



# Employee reactions to pay dispersion: A typology of existing research



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## ABSTRACT

Pay dispersion has received growing attention in the management literature. Despite an increasing number of studies, research evidence on the effects of pay dispersion has not yet been consistent. The purpose of this paper is to review existing work and to provide a comprehensive theoretical framework that can advance pay dispersion research. Specifically, our framework suggests four unique types of pay dispersion and discusses three existing theories (equity theory, expectancy theory, and tournament theory) to integrate existing research from an employee reaction perspective in the pay dispersion area. We build upon this taxonomy and theoretical explication to suggest an agenda for future pay dispersion research.

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## 1. Introduction

Firm-level research on compensation system structure has been of interest to human resource scholars over the past several decades. One such pay structure property, pay dispersion, has been the subject of investigation in the management literature. Pay dispersion is often defined as “the amount of difference (inequality) in pay created by a firm’s pay structure” (Bloom & Michel, 2002, p. 33), and is sometimes referred to as pay variation or pay differential. In compressed pay systems, high and low earners in the pay scale are fairly close to each other in terms of total rewards. Dispersed pay systems, on the other hand, are more spread out so that high earners make much more than low earners in the pay scale.

In the compensation literature, the relationship between pay dispersion and organizational performance has not been clearly established (Gupta, Conroy, & Delery, 2012). In 1992, Becker and Huselid studied the dispersion of rewards in NASCAR competitions. They concluded that large differences in rewards (i.e., high pay dispersion) improved driver performance. They suggested that larger prizes for winning resulted in increased motivation and more aggressive decision making. One year later, Pfeffer and Langton (1993) reported that large pay differences negatively impacted the research productivity of the college and university faculty they studied. They argued that large differences in pay caused perceptions of inequity among faculty members, and that these perceptions of injustice decreased motivation and individual performance. A more recent study (Hunnes, 2009) investigated 1700 firms across an eleven-year period and found “no significant link between wage dispersion and how well the firm performs” (p. 792).

Some researchers have tried to resolve these conflicting findings by suggesting moderators of the dispersion–performance relationship, such as pay basis (Kepes, Delery, & Gupta, 2009; Messersmith, Guthrie, Ji, & Lee, 2011; Shaw, Gupta, & Delery, 2002), pay level (Brown, Sturman, & Simmering, 2003; Pfeffer & Davis-Blake, 1992; Trevor & Wazeter, 2006), pay system communication (Lazear & Shaw, 2007), interdependence (Shaw et al., 2002), and external pay standing (Trevor & Wazeter, 2006). Additionally, some scholars have suggested that the use of certain methodological approaches has created ambiguity in empirical findings

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regarding the effect of pay dispersion on organizational and individual performance (Gerhart & Rynes, 2003; Trevor, Reilly, & Gerhart, 2012). These authors have argued that controlling for various performance-relevant inputs (e.g., human capital, defined as a subset of individual differences — namely those knowledge, skills, and abilities that are positively related to employee performance and productivity; Lepak & Snell, 1999) fundamentally changes the interpretation of results.

Certainly the conflicting findings, moderators, and methodological critiques that have been presented in the literature add complexity to this domain of study. Further complicating this research is the fact that pay dispersion mechanisms occur across multiple system levels (i.e., individuals versus organizations) and can be viewed from multiple disciplinary perspectives (i.e., psychology, sociology, and economics). These different perspectives can cause researchers to have contrasting approaches to management phenomena (Molloy, Ployhart, & Wright, 2011) in general and pay dispersion in particular. Given these distinct approaches, integrating findings into a coherent understanding of the effects of pay dispersion is a challenge. Such integration, however, is important, as it helps researchers identify where we have been and expand our thinking for future research.

In order to form this coherent picture, we review the pay dispersion research findings through an individual-level, psychological lens. In that sense, our interpretations are focused primarily on employee reactions to and functional (individual-level) mechanisms of pay dispersion, and we believe that study of these reactions is an important future direction for this area of research. Although other domains of HR have advanced an understanding of how employees react to HR policies (e.g., employee reactions to performance appraisals, see Cawley, Keeping, & Levy, 1998; Erdogan, 2002; applicant reactions to selection procedures, see Hausknecht, Day, & Thomas, 2004), pay dispersion has lagged behind in this respect — research findings are heavily focused on firm-level (strategic) aspects of pay dispersion (with a few examples; e.g., Trevor & Wazeter, 2006). Through examining individual-level aspects of pay dispersion, we intend to call for research attention to a more balanced and integrated perspective of pay dispersion (firm- and individual-levels; strategic and functional processes). Further, such a perceptual approach aligns with the primary theories that have been applied to pay dispersion (i.e., tournament, equity, and expectancy theories), which imply that employees react to various phenomena and then modify their behavior in a way that affects the firm.

As such, the purpose of this review is to suggest a typology of employee reactions to pay dispersion that stems from relevant theories and then to place existing studies within our proposed framework. Specifically, we make three contributions to the compensation literature. First, we highlight that there are four unique types of pay dispersion at a strategic level, and we provide a two-dimensional framework that describes the distinctions between each type. This conceptualization of different types of pay dispersion has been implied in the literature (Gupta et al., 2012; Trevor et al., 2012), and we use those underlying assumptions to identify and clarify a typology for understanding how employees may react to pay dispersion. Second, we use this typology to identify the current state of pay dispersion research more broadly. From this we conclude that some theoretical mechanisms have received a great degree of attention, while others have not been studied to such an extent. Our review shows that equity theory has been investigated in many contexts, while other theories (e.g., tournament theory or expectancy theory) have gone largely untested in the context of pay dispersion research. Finally, we suggest future directions for pay dispersion by building on our typology and theoretical explications. Testing the strategic-level mechanisms involved in pay dispersion is complex given the existing approaches to pay dispersion. These challenges lead us to believe that a functional perspective (emphasizing employee reactions to pay dispersion) may allow scholars to more fully identify the mechanisms and outcomes of pay dispersion. Such an employee reaction approach may require a focus on the individual level and a more psychological perspective, and thus we propose this is an opportunity for researchers to apply a different paradigm to pay dispersion.

## 2. Conflicting findings in the literature

We begin by identifying existing empirical evidence regarding the nature of pay dispersion. Many authors have acknowledged two competing hypotheses of the nature of pay dispersion's effect on firm outcomes (e.g., Bloom, 1999; Bloom & Michel, 2002; Kepes et al., 2009) and have introduced their studies as an investigation to determine whether the effect of pay dispersion on firm outcomes is positive or negative. Because this direct comparison approach is common in this literature, we begin by reviewing studies in three categories: (a) those that support a positive relationship between pay dispersion and firm outcomes, (b) those that support a negative relationship between pay dispersion and firm outcomes, and (c) those that show the relationship is more nuanced.

### 2.1. The benefits of pay dispersion

As mentioned above, Becker and Huselid (1992) were among the first to empirically demonstrate the positive effects of pay dispersion. Analysis of their NASCAR data showed that higher absolute prize differentials between the top finishing positions improved driver performance. Kepes et al. (2009) corroborated this finding by showing that higher pay dispersion between truck drivers was negatively associated with a firm's out-of-service days and positively associated with return-on-equity.

