Cammann C, Fichman M, Jenkins GD, Jr., Klesh JR. (1983). Assessing the attitudes and perceptions of organizational members. In Seashore SE, Lawler EE, III, Mirvis PH, Cammann C (Eds.), *Assessing organizational change: A guide to methods, measures, and practices* (pp. 71–138). New York: Wiley.
- Colquitt JA, Conlon DE, Wesson MJ, Porter COLH, Ng KY. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86, 425–445.
- Dalton D, Todor W. (1979). Turnover turned over: An expanded and positive perspective. *Academy of Management Review*, 4, 225–235.
- Delery JE, Doty DH. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal*, 39, 802–835.
- Ehrenberg RG, Bognanno ML. (1990). Do tournaments have incentive effects? *Journal of Political Economy*, 98, 1307–1324.
- Evans MG. (1985). A Monte Carlo study of the effects of correlated method variance in moderated multiple regression analysis. *Organizational Behavior and Human Decision Processes*, 36, 305–323.
- Freeman RB. (1982). Union wage practices and wage dispersion within establishments. *Industrial and Labor Relations Review*, 36, 3–21.
- Freeman RB, Kleiner MM. (1990). The impact of new unionization on wages and working conditions: A longitudinal study of establishments under NLRB elections. *Journal of Labor Economics*, 8, s18–s35.
- Freeman RB, Medoff JL. (1984). *What do unions do?* New York: Basic Books.
- Gerhart B, Rynes SL. (2003). *Compensation: Theory, evidence, and strategic implications*. Thousand Oaks, CA: Sage.
- Gerhart B, Wright PM, McMahan GC, Snell SA. (2000). Measurement error in research on human resources and firm performance: How much error is there and how does it influence effect size estimates. *PERSONNEL PSYCHOLOGY*, 53, 803–834.

- Glebeek AC, Bax EH. (2004). Is high employee turnover really harmful? An empirical test using company records. *Academy of Management Journal*, 47, 277–286.
- Gupta N. (1980). Performance-contingent rewards and satisfaction: An initial analysis. *Human Relations*, 11, 813–829.
- Gupta N, Shaw JD. (2001). Successful skill-based pay plans. In Fay CH, Knight D, Thompson MA (Eds.), *The executive handbook on compensation: Linking strategic rewards to business performance* (pp. 513–526). New York: Free Press.
- Gupta N, Shaw JD, Delery JE. (2000). Correlates of response outcomes among organizational key informants. *Organizational Research Methods*, 3, 323–347.
- Hart OD. (1983). Optimal labor contracts under asymmetric information: An introduction. *Review of Economic Studies*, 50(160), 3–35.
- Hirschman AO. (1970). *Exit, voice, and loyalty*. Cambridge, MA: Harvard University Press.
- Huselid MA. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38, 635–672.
- Huselid MA, Becker BE. (2000). Comment on “Measurement error in research on human resources and firm performance: How much error is there and how does it influence effect size estimates?” by Gerhart, Wright, McMahan, and Snell. *PERSONNEL PSYCHOLOGY*, 53, 835–854.
- Kacmar KM, Andrews MC, Van Rooy DL, Steilberg RC, Cerrone S. (2006). Sure everyone can be replaced. . . but at what cost? Turnover as a predictor of unit-level performance. *Academy of Management Journal*, 49, 133–144.
- Koys DJ. (2001). The effects of employee satisfaction, organizational citizenship behavior, and turnover on organizational effectiveness: A unit-level, longitudinal study. *PERSONNEL PSYCHOLOGY*, 54, 101–114.
- Lambert RA, Larcker DF, Weigelt K. (1991). How sensitive is executive compensation to organizational size? *Strategic Management Journal*, 12, 395–402.
- Lawler EE, III. (1971). *Pay and organizational effectiveness: A psychological view*. New York: McGraw-Hill.
- Lazear EP. (1995). *Personnel economics*. Cambridge, MA: MIT Press.
