

SIGNALING IN SECRET: PAY FOR PERFORMANCE AND THE INCENTIVE AND SORTING EFFECTS OF PAY SECRECY

ELENA BELOGOLOVSKY
Cornell University

PETER A. BAMBERGER
Tel Aviv University

Although the vast majority of U.S. firms follow a policy of pay secrecy, research provides a limited understanding of its overall utility to organizations. Building on signaling theory, we develop and test a model of the incentive and sorting effects of pay secrecy—a pay communication policy that limits employees' access to pay-related information and discourages the discussion of pay issues—under varying pay-for-performance (PFP) system characteristics. Results of a multiround laboratory simulation largely support the proposed moderated-mediation model. They indicate that pay secrecy has an adverse impact on individual task performance that is mediated by PFP perceptions, amplified when pay determination criteria are relative (as opposed to absolute), and attenuated when performance assessment is objective (as opposed to subjective). Results also indicate that pay secrecy has a similar adverse effect on participant continuation intentions (mediated through PFP perceptions, amplified when pay determination criteria are relative, and attenuated when performance assessment is objective), particularly among high performers. These findings suggest that weak signals associated with a particular managerial practice may become salient when interpreted in the context of other practice-based signals and that, under such conditions, even weak signals may drive negative-oriented inferences, having important behavioral implications.

Although the National Labor Relations Board (NLRB) and courts have struck down organizational pay secrecy as a violation of employees' rights under the National Labor Relations Act of 1935 (Gely & Bierman, 2003), pay secrecy—a pay communication policy that limits employees' access to pay-related information and discourages discussion among employees about pay issues—continues to be widespread (Colella, Paetzold, Zardkoohi, & Wesson, 2007; Day, 2007). Indeed, most private sector employees are discouraged or prohibited from discussing compensation-related issues with

others (IWPR & Rockefeller Survey of Economic Security, 2011; Lawler, 2003).

For scholars as well, pay secrecy continues to be a controversial topic, with little agreement regarding its overall impact (Colella et al., 2007; Tremblay & Chenevert, 2008). Those favoring pay secrecy over transparent pay communication speculate that—particularly in the context of pay for performance (PFP)—transparency has the undesired effect of causing managers to compress performance ratings in order to avoid the pecuniary costs of differential pay. Such centralization of ratings, by equalizing pay, can generate weak incentive and negative sorting effects (Bartol & Martin, 1989; Leventhal, Karuza, & Fry, 1980; Major & Adams, 1983), both of which would undermine performance. Others argue that transparency can exacerbate employee jealousies and conflicts (Balkin & Gomez-Mejia, 1990). In contrast, drawing from equity (Adams, 1965) and justice (Greenberg, 1990) theories, those favoring pay transparency argue that, by promoting internal consistency, pay transparency reinforces employee trust in management, and thus

We are grateful to Michal Biron, Matt Bloom, Dvora Geller, Barry Gerhart, Nina Gupta, Kevin Hallock, David Wagner, and Michele Williams for their helpful comments and suggestions on earlier versions of this manuscript. We also thank Jason Shaw and three anonymous reviewers for their constructive critiques and insightful recommendations. This research was supported by the generous financial help of an Israel Foundations Trustees (IFT) doctoral grant awarded to the first author, as well as by a grant from the Henry Crown Institute for Business Research at Tel Aviv University.

has positive incentive and sorting effects, boosting task commitment and facilitating the retention of strong performers (Cloutier & Vilhuber, 2008; Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Day, 2007; Lawler, 1966a, 1966b, 1967; Milkovich, Newman, & Gerhart, 2013).

Unfortunately, the empirical evidence does little to resolve this conundrum in that, as Colella et al. (2007: 56) concluded, research on pay secrecy is both “scanty” and “dated.” Most of our knowledge regarding the consequences of pay secrecy is based on empirical research conducted 30 or more years ago (Lawler, 1966a, 1966b, 1967; Leventhal et al., 1980; Milkovich & Anderson, 1972), with the vast majority of this research examining the effects of pay secrecy on employee pay perceptions and managerial reward allocation. Indeed, only three studies that we know of (i.e., Bamberger & Belogolovsky, 2010; Futrell & Jenkins, 1978; Tremblay & Chenevert, 2008) have empirically examined the performance-related consequences of pay secrecy. Notably, two of these studies suggest that pay secrecy has detrimental performance consequences, while the third suggests beneficial effects. Moreover, only the most recent of these studies began to explore the mechanisms potentially underlying such an association. Testing a variety of possible mediators based on justice and expectancy theories, Bamberger and Belogolovsky (2010) found only PFP perceptions (i.e., the perceptions that employees hold regarding the nature of performance-pay contingencies) to partially explain the effects of pay secrecy on performance, but only for more inequity-sensitive individuals. Accordingly, scholars have yet to develop a comprehensive theoretical framework able to explain when and how pay secrecy may affect task performance regardless of individual differences.