Two additional studies offer less convincing, although still positive, support for the benefits of pay dispersion. Brown et al. (2003) showed that pay dispersion was negatively related to the number of days a patient stayed in a state-run general hospital. Their regression analyses, however, showed that this main effect of pay dispersion was only marginally significant and that pay dispersion was not a significant predictor of their other dependent variables. Similarly, Ding, Akhtar, and Ge (2009) illustrated that one measure of pay dispersion (i.e., pay dispersion between managers and workers) was positively related to sales growth and product or service quality in an archival data set of Chinese manufacturing and service firms. Their remaining measures of pay

dispersion (i.e., pay dispersion within managers or workers) did not exhibit such a positive relationship. We explore these measures in more depth below.

## 2.2. The pitfalls of pay dispersion

Pfeffer and Langton (1993), as mentioned above, provided clear evidence that pay dispersion negatively impacted research productivity and job satisfaction among college and university faculty. Bloom (1999) and Bloom and Michel (2002) reported similar findings in two different archival datasets. Bloom (1999) showed that pay dispersion was negatively related to individual and team performance in Major League Baseball, and Bloom and Michel (2002) found the same negative effects of pay dispersion on retaining executive managers. Trevor and Wazeter (2006) conducted a survey of public school teachers and found that pay dispersion was negatively related to individual pay equity perceptions. Finally, Cowherd and Levine (1992) showed that pay equity positively related to product quality in 102 different business units in the US and UK.

Messersmith et al.'s (2011) findings also highlight the pitfalls of dispersed pay. They showed that pay dispersion was positively related to turnover among managers in publicly-traded firms. Similarly, Pfeffer and Davis-Blake (1992) studied college administrators and found that pay dispersion was positively related to turnover for employees low in the salary distribution. Shaw and Gupta (2007) sought to extend this finding by studying the quit rates of good, average and poor performing truck drivers. They found that when firms made efforts to make sure individuals understood the details of a merit-based pay system, pay dispersion was negatively related to good performer quit rates. On the other hand, for firms where pay was not as closely tied to performance, pay dispersion was positively related to good performer quit rates.

Shaw et al. (2002) did find evidence of a negative effect of pay dispersion on firm outcomes. However, they were very clear not to suggest that this negative main effect is the appropriate interpretation of the data. They argued that “dispersion per se is neither functional nor dysfunctional; rather, situational contingencies determine the strategic effectiveness of dispersion (or lack thereof)” (p. 504). As such, we turn our attention to the variety of moderators that have been proposed in the pay dispersion literature.

## 2.3. The boundary conditions of pay dispersion

Many authors have attempted to resolve the conflicting findings about the effects of pay dispersion by identifying boundary conditions, such as interdependence, individual internal or external pay standing (or firm pay-level), pay system communication,

**Table 1**  
Included studies and their position in our typology.

Path (Fig. 3)	Theoretical bases	Predicted effect	Study supporting this effect	Dependent variable(s)	Moderator(s) in study
A	Equity theory	Positive <sup>a</sup>	Kepes et al. (2009) <sup>b</sup> Trevor and Wazeter (2006)	Firm performance Pay equity perceptions	Pay basis Individual position in internal and external pay distributions
		Negative <sup>a</sup>	Bloom (1999) Kepes et al. (2009) <sup>b</sup> Pfeffer and Langton (1993)	Individual performance, team performance Firm performance Individual performance, individual job satisfaction	Individual position in internal pay distribution Pay basis Salary; pay-performance correlation
			Shaw et al. (2002) Trevor and Wazeter (2006)	Firm performance Pay equity perceptions	Interdependence; pay basis Individual position in internal and external pay distributions
			Messersmith et al. (2011) <sup>b</sup>	Executive turnover	Individual position in internal pay distribution; at-risk pay; salary
B	Equity theory	Positive <sup>a</sup>	Messersmith et al. (2011) <sup>b</sup>	Executive turnover	Individual position in internal pay distribution; at-risk pay; salary
		Negative <sup>a</sup>	Bloom and Michel (2002) Messersmith et al. (2011) <sup>b</sup> Pfeffer and Davis-Blake (1992)	Managerial turnover Executive turnover Turnover	Individual position in internal pay distribution; at-risk pay; salary
C	Equity theory	Positive <sup>a</sup> Negative <sup>a</sup>			
D	Equity theory	Positive <sup>a</sup> Negative <sup>a</sup>			
E	Equity theory, expectancy theory	Positive	Shaw and Gupta (2007)	Poor, average, and good performer quits	Pay system communication; pay basis
			Trevor et al. (2012) Becker and Huselid (1992)	Team performance Individual performance	
F	Equity theory, expectancy theory	Positive	Becker and Huselid (1992)		
G	Equity theory, tournament theory	Positive	Becker and Huselid (1992)		
H	Equity theory, tournament theory	Positive	Brown et al. (2003) Ding et al. (2009)	Firm performance Firm performance	Firm average pay level

<sup>a</sup> We suggest that this relationship will be positive or negative depending on the employees' perceptions of legitimacy of pay dispersion. If pay dispersion is perceived as legitimate, then the effect is expected to be positive.

<sup>b</sup> Some studies are included in our table more than once when their interaction analyses suggest a positive and a negative effect of pay dispersion on outcomes depending on the moderator.

and pay basis. We outline empirical work on these four moderators below and in Table 1. J. Shaw et al. (2002) identified one moderator: interdependence. They argued that the nature of interdependent work allows individuals the opportunity to observe others' work, and they built a case that interdependence should be carefully considered in any pay dispersion research. In their study, the result confirmed that pay dispersion is more detrimental to firm performance when the nature of work is highly interdependent.

Position in the pay distribution is another important moderator in pay dispersion research. Applying an individual-level perspective, proponents of this moderator argue that individuals low in the pay hierarchy will be especially likely to view dispersed pay as being inequitable. High-earning employees, on the other hand, will be more likely to be tolerant to inequitable pay situations because of their overall larger reward. For example, Trevor and Wazeter (2006) highlighted that negative pay equity perceptions were particularly pervasive for individuals with low pay standing in highly dispersed pay systems. Similarly, Brown et al. (2003) found that pay dispersion is less strongly related to firm performance when average firm pay level is high, and these authors noted that "higher wages can compensate for the negative effects of inequitable pay systems" (p. 760).

Another moderator is pay system communication; how managers communicate with employees about pay strategy and policies clearly and openly. As Shaw and Gupta (2007) posited, "low levels of pay system communication weaken employees' perceptions that within-group pay differences are the result of *legitimate* factors" (p. 909; emphasis added). As documented in the justice literature, clear and open communication is critical because it helps employees understand how and why pay differentials exist within an organization (procedural justice). Through open and clear communication, employees are likely not only to acquire accurate information about pay system (informational justice) but also feel they are treated with respect and dignity by the managers (interpersonal justice). Supporting this rationale, Shaw and Gupta (2007) provided empirical evidence showing the moderating role of pay system communication in understanding the relationships among pay dispersion, pay basis, and firm performance. They demonstrated that in firms with high pay system communication, performance-based pay dispersion was negatively related to high performer quits.

Perhaps the most important moderator (for reasons we outline below), however, is pay basis. The pay basis approach to pay dispersion suggests that if the pay differences between individuals are *legitimately* based on differences in performance outcomes, then employees are not likely to have perceptions that the system is unfair. Further, if performance is tightly tied to pay, then dispersion should have a positive effect on individual motivation, as high-performing individuals have an opportunity to earn more money than they would in a compressed pay structure. Some research has explored the interactional influence between pay basis and pay dispersion on firm outcomes. Shaw and Gupta (2007), as previously discussed, showed that there are negative outcomes for firms where pay is dispersed and not based on performance. Kepes et al. (2009) reported that pay dispersion was positively related to return on equity when pay was not based on politics (i.e., "brown-nosing" or "company politics"). In high politically-based pay systems, pay dispersion was unrelated to return on equity.