- Lazear EP. (1999). Personnel economics: Past lessons and future directions. *Journal of Labor Economics*, 17, 199–215.
- Lazear EP, Rosen S. (1981). Rank order tournaments as optimum labor contracts. *Journal of Political Economy*, 89, 841–864.
- LeMay SA, Taylor GS, Turner GB. (1993). Driver turnover and management policy: A survey of irregular route motor carriers. *Transportation Journal*, 33(2), 15–21.
- Leventhal GS. (1979). Effects of external conflict on resource allocation and fairness within groups and organizations. In Austin WG, Worschel S (Eds.), *The social psychology of intergroup relations* (pp. 237–251). Monterrey, CA: Brooks/Cole.
- Leventhal GS, Karusa J, Jr., Fry WR. (1980). Beyond fairness: A theory of allocation preferences. In Mikula G (Ed.), *Justice and social interaction* (pp. 167–217). New York: Springer-Verlag.
- Lind EA, Van Den Bos K. (2002). When fairness works: Toward a general theory of uncertainty management. In Staw BM, Kramer RM (Eds.), *Research in organizational behavior* (Vol. 24, pp. 181–223). Greenwich, CT: JAI Press.
- Livernash ER. (1957). The internal wage structure. In Tayler GW, Pierson FC (Eds.), *New concepts in wage determination*. New York: McGraw-Hill.
- Medoff JL, Abraham KG. (1980). Experience, performance, and earnings. *Quarterly Journal of Economics*, 94, 703–736.
- Ouellet LJ. (1994). *Pedal to the metal: The work lives of truckers*. Philadelphia, PA: Temple University Press.

- Park HY, Ofori-Dankwa J, Bishop DR. (1994). Organizational and environmental determinants of functional and dysfunctional turnover: Practical and research implications. *Human Relations, 47*, 353–366.
- Pfeffer J, Davis-Blake A. (1992). Salary dispersion, location in the salary distribution, and turnover among college administrators. *Industrial and Labor Relations Review, 45*, 753–763.
- Pfeffer J, Langton N. (1993). The effect of wage dispersion on satisfaction, productivity, and working collaboratively: Evidence from college and university faculty. *Administrative Science Quarterly, 38*, 382–407.
- Powell I, Montgomery M, Cosgrove J. (1994). Compensation structure and establishment quit and fire rates. *Industrial Relations, 33*, 229–248.
- Rosen S. (1986). Prizes and incentives in elimination tournaments. *American Economic Review, 76*, 701–715.
- Shaw JD, Delery JE, Jenkins GD, Jr., Gupta N. (1998). An organizational-level analysis of voluntary and involuntary turnover. *Academy of Management Journal, 41*, 511–525.
- Shaw JD, Duffy MK, Stark EM. (2001). Team reward attitude: Scale development and initial validation. *Journal of Organizational Behavior, 22*, 903–917.
- Shaw JD, Gupta N, Delery JE. (2002). Pay dispersion and work force performance: Moderating effects of incentives and interdependence. *Strategic Management Journal, 23*, 491–512.
- Shaw JD, Gupta N, Delery JE. (2005). Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. *Academy of Management Journal, 48*, 50–68.
- Tomaskovic-Devey D, Leiter J, Thompson S. (1994). Organizational survey nonresponse. *Administrative Science Quarterly, 39*, 439–457.
- Trevor CO. (2001). Interactions among actual ease-of-movement determinants and job satisfaction in the prediction of voluntary turnover. *Academy of Management Journal, 44*, 621–638.
- Trevor CO, Gerhart B, Boudreau JW. (1997). Voluntary turnover and job performance: Curvilinearity and the moderating influences of salary growth and promotions. *Journal of Applied Psychology, 82*, 44–61.
- Trevor CO, Wazeter DL. (2006). A contingent view of reactions to objective pay conditions: Interdependence among pay structure characteristics and pay relative to internal and external referents. *Journal of Applied Psychology, 91*, 1260–1275.