Research on the sorting effects of pay secrecy is even more limited, with only one study examining its impact on employee turnover (Card, Mas, Moretti, & Saez, 2012). This study found pay communication policy to have no significant effect on job search among those paid at or above the unit or occupational median, but did find employees in the lowest pay quartile and working under conditions of pay transparency to be 20% more likely than their quartile peers working under conditions of pay secrecy to report searching for a new job (Card et al., 2012). Finally, although Colella et al. (2007) suggested that the broader pay context within which pay secrecy is adopted has significant implications for the policy's consequences,

scholars have yet to generate (let alone to test) a theory regarding how other pay system characteristics may moderate the effects of pay secrecy. Accordingly, the purpose of the current research is to develop and test an integrative model of the incentive and sorting effects of pay secrecy under varying pay system characteristics.

In developing and testing our model, we focus attention on one particular dimension of the broader pay system—namely, the nature of PFP, or the way in which the pay system accounts for differential employee contribution. We do so for two reasons. First, in the private sector, PFP is pervasive (Gerhart, Rynes, & Fulmer, 2009), with 90% of all U.S. companies reporting that they connect at least a portion of their employees' pay to measures of individual or firm performance, or some combination of the two (Cohen, 2006), most typically in the form of a bonus (Bloom & Milkovich, 1998; Milkovich et al., 2013). Second, although most PFP systems are implemented in the context of pay secrecy, research on PFP under varying degrees of pay transparency has generated inconsistent results (Perry, Engbers, & Jun, 2009). For example, Pfeffer and Langton (1993) demonstrated that while greater pay dispersion (a typical outcome of PFP) in higher education is associated with decreased faculty productivity, this effect is less severe in private universities and colleges in which pay is *less* transparent. In contrast, Shaw and Gupta (2007) found PFP to enhance the commitment of higher performers to the extent that the pay system was *more* transparent. Such inconsistent findings regarding the consequences of the PFP–pay–secrecy interaction suggest that, in seeking to understand how the broader pay system may moderate the incentive and sorting effects of pay secrecy, varying PFP system characteristics may provide a useful starting point.

We develop our model of how PFP system characteristics moderate the incentive and sorting effects of pay secrecy by integrating research on positive–negative asymmetry and paranoid cognition (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Kramer, 1998) with signaling theory (Spence, 2002). As pointed out by Connelly, Certo, Ireland, and Reutzel (2011), signaling theory focuses on information asymmetries in an effort to explain whether and how parties attempt to communicate information and how recipients interpret such signals. Signaling theory may be useful for understanding the interactive effects of pay secrecy and PFP for two reasons: First, pay secrecy has a

direct and obvious impact on information asymmetry in employment relations; second, as noted by Gomez-Mejia, Berrone, and Franco-Santos (2010: 104), agency theory—a central theory upon which PFP is based (Cadsby, Song, & Tapon, 2007)—“argues that pay is an important signaling device.” Indeed, agency theory suggests that, particularly in an asymmetrical information context, PFP may have beneficial *incentive* effects (by allowing management to emphasize those behaviors most valued or to signal those objectives of highest priority), as well as beneficial *sorting* effects (by signaling the type of employees whom it seeks to attract and retain).