Other authors contend that pay basis should be conceptualized as more than just a moderator, but that it arises, intentionally or unintentionally, in modeling pay dispersion data even when the dispersion-by-basis interaction is not of primary interest in the study. Gerhart and Rynes (2003) and Trevor et al. (2012) argued that human capital and pay basis variables are of critical interest to pay dispersion research. Their concern raises a key question about the interpretability of the coefficient of a pay dispersion measure when human capital or pay basis variables are included (thus controlled for) in the model. Including human capital as a control variable, for example, could partial out some portion of variance in the pay dispersion measure that is due to employees having higher levels of ability or performance. They argued that the residual independent variable then represents pay dispersion that is not tied to individual differences in performance. They coin this residual *unexplained* pay dispersion, meaning that pay is not tied directly to productivity-relevant individual differences. As a result, models with human capital control variables are often misinterpreted to imply that pay dispersion negatively impacts performance (e.g., Pfeffer & Langton, 1993). A more careful interpretation, according to this argument, is to say that *unexplained* pay dispersion negatively impacts performance. Although Bloom (1999) and Pfeffer and Langton (1993) both argued that pay dispersion was negatively related to performance, Gerhart and Rynes called these conclusions into question given this argument about human capital control variables.

### 3. A typology of pay dispersion

#### 3.1. Performance-based and non-performance-based pay dispersion

Gerhart and Rynes (2003) and Trevor et al. (2012) noted that explained pay dispersion is used to secure productivity-relevant inputs, and this is critical for analyzing firm-level pay dispersion data. As Trevor et al. showed, explained and unexplained pay dispersion each has different effects on firm performance, and careful modeling of these data can highlight these effects. This delineation requires the assumption that the acquisition and development of human capital is the primary mechanism through which pay dispersion impacts firm performance. Consider an example where an employee with an M.B.A. degree is paid more than an employee with a B.A. degree. This difference would be considered explained in the Gerhart and Rynes approach, as the firm must pay more to acquire an individual with higher education and skills, and the acquisition of those skills (at the collective level) should lead to improved firm performance.

As we noted above, however, we approach this review through a paradigm of employee reactions to pay dispersion. Given this perspective, employees may or may not view the above example as "explained" by differences in productivity-relevant inputs, as the difference in human capital between these two individuals is a deficient measure of the legitimate productivity differences

between these two individuals. That is, there are a very large number of considerations that may impact whether individuals respond positively or negatively to this difference in pay. As such, although the explained/unexplained distinction is ideal for identifying the human capital acquisition mechanism of pay dispersion, this same distinction does not provide clear predictions about the nature of pay dispersion from an employee reaction perspective.

Instead of using the explained/unexplained distinction, we borrow terms from Gupta et al. (2012) by drawing a distinction between *performance-based* and *non-performance-based* pay dispersion. Gupta et al. suggested that pay variation that occurs because of performance-contingent pay should motivate high performance, while pay variation due to other factors (e.g., seniority or politics) would not foster such individual motivation according to tournament and expectancy theories (to be discussed in more detail below). This distinction in terminology is important from an employee reaction perspective to pay dispersion. As one example, pay differences based on individual differences in skills *would not* be “performance-based” according to Gupta et al.’s (2012) language, but most likely *would* be “explained” using Trevor et al.’s (2012) language.

To promote clarity, this review distinguishes between performance-based and non-performance based dispersion. Conceptually, *non-performance-based pay dispersion* is pay dispersion that is not based on individual differences in performance, while *performance-based pay dispersion* can be attributed to individual differences in performance. Although we consider these distinctions to exist at the policy (strategic) level, a statistical way to conceptualize these differences is to consider performance-based pay dispersion equal to the overlap between variance in individual performance and variance in individual pay.

### 3.2. Vertical and horizontal pay dispersion

An additional distinction that is often made in the pay dispersion literature is the difference between vertical and horizontal pay dispersion (e.g., Bloom, 1999; Ding et al., 2009; Kepes et al., 2009; Shaw & Gupta, 2007). These two concepts are distinct based on where pay dispersion occurs: between or within hierarchical levels of an organization (see Gupta et al., 2012, for a complete review). *Vertical pay dispersion* is a between-job construct that generally relates to the “slope” of the pay structure within a firm. Steeper pay structures exhibit higher vertical dispersion, where differences in pay between steps of the organizational ladder are larger than differences in flatter (more compressed) structures. The alternative to vertical dispersion is *horizontal (or lateral) pay dispersion*, which refers to the degree that pay varies for employees within a given job or hierarchical level. Although jobs may be differentiated in titles, we follow Gupta et al. (2012) and adopt a definition of job as a collection of duties and responsibilities. In this sense, different titles may not necessarily mean different jobs (if individuals in these positions conduct the same set of activities). Horizontal pay dispersion could be created by pay-for-performance or seniority pay structures (Bloom, 1999; Shaw & Gupta, 2007).

Integrating these distinctions from existing research, we propose that pay dispersion can be broken down into four categories along these two dimensions: performance-based vertical (PBV) dispersion, performance-based horizontal (PBH) dispersion, non-performance based (NPBV) vertical dispersion, and non-performance-based horizontal (NPBH) dispersion (Fig. 1). At a conceptual level, these categories should be considered mutually exclusive and exhaustive of intra-firm variance in pay. That is, each category can be thought of as a partition of overall pay variation. At a measurement level, however, achieving a reliable and valid measure of a given category proves challenging, as we discuss below. The key point of defining these types of pay dispersion is that care must be taken in interpreting empirical results through the lenses of theory that are most applicable to pay dispersion: equity theory, expectancy theory, and tournament theory.

### 3.3. Theories relevant to pay dispersion

The most commonly applied theories in the area of pay dispersion are equity theory, expectancy theory, and tournament theory. Equity theory posits that individuals calculate a ratio of their own inputs (e.g., effort, skill) to their own outputs (e.g., pay), and then compare those ratios to referent others (i.e., individuals whom they perceive should have comparable input/output ratios). If these input/output ratios are disproportional, individuals generally adjust their own inputs or seek different outputs in order to make the two ratios more equitable. Pay dispersion research generally explains the equity theory application like this: as

<b>Vertical</b>	<b>A. Positive Firm Outcomes</b> (tournament & equity theories)	<b>C. Positive OR Negative Firm Outcomes</b> (equity theory)
	<b>B. Positive Firm Outcomes</b> (expectancy & equity theories)	<b>D. Positive OR Negative Firm Outcomes</b> (equity theory)
<b>Horizontal</b>	<b>Performance-Based</b>	<b>Non-Performance-Based</b>

Fig. 1. A typology of pay dispersion.

pay differences become larger, some individuals will perceive inequity in pay, which will have a negative impact on motivation and satisfaction (e.g., [Kepes et al., 2009](#)). The implication of this perspective, from a pay dispersion standpoint, is that pay system should be as compressed as possible in order to mitigate the negative effects of perceived injustice between employees ([Bloom, 1999](#)). Although equity theory proposes positive outcomes when pay is considered equitable, this “motivating” mechanism is generally not considered in pay dispersion research. We propose that a complete picture of the equity theory mechanism must also include testing the positive effects that are proposed to occur as a result of individuals perceiving proportional input/output ratios in comparison to their referent group.

Expectancy theory ([Vroom, 1964](#)), by contrast, suggests that pay differences are motivating if employees (a) value outcomes, such as a high level of pay (valence), (b) believe that increased efforts lead to increased performance (expectancy), and (c) perceive that a higher level of performance is tied to a higher level of outcomes such as pay (instrumentality). Although early conceptualizations of expectancy argued that the three motivating factors are multiplicative ([Vroom, 1964](#)), meta-analytic evidence suggests that all three of the motivating factors primarily impact motivation through main effects ([Van Eerde & Thierry, 1996](#)). Expectancy theory has two major implications for pay dispersion: 1) that larger rewards will result in greater motivation effect through increased valence and 2) that closer relationships between pay and performance will result in greater motivation through increased instrumentality (i.e., line of sight, [Lawler, 1990](#)).

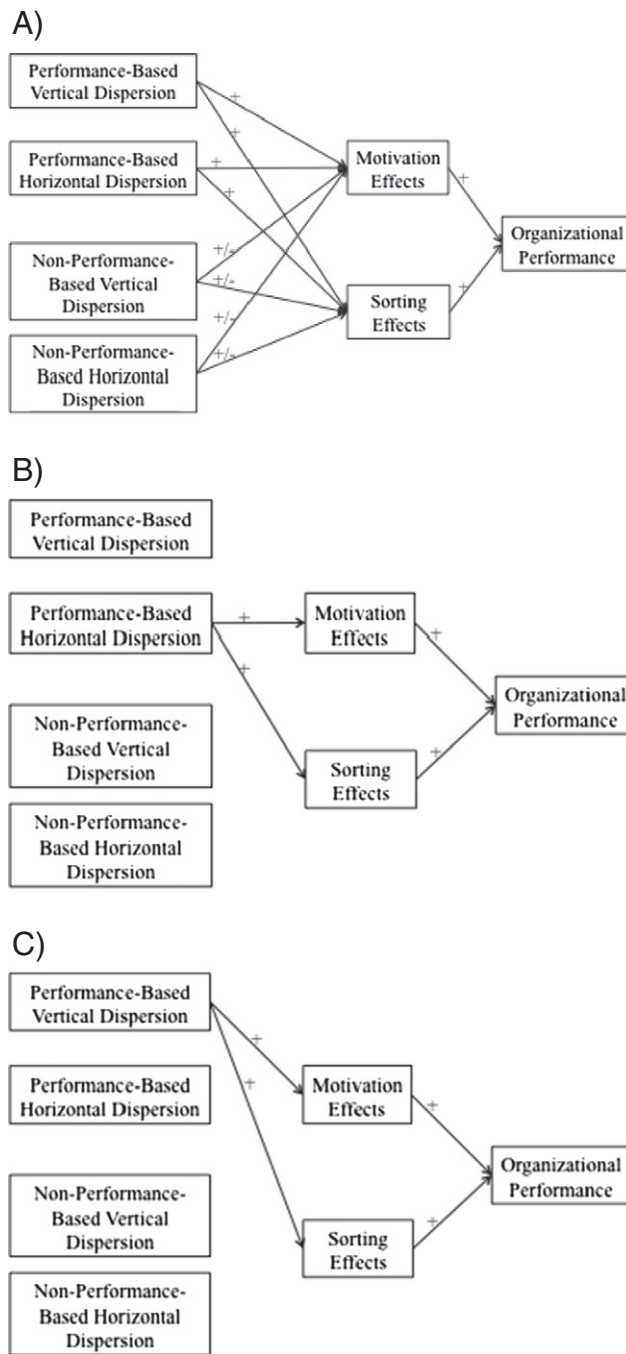
Tournament theory also advocates for larger differences in pay, which are predicted to result in greater motivation ([Trevor & Wazeter, 2006](#)). In this theoretical paradigm, a greater reward (larger raise) for winning (earning a promotion) increases the amount of effort each competitor (employee) will put toward achieving the promotion. The theory also identifies that individuals who win a tournament have an opportunity at the tournaments occurring at higher levels, while losers of a tournament are afforded no such opportunity. This competitive motivation to achieve rewards is posited to incentivize higher levels of motivation and attract higher performers (who can presumably earn more by entering tournaments with larger prizes).

[Fig. 2B](#) and [C](#) illustrates the distinct ways in which equity theory, expectancy theory and tournament theory predict pay dispersion will affect organizational performance. Note that equity and expectancy theories are individual-level and perceptual theories ([Gupta et al., 2012](#)), but in the context of pay dispersion, can affect the organization through the aggregation of individual perceptions, attitudes, and behaviors. At the same time, tournament theory (a traditionally firm-level theory) has important contextual implications for individuals. Pay dispersion, a necessarily firm-level construct, may have cross-level effects on individuals within firms. As such, we have drawn [Fig. 2A](#), [B](#), and [C](#) to represent this reality: pay dispersion impacts individual motivation (e.g., effort, engagement, extra-role behaviors) and sorting (i.e., attraction and retention), and these effects accumulate to impact firm-level performance. Note that these aggregated intervening processes are believed to be the primary mechanisms of the observed relationships between pay dispersion and firm-level outcomes. However, the “black box” of how these effects accumulate yet to be confirmed empirically, as aggregating individual attitudes and behaviors to the firm-level has proven complex in the field of management in general ([Ostroff & Bowen, 2000](#)).

We apply equity theory to the pay dispersion effect in [Fig. 2](#). In this figure, all performance-based dispersion (PBH and PBV) positively impacts individual's reactions (and subsequent motivation and sorting). These relationships capitalize on equity's prediction that individuals compute and compare input/output ratios with referent others. Therefore as performance increases (i.e., input increase) so does pay (i.e., output). However, based on equity theory, interpreting non-performance-based pay dispersion (NPBH and NPBV) is more challenging. At the strategic level, using a non-performance basis would presumably create inequity between employees. Such inequity, then, would lower individuals' motivation and make it more difficult to attract and retain high-performing workers.

From a functional perspective (employee reactions), however, the direction of the effect depends on individual perceptions of legitimacy of that basis for dispersion. As [Shaw and Gupta \(2007\)](#) suggest, the “rationale” or “legitimacy” (p. 909) of employees' perceptions of pay differences may moderate the effects of pay dispersion. Further, [Trevor and Wazeter \(2006\)](#) leave open the possibility that “...pay dispersion's negative associations with pay equity perceptions partially dissipate when the pay basis is viewed as fair” (p. 1272). As one example, skill-based pay dispersion is non-performance based, but individuals may believe that as people's skills improve, so should their pay. In this sense, skill-based pay dispersion is legitimate, and should not result in negative equity perceptions. Politically-based pay dispersion, on the other hand, may not be seen as a legitimate basis for pay dispersion, and thus individuals' input/output ratios would become disproportional (because outputs would vary when legitimate inputs do not vary). This effect of perceptions in input/output ratios in equity theory is not a new concept. [Greenberg and Ormstein \(1983\)](#), after conducting two experiments on how the “deservingness” of a job title influenced subsequent equity responses, noted that “...the same potential reward...was responded to very differently as a function of the perceived basis for its bestowal” (p. 296). In pay dispersion research, legitimized non-performance-based pay dispersion may, in fact, have a positive effect for firms through individual motivation and sorting. Any illegitimate disproportionalities in individuals' input/output ratios, however, will have a negative effect on individuals' motivation ([Cohen-Charash & Spector, 2001](#); [Colquitt, Conlon, Wesson, Porter, & Ng, 2001](#)), which may include individuals withholding their effort, reducing citizenship behavior, or becoming less engaged (these concepts are classified in [Fig. 2](#) as motivational effects<sup>1</sup>). In addition to this motivational mechanism, equity theory also presents an argument that such illegitimate pay dispersion will result in negative sorting effects for the firm. Such disproportionalities should negatively impact job attitudes ([Cohen-Charash & Spector, 2001](#); [Colquitt et al., 2001](#)) and thus intentions to stay with the company ([Mitchell, Holtom, Lee,](#)

<sup>1</sup> The term “motivational effects” is loosely applied in this article to describe the impact of dispersion on a variety of individual performance variables, or variables that have been shown to impact individual performance. Examples of variables from the dispersion literature include perceptions of justice ([Trevor & Wazeter, 2006](#)), product/service quality ([Shaw et al., 2002](#)), and individual performance ([Bloom, 1999](#); [Pfeffer & Langton, 1993](#)).