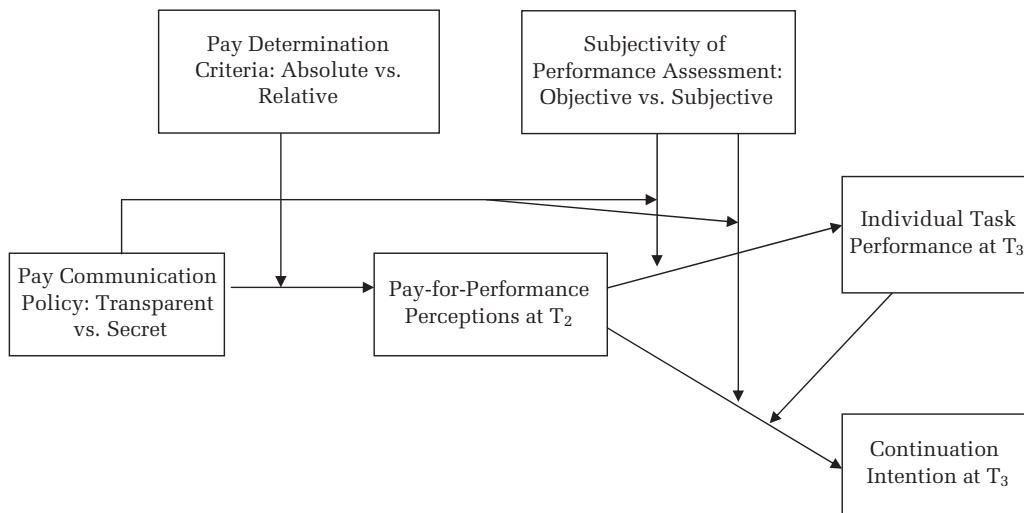
However, as we will argue, signaling theory also suggests that recipients may draw inferences from pay system attributes beyond or different from those intended by management (Connelly et al., 2011; Suazo, Martínez, & Sandoval, 2009, 2011). In particular, in contrast to the trust-reinforcing effects of pay transparency noted earlier, employees may interpret pay secrecy as a signal of deception (Day, 2007; Milkovich et al., 2013). We base this assertion on social-psychological research, which suggests that situational attributes signaling uncertainty or potential risk can foster modes of social information processing that elevate distrust and suspicion (Baumeister et al., 2001; Kramer, 1998).

Moreover, while signaling theory focuses on deterministic effects of one signal at a time, we suggest that signals tend to be interpreted in light of other signals, with weak signals potentially becom-

ing salient when interpreted in the context of other signals. As such, pay secrecy may create a context in which the inferences that employees draw from two main and interactive PFP attributes—namely, the nature of pay determination criteria (i.e., absolute vs. relative), and the subjectivity of performance assessment—ultimately combine to *adversely* affect individual performance and continuation intentions. More specifically, we argue that inferred signals of heightened uncertainty regarding how performance links to pay (on the basis of relative—as opposed to absolute—pay determination criteria) and inferred signals of heightened risk of bias (on the basis of assessment subjectivity) amplify the adverse effects of pay secrecy on performance and continuation intentions. Accordingly, we develop a moderated-mediation model of the incentive and sorting effects of pay secrecy in the context of PFP (see Figure 1), which we test on the basis of a laboratory simulation.

By proposing and testing this model, we offer several theoretical contributions. First, we extend signaling theory by proposing and demonstrating that the inferences drawn from one particular signal may vary as a function of signals inferred from other related management policies or practices, suggesting that even weak signals may become salient when interpreted in the context of other signals. We also advance signaling theory by integrating notions of positive–negative asymmetry (Baumeister et al., 2001) and sinister attribution (Kramer, 1998), and by demonstrating how contex-

FIGURE 1
Theoretical Model



tual practices signaling uncertainty can result in the overweighting of malevolent inferences when interpreting weak signals. Additionally, while signaling theory has been applied in human resources research to explain employer and candidate behavior in the staffing process (Rynes, 1991; Suazo et al., 2011), we extend signaling theory into the realm of compensation, using it as a means to better understand how pay administration may influence two key compensation outcomes: performance, and continuation intentions. This is important in that, as Gomez-Mejia et al. (2010: 104) point out with respect to pay, “there is practically no research on how the signaling process works (or doesn’t work).” In doing so—following the recommendations of Colella et al. (2007), who suggest that the broader human resources context may influence the ultimate impact of pay secrecy on employee outcomes—we attempt to systematically incorporate several of these elements into a single, integrative theoretical model. Accordingly, we provide a more nuanced and context-sensitive (Johns, 2006) framework within which to understand when and how pay secrecy may interact with other pay system attributes to affect employee outcomes. Finally, we extend past research on the performance-related consequences of pay secrecy to the issue of sorting, theorizing, and demonstrating how, in the context of alternative PFP system attributes, pay secrecy may also affect continuation intentions, particularly among high performers.