**Fig. 2.** A. An equity theory perspective on pay dispersion. B. An expectancy theory perspective on pay dispersion. C. A tournament theory perspective on pay dispersion. Note: For all models, plus and minus signs should be interpreted as positive (+) and negative (–) effects for the firm rather than a positive or negative correlation between variables.

Sabylnski, & Erez, 2001). Further, job applicants with higher expectations of organizational justice are more likely to accept job offers and to recommend their organization to other prospective employees (Bell, Wiechmann, & Ryan, 2006).

The second theoretical model (Fig. 2B) represents the model based on expectancy theory. Specifically, this theory explains why PBH dispersion should be linked to organizational performance. First, as noted above, our application of expectancy theory to pay dispersion research posits that individual motivation is dependent on the extent to which performance is tied to pay. Second,

the link between performance and pay is expected to be critical among employees who perform the same job or who hold the same organizational hierarchy (Gupta et al., 2012). In fact, meta-analytic evidence conducted outside of a pay dispersion context showed that greater levels of valence, expectancy, and instrumentality are associated with higher levels of individual outcomes (Van Eerde & Thierry, 1996). In particular, instrumentality (the performance–outcome link) is positively related to individual performance ( $r = .17$ ;  $k = 12$ ), effort ( $r = .24$ ;  $k = 9$ ), intention to apply for a job or to turn over in a job ( $r = .29$ ;  $k = 7$ ), ratings of attractiveness or preference of jobs, occupations, or organizations ( $r = .71$ ;  $k = 14$ ), and choices including actual voluntary turnover, job choice, and organizational choice ( $r = .27$ ;  $k = 4$ ). Given the positive correlations with various organizational criterion measures, we expect a high level of PBH dispersion is positively linked to improved organizational performance and their capability to attract and retain employees.

The third model (Fig. 2C) is based on tournament theory. In this paradigm, PBV dispersion should be the fundamental type of pay dispersion that affects organizational performance.<sup>2</sup> That is, a steeper reward structure up the corporate ladder will induce greater competition among the individuals working toward those rewards. In essence, the employees at a given hierarchical level are in a tournament, competing for small numbers of openings at the next level, where a step up in rewards and prestige can be expected (Lazear & K. Shaw, 2007). From this perspective, the motivational effects of PBV dispersion on individuals are clear, as larger rewards for winning at each level of the tournament will result in each competitor putting in more effort.

Two possible sorting effects can be proposed through the tournament theory perspective: a turnover mechanism and an attraction mechanism. The turnover mechanism is based on the idea that in every tournament there must be losers. The individuals who are not promoted are less likely to win a promotion in later opportunities, and they may voluntarily turn over in pursuit of a different position with another firm. The effect of this turnover on organizational performance is unclear; those individuals are generally lower-performing employees (Shaw & Gupta, 2007). The second sorting effect, attraction, is that the organization may benefit from high-performing employees selecting into an organization that has a greater degree of vertical dispersion. This attraction mechanism may positively impact organizational performance as high-performing employees seek to enter the tournament in order to increase their own compensation. As described below, the sorting effects of vertical pay dispersion are not well-studied (Trevor et al., 2012). Future research has an opportunity to grow our understanding of how these sorting processes impact organizational performance.

When looking at overall pay dispersion (Gupta et al., 2012), it would appear that equity theory, expectancy theory, and tournament theory are set at odds against each other, with managers and researchers attempting to find a sweet spot where incentives are just large enough to motivate individuals, but not quite large enough to create perceptions of unfairness among employees. As we begin to break down pay dispersion into its various components, however, it becomes clear that this is not the case. This typology challenges the notion that there is a “sweet spot” of pay dispersion, and argues that a single pay system can capitalize on the positive effects of tournament, equity, and expectancy theories while minimizing the detrimental effects associated with equity violations. This employee reaction perspective causes us to ask: can pay systems increase certain types of pay dispersion and simultaneously decrease other types of dispersion in order to maximize the positive effects on individuals and organizations?

### 3.4. Control variables in existing research

Before applying the typology to existing research, there are two points about how control variables impact pay dispersion analyses. The first relates to the Gerhart and Rynes (2003) and Trevor et al. (2012) arguments about human capital variables in regression models. The second relates to the nature of pay dispersion (horizontal or vertical) and hierarchical level as a control.

With regard to the first issue, consider two studies (Kepes et al., 2009; Trevor & Wazeter, 2006) that have shed light by performing analyses using both model with human capital variables and model without human capital variables. Kepes and colleagues found no significant differences between the two types of analyses, but Trevor and Wazeter found a small decrease in the main effect of pay dispersion on pay equity perceptions once pay basis variables were removed from the model.

The Trevor and Wazeter (2006) results (as they relate to the use of human capital and pay basis control variables) are theoretically meaningful through the Fig. 2 paradigm. In their Table 3, Model 2, pay dispersion has a greater negative effect ( $\beta = -.040$ ,  $p < .05$ ) on pay equity perceptions than pay dispersion in Model 3 ( $\beta = -.036$ , n.s.). This difference, although small in magnitude, aligns with the expectations of equity theory and our Fig. 2 explication. Their Model 2 controls for the extent to which school districts base pay on years of service and level of education, while their Model 3 does not control for these pay bases. Although these pay bases would not be considered performance-based, they still may be considered legitimate from an employee reaction perspective. That is, employees may react positively to pay dispersion when it is based on these legitimate differentiating criteria (e.g., seniority and skill). As such, when these legitimate pay bases (years of service and level of education) are controlled, pay dispersion has a stronger negative effect on pay equity perceptions because the nature of the pay dispersion variable does not include these legitimate bases for pay.

<sup>2</sup> One could make the argument that non-performance-based vertical dispersion should have a similar effect as performance-based pay dispersion, and increase motivation according to tournament theory. However, expectancy theory posits that if individuals cannot see the connection between their efforts and the rewards they will obtain for those efforts, there will be no increase in motivation. This supported finding is through the performance management literature, where a political environment decreases employee morale and performance (Rosen et al., 2006). In this political environment, rewards may not directly tie to effort (in the minds of employees), so motivation would not be stimulated with non-performance-based vertical dispersion as it would be with performance-based vertical dispersion.



In addition, the magnitude of difference between Trevor and Wazeter's (2006) two models is not surprisingly small, given that only a small portion of legitimate pay differences are partialled out. That is, the pay dispersion measure in both models is still composed of *both* legitimate and illegitimate dispersion. The Model 2 measure of pay dispersion (with pay basis controls), however, is comprised of less legitimate sources of pay variation than is the Model 3 measure of pay dispersion (because in Model 2 *some* of that dispersion is being controlled). If we were able to continue to control out more legitimate sources of pay variation in these data, we expect that the coefficient on the remaining pay dispersion measure would become increasingly negative.

To summarize, from the employee reaction perspective, the legitimately perceived portions of pay dispersion should have a positive effect on pay equity perceptions, while the illegitimately perceived portions should have a negative effect on pay equity perceptions. As the portion of the measure represented by illegitimate portions of variance increases (i.e., legitimate dispersion is modeled out), the coefficient should become increasingly negative according to equity theory. While the differences between the two coefficients are small in Trevor and Wazeter's data, they are in the appropriate direction to support our proposition. Note that this interpretation is slightly different from the explained/unexplained distinction that Trevor et al. (2012) make. They argued that the reason why these coefficients differ is because the explained pay is used to secure human capital that positively impacts firm performance. Our proposition from an employee reaction perspective (and based on our above explication of equity theory) differs slightly in that individuals in the firm react positively to the variance in pay that is attributable to differences in human capital (i.e. productivity-relevant inputs; Lepak & Snell, 1999), and that controlling for these differences highlights employees' reactions to illegitimate pay differences.

If the differing results from Trevor and Wazeter (2006) are theoretically meaningful, why did the Kepes et al. (2009) results not differ? One possible interpretation is based on the employees' legitimacy perceptions in the sample each study used to test their hypotheses. A unique aspect of the truck drivers studied by Kepes et al. (2009) is that their pay level is very strongly tied to performance level, which is a very typical case of PBH dispersion. According to our model, we expect that this type of performance-based pay dispersion has a positive effect on individuals that is not moderated by individual perceptions of legitimacy. That is, each individual driver in Kepes et al.'s sample is very likely to believe their pay level is closely tied to their performance level (based on miles driven); nearly any difference in pay is performance-based and thus perceived as a legitimate input according to equity theory. Once pay dispersion is strongly based on performance and thus viewed legitimate, pay dispersion should be positively associated with individual performance regardless of statistical controls. Contrast this to the teacher sample that Trevor and Wazeter studied, where pay dispersion is more non-performance based than the truck driver sample in Kepes et al.'s work. This non-performance basis creates larger room for subjective legitimacy perceptions from employees' perspectives to impact employee reactions, as non-performance based dispersion can be perceived as legitimate or illegitimate depending on how the pay structure is operating at the individual or functional level.

Therefore, we make the case that employees' legitimacy perceptions play a critical role in understanding the effect of pay dispersion on individual motivation and performance. At the policy (or strategic) level, we suggest four types of pay dispersion and the theoretical frameworks for understanding the impact of each type of dispersion on motivational and sorting effects. At the individual level (or functional level), employees' legitimacy perceptions are formed as their reaction to the pay system and expected to play a pivot role in transmitting the cross-level impact of pay dispersion to individual motivation and performance. As such, human capital variables may very well be the basis of employees' legitimacy perception process, but this proxy may not capture the foundational criteria on which individuals determine whether or not pay differences are legitimate.

We extend the Gerhart and Rynes (2003) and Trevor et al. (2012) argument by pointing out that, from an employee reaction perspective, there is a deficiency of human capital variables to control legitimate portions of pay dispersion out of total pay dispersion. Our interpretation of the pay dispersion measure (with human capital control variables modeled) is that it represents both legitimate and illegitimate portions of pay dispersion. The result of this interpretation is that we, as researchers, are likely underestimating the effect of illegitimate portions of pay dispersion. Given our understanding of equity, expectancy, and tournament theories (see Fig. 2A, B, and C), the regression coefficient of pay dispersion measure with both legitimate and illegitimate portions of pay dispersion will necessarily be smaller in magnitude than a pure measure of illegitimate portions of pay dispersion.

There is a second way in which the use of controls has become important in the pay dispersion literature. In individual-level research questions, if individual hierarchical level is included as a control, the remaining measure of pay dispersion necessarily represents *horizontal* pay dispersion (because the effect of organizational level has been partialled out). For example, Messersmith et al. (2011) used tournament theory to construct an argument regarding the effects of pay dispersion on executive turnover, but they controlled for organizational tenure and hierarchical level (i.e., executive title) in their analyses. Controlling for these variables necessarily results in a test of horizontal dispersion, and the resulting effects cannot be explained through the tournament theory lens (see Fig. 2C). In fact, their findings illuminate one of the rarely studied (at least in dispersion research) mechanisms of equity theory, rather than tournament theory. Equity theory proposes a positive effect on individuals' attitudes when an individual's rewards-to performance ratio is proportional to a referent individual or referent group. While this mechanism does not appear in much existing pay dispersion research, Messersmith et al.'s found that, for individuals with high pay level, pay dispersion was negatively related to turnover. Although they suggest this is a test of tournament theory, we contend that their use of horizontal dispersion suggests this would be better interpreted as a test of equity theory.

In other pay dispersion work, it is difficult to determine whether pay dispersion is operationalized as vertical or horizontal. For example, Bloom and Michel (2002) do not go into detail about whether their measure represents vertical, horizontal, or overall pay dispersion. In their study, if their measure represented horizontal dispersion, then they have made an additional contribution to equity theory, namely that within-level pay dispersion positively predicts turnover. If the gini coefficient they used in this

study, however, is a measure of vertical dispersion, then this study presents support for tournament theory, which posits that more vertical dispersion will result in greater voluntary turnover.

### 3.5. Review of existing pay dispersion studies

In this section, we review the previous studies on pay dispersion based on our framework. Fig. 3 represents the four different types of pay dispersion effect on organizational performance through motivation and sorting effects. According to Fig. 3, relationships A and B are well documented at the strategic level. Clearly a negative effect exists for relationship A (the impact of NPBH dispersion on sorting) is primarily supported by a number of studies that look at how pay dispersion influences the likelihood of individual turnover (e.g., Messersmith et al., 2011; Pfeffer & Davis-Blake, 1992; Shaw & Gupta, 2007). Relationship B (between NPBH dispersion and employee motivation) has been tested by much of the existing dispersion research (Bloom, 1999; Kepes et al., 2009; Pfeffer & Langton, 1993; Shaw et al., 2002; Trevor & Wazeter, 2006). As we mentioned above, however, the functional (employee reactions) levels of relationships A and B have not yet been studied.

Relationships C and D (the effects of NPBV on individual retention and motivation) are currently unexplored in the pay dispersion literature, although its effects can be inferred from given theory and existing research in other literatures. For example, the distributive justice paradigm is a well-developed area of research (Colquitt et al., 2001) that would provide a logical framework for the negative relationship between unexplained vertical dispersion and individual retention motivation. This paradigm argues that individuals respond negatively to unfair distributions of rewards. Although fairness is a subjective concept, several types of allocation rules have been studied in this research (e.g. equity, equality, need). We propose that individuals will respond negatively to unfairness according to these rules. Additionally, Rosen, Levy, and Hall (2006) showed that individual motivation is reduced when individuals observe a loose connection between performance and rewards at higher levels of the organizational ladder. Although Kepes et al. (2009) studied NPBH and not NPBV, their findings are consistent with Rosen et al. (2006). Future research can confirm that NPBV has a similar negative effect as NPBH.

With regard to the effect of PBH, Trevor et al. (2012) and Shaw and Gupta (2007) provide the only existing evidence that supports relationship E (the effect of PBH dispersion on sorting). Trevor and colleagues argue that their study demonstrates how explained pay dispersion impacts sorting outcomes, and human capital (i.e., team member inputs) in this study was operationalized as performance in year  $t - 1$ . As we mention above, there are some similarities and differences between Trevor et al.'s use of the explained/unexplained distinction and Gupta et al.'s (2012) use of performance-based/non-performance-based distinction. In this case, however (because Trevor and colleagues actually use prior performance as their operationalization of human capital), explained pay dispersion and performance-based pay dispersion are equivalent. J. Shaw and Gupta showed that high performing truck drivers were retained through performance-based pay dispersion, while non-performance-based pay dispersion was positively associated with good performer quits. Relationship F (the effect of PBH on motivation) was tested and supported by Becker and Huselid (1992) based on tournament theory. It should be noted, however, that their study is a very specific case where NASCAR drivers compete with each other for winning a prize. Although tournament theory can be applied to test the effect of PBH in such cases (Gupta et al., 2012), this relationship in general is posited by expectancy theory more than it is posited by tournament theory. While Becker and Huselid's findings provide excellent evidence regarding the nature of the effect of PBH, additional research should be conducted to more fully understand the effect of PBH on motivation and performance.

In terms of the effect of PBV, relationship H appears to have been a primary target of many of the studies in this review (e.g., Brown et al., 2003; Ding et al., 2009), but based on our taxonomy, they have not provided insight into this relationship. Two studies that have measured PBV dispersion have found limited effects. The findings of Ding et al. (2009) support that inter-hierarchical (vertical) wage dispersion positively impacts firm performance. These results are limited, however, in the measure of organizational performance (subjective ratings of human resources managers). Brown et al. (2003), in their study of 333 hospitals, showed that more dispersed pay systems result in higher quality output (better patient care), although testing this

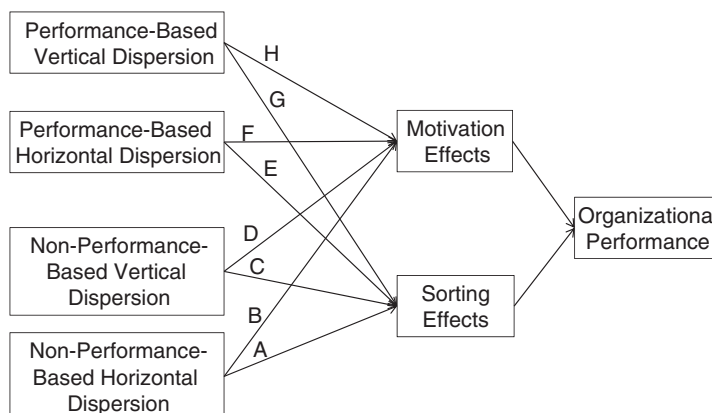


Fig. 3. A theoretical model of four types of pay dispersion and organizational performance.

main effect was not a primary point of emphasis in the study. For the relationship between PBV and sorting, relationship G has been remained still unexplored. Future research is needed to test whether PBV has a positive sorting effect.

#### 4. Discussion

From our review we conclude that pay dispersion does, in fact, have important outcomes for firms. Clearly this pay structure characteristic can motivate, de-motivate, attract, retain, and encourage turnover among employees. Although these effects seem radically different, there are a few conditions that provide for predictable effects of pay dispersion. First, pay dispersion that is based on performance is generally motivating for employees and positive for firms. In a similar vein, using pay dispersion to acquire valuable and talented employees (i.e., employees with higher human capital) appears to be positive for firm outcomes. Second, employees will respond differently depending on their position in the pay hierarchy. Not surprisingly, employees high in the internal distribution of salaries tend to respond positively to pay dispersion, while employees low in this distribution will respond negatively to increased pay dispersion. Although these conditions offer some advice to managers designing pay systems, much future research is needed to better understand the impact of pay dispersion on firms.

##### 4.1. Future research

Aside from the research proposed above, there may be several other ways to develop a more complete picture of how pay dispersion impacts firms. Perhaps the simplest recommendation to implement is that this field needs more research on more diverse samples in order to offer more comprehensive conclusions regarding the effects of pay dispersion on organizational outcomes. After reviewing a great deal of the pay dispersion research in the management literature, one of the primary criticisms we have surrounds the samples that have been studied, which have included: professional auto racers, professional golfers, Major League Baseball players, professional hockey players, management professors, truck drivers, teachers, hospitals, and top management teams. It is difficult to say that any of these samples are representative and exhibit external validity to the population of organizations. Researchers may, in fact, discover moderating effects in different industries.

Beyond the external validity of these samples, however, of the samples listed above, very few are appropriate for testing the tournament theory mechanisms of pay dispersion (Fig. 2C). That is, for many of these samples a promotional tournament does not exist. Take, for example, a sample of teachers. With a few exceptions, teachers are not competing for a promotion to a higher-level, higher-paying position. As such, a tournament theory mechanism is not likely to be present in this sample. While variance in pay dispersion exists between educational organizations, tournament theory does not posit that teachers will be motivated to improve their performance as a result of this pay dispersion. In order to test tournament theory exclusively, researchers must seek out new samples where tournaments for career advancements are explicitly present in the data.

Future research at the firm level can also advance our understanding of pay dispersion by testing alternative causal models. For example, a reverse-causal model is possible; organizational performance could lead to changes in pay dispersion. In fact, Bloom and Michel (2002) demonstrated that environmental munificence was positively related to subsequent pay dispersion. Further, some evidence exists that people overemphasize the impact of a leader on team performance (Meindl, Ehrlich, & Dukerich, 1985). It is possible that, following a certain level of organizational performance, leaders are either over- or under-rewarded (or terminated) relative to their contribution. This process would impact pay dispersion in a way that is consistent with some of the existing research. Longitudinal analyses may rule out the possibility that pay dispersion is actually a response to organizational performance.

In a similar vein, the existing pay dispersion literature rarely discusses the possibility of endogeneity. Although many isolated studies examine several control variables, the existing literature, taken as a whole, has analyzed a small number of potentially related constructs. There could, in fact, be a number of non-measured variables that impact both pay dispersion and firm performance. For example, increased vertical pay dispersion may be evidence of unethical or counter-productive leadership, which could potentially have a negative impact on organizational performance (or a positive effect, depending on the performance measure). Further, steeper pay structures themselves would not cause lower organizational performance, but poor leadership may cause both greater dispersion and lower organizational performance. Similar correlates might include research and development or corporate strategy. For example, a cost-leadership strategy may have negative effects on pay dispersion and positive short-term effects on organizational performance.<sup>3</sup>

A major conclusion of our review is that tournament theory has not fully been tested in pay dispersion research. There are two possible ways that tournament theory can be tested. Trevor et al. (2012) used a statistical process that objectively evaluates “explained” pay dispersion (in their terminology) and creates a residual term that is useful for measuring “unexplained” pay dispersion. We suggest that future firm-level research follow this approach as it is excellent for dealing with panel or archival data, and will allow us to test certain tournament-theory questions. However, the drawback of these “explained” and “unexplained” measures is that they still do not capture individual perceptions of pay dispersion, which are fundamental mechanisms to tournament, expectancy, and equity theories. Future research at the individual level can therefore contribute to pay dispersion research by advancing our understanding the “black box” of these perceptual processes.

<sup>3</sup> Bloom and Michel (2002) investigated the impact of investment opportunities on dispersion. This proposition differs from this study in that they included opportunities for firms to invest in projects outside the organization. Our proposition is that a lack of reinvestment of capital into the firm may signal a risk-averse approach to financial management, which could correlate with compressed pay and short-term firm outcomes.

One individual-level research method to enhance our understanding of tournament theory in motivation and turnover is through an experimental design. We found no experimental studies that supported the tournament theory in management journals. It does appear that economists have conducted experimental tests of tournament theory (e.g., Bull, Schotter, & Weigelt, 1987; Harbring & Irlenbusch, 2003). However, these studies have focused on testing the tenets of tournament theory by manipulating prize sizes and ratios of winning competitors. While these experiments are important in demonstrating and understanding some of the effects of tournaments, we suggest that HR researchers can build on this work by using the laboratory to better understand the mechanisms of individuals' responses to pay dispersion. A psychological perspective to these phenomena may uncover different mechanisms or boundary conditions that can be useful to managers designing pay systems. For example, Harbring and Irlenbusch (2003) showed that effort levels were bipartite when 1/3 of the competitors won a tournament (this was not the case when 1/2 or 2/3 of competitors won). They suggested that relative deprivation might be one explanation for their observation, but HR researchers might also draw on self-efficacy, goal orientation, and goal commitment research in understanding how individuals respond to pay dispersion and tournaments.

Another way individual-level analysis can support study on pay dispersion is via conducting research on individual perceptions of how pay dispersion comes to be performance or non-performance based and legitimate or illegitimate. As we have suggested in this review, employees are the ultimate authority with regard to the extent to which pay system dispersion is legitimate or illegitimate. As such, human capital variables may not be the only criteria on which individuals make these judgments. There are many possible criteria on which employees may base such an evaluation. Qualitative and field survey research methods are appropriate for identifying and testing these other criteria. This research agenda ultimately may lead management researchers to better understand means through which organizations can increase the amount of pay dispersion that employees consider legitimate. For example, Vest, Scott, Vest, and Markham (2000) found that perceptions of pay level equity and performance appraisal accuracy are significantly related to employees' belief that pay is tied to performance. And, qualitative research will advance our understanding to a deeper level with regard to how employees' legitimacy perceptions of pay dispersion are formed. In such studies, researchers can examine employees' perceptual processes by asking (a) how employees shape their perceptions of what their pay system is like, (b) how they develop their expectations about what their organization should provide, and (c) what kind of exchange relationships (e.g., social or economic/transactional) they build with their organization. Narrative analyses of qualitative data on these questions can help understand the cross-level mechanisms whereby pay dispersion impacts individual motivation and sorting.

Extending this use of survey research, another question that arises when individuals' perceptions of pay dispersion are considered alongside objectively measured pay dispersion is the relationship between actual pay dispersion and individuals' perceptions of pay dispersion. Tournament, expectancy, and equity theories posit that individuals accurately perceive pay dispersion, but current research has yet to confirm this assumption. Do employees accurately perceive the degree to which their firm has a dispersed pay system? What individual or pay system factors facilitate both: (a) accurate perceptions of pay dispersion, and (b) the degree to which individuals see these differences as legitimate? These questions, again, could be answered by performing pay dispersion research at the individual level.

One more suggestion of how individual-level research can advance our understanding of pay dispersion is to examine the role of individual differences in analyzing employees' responses to pay dispersion. For example, performance-prove goal orientation describes individuals who seek to demonstrate their competence to others, and achieving goals and rewards provides evidence of such accomplishments (VandeWalle, Cron & Slocum, 2001). These individuals may be particularly uncomfortable with non-performance-based pay differentiation. Performance-avoid-oriented individuals, in contrast, seek to avoid displaying incompetence (VandeWalle et al., 2001). These individuals may actually prefer non-performance-based rewards differentiation due to their fear of being unable to achieve their goals.

Further, the effects of pay dispersion may be nonlinear, as individuals could perceive that the differences in pay are too large to justify extra effort. Such a negative curvilinear (inverse-U) relationship between pay dispersion and individual motivation has yet to be empirically investigated. Grund and Westergaard-Nielsen (2008) demonstrated this type of effect in a variety of Denmark-based organizations. However, they also show a positive curvilinear (U-shaped) effect of wage *growth* dispersion on firm performance. They argue that a fairness mechanism operates up to a certain level of wage growth dispersion, at which point a competition mechanism creates a positive effect for individuals. Although we have preliminary data regarding the nonlinear effects of pay dispersion, the door is certainly not closed on this issue. In fact, an understanding of nonlinear pay dispersion effects is an important area for future research.

As an alternative individual difference, McClelland (1964) noted that money has different meanings to different people. Expectancy theory (Vroom, 1964) also predicts that the effect of pay dispersion on individual motivation will vary depending upon valence of outcomes (i.e., pay). Thus, we believe that attitude toward money – defined the extent to which people value money (Tang, 1993) – is one example of an individual difference that may play a role in understanding employees' reactions to pay dispersion. The more an individual values pay, the more responsive to pay dispersion he or she will be. Other examples, based on equity theory and social comparison theory (Festinger, 1954), include equity sensitivity (Huseman, Hatfield, & Miles, 1987) and social comparison orientation (Gibbons & Buunk, 1999). Equity sensitivity refers to individuals' sensitivity (or tolerance) to violations of equity norms (Huseman et al., 1987), and social comparison orientation refers to individuals' inclination to engage in social comparison (Gibbons & Buunk, 1999). Given that social comparison and equity norms may be core perceptual principles in understanding individual reactions to pay dispersion (e.g., Harris, Anseel, & Lievens, 2008), we expect that examining these two characteristics enhances how employees react to actual pay system and shape legitimacy perceptions of pay differences.

## 4.2. Managerial implications

Our review suggests two major implications for managers. First, managers should increase pay dispersion (both vertical and horizontal) that is based on performance differences. Theory and empirical evidence presented above identifies that such pay dispersion will positively impact employee motivation, attraction, and retention. At this strategic level, based on our review, the primary take away for designers of pay systems is that performance-based dispersion will motivate and attract highly productive employees.

Secondly, managers should work to increase employees' perception of legitimacy of pay dispersion. This notion is consistent with an organizational fairness perspective, which suggests that procedural fairness of the HR systems can maximize the effectiveness of distribution of organizational resources, such as pay. Empirical research suggests that one HR policy, pay system communication, can improve individuals' perceptions of legitimacy (Kepes et al., 2009).

Future research in this area will identify other possible organizational practices which individuals' legitimacy perceptions can be enhanced. For example, we suggest that HR policies could provide employees with opportunities to express their opinions (e.g., due process, appeal opportunity), which in turn will strengthen employees' procedural fairness perceptions. Culture may also play an important role in impacting legitimacy perceptions. For example, consider a manufacturing firm that uses educational level as a basis for pay differentiation. Given a production-emphasis culture, such a non-performance-based pay differentiation basis may have a stronger impact on employees than the same pay basis might in a knowledge-worker environment. In summary, managers at the strategic level should consider ways to both increase performance-based dispersion and create organizational policies that increase perceptions of legitimacy in order to capitalize on tournament, equity, and expectancy theory effects. The design of these systems must take into account individual, organizational, and environmental characteristics that may moderate the impact of pay dispersion.

To conclude, Hunnes (2009), in a study of more than 1700 firms across an eleven-year period, showed no relationship between pay dispersion and firm performance. This finding is seemingly robust given the nature of the data that was analyzed. One of two conclusions can be made in interpreting these results: (a) pay dispersion actually has no effect on firms, and differences in firms are strictly random and inconsequential, or (b) pay dispersion does have an effect, but we must continue to advance our ability to measure and model this construct in order to accurately explain its effects on organizations.

This review assumed the latter interpretation. Pay dispersion is an important strategic weapon in a firm's human resources arsenal. It can have major implications on employee motivation, performance, and retention, and there are recruiting effects that can become a strategic advantage as a firm competes in the market. By better understanding pay dispersion and its unique effects on organizations, research can make strides in its ability to inform and advise pay systems in firms.

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