THEORETICAL BACKGROUND AND HYPOTHESES

Information Asymmetry and Signaling Theory

In economics, information asymmetry occurs when one party to an exchange has more or higher quality information than the other—or, as Stiglitz (2002: 469) explained, when “different people know different things.” Information asymmetries can result in less-than-efficient transactions or, when aggregated to the market level, dysfunctional markets (Akerlof, 1970). Accordingly, as originally proposed by Spence (1973), informed parties attempt to communicate or “signal” certain information to their underinformed exchange partners, hoping that, by reducing uncertainty on the part of the underinformed, they can elicit behavior more favorable to themselves (the more informed). Connelly et al. (2011: 45) refer to this as the “strategic aspect of signaling,” noting that, “for signaling to

take place, the signaler should benefit by some action from the receiver that the receiver would not otherwise have done.”

However, underinformed parties need not wait for the informed party to signal; rather, they can scan their environment for signals that might reduce uncertainty and hence lower risk in choice behavior. Indeed, Connelly et al. (2011: 54) posit that, for the underinformed, “monitoring the environment for weak signals can be particularly important.” Given that informed parties typically signal strategically (Connelly et al., 2011), such monitoring allows underinformed recipients to assess the signaler’s credibility and intent (Davila, Foster, & Gupta, 2003).

The effectiveness of signaling in resolving information asymmetries is contingent on the accuracy with which recipients interpret the signals received. But, for several reasons, recipients may tend to interpret signals in a manner inconsistent with the intentions of the signals’ senders. First, as Connelly et al. (2011: 55) write, “receivers may apply weights to signals in accordance with preconceived notions about importance or cognitively distort signals so that their meanings diverge from the original intent of the signaler.” Second, they may use weak, intent-oriented signals (Stiglitz, 2002), distilled from the environment, as a framework with which to interpret stronger signals transmitted by their exchange partner, such that the interpretation may be quite different from the intended message (Suazo et al., 2011). For example, although the provision of work–life benefits may be used by management to signal to workers that they are valued in the hope of eliciting enhanced employee commitment (Lambert, 2000), employees may also pick up on other, inconsistent signals (e.g., rumors of an intended layoff or union-busting campaign) that may potentially weaken the strength of the signal or result in its complete misinterpretation. Third, consistent with the positive–negative asymmetry effect, in drawing inferences from signals, individuals may pay more attention to, and overweight, negative information (Baumeister et al., 2001; Peeters & Czapinski, 1990). This overweighting of the negative when drawing inferences from signals appears to be particularly robust under conditions of uncertainty (Kramer, 1998, 2001). More specifically, research on paranoid cognition indicates that individuals uncertain about their social standing in groups and organizations tend to pay more attention to information supportive of a stance of distrust than to that supportive of

trust, thus leading them to be suspicious regarding others' motives and intentions. Such suspicion can lead to a sinister attribution error (i.e., a tendency to overattribute hostile intentions and malevolent motives to others), thus motivating behaviors aimed at loss prevention or reduction (Kramer, 1998, 2001).

Finally, economists typically assume information asymmetry as a given attribute of a market that, while perhaps exploited by a more informed exchange partner, is not the result of any intentional act by either party. However, information asymmetry can also be intentional on the part of one of the exchange partners, creating what Williamson (1975) terms "information impactedness." Such is the case with pay secrecy, in that, in the vast majority of workplaces, pay-related information is intentionally made asymmetrical by employers. And although there is little research regarding how different signals may interact with one another to shape choice behavior (Connelly et al., 2011), it is conceivable that the underinformed party may interpret such *intentional* information asymmetry as a signal in and of itself, and thus use that understanding to facilitate the interpretation and assess the credibility of other signals (Stiglitz, 2002).

Taken together, signaling theory therefore suggests the following four main principles relevant to understanding the incentive and sorting consequences of pay secrecy in the context of PFP.

Principle 1. Informed exchange partners transmit signals to their underinformed partners in order to influence their behavior.

Principle 2. Underinformed partners scan their environments for signals that may reduce uncertainty.

Principle 3. Signals may be misinterpreted by recipients.

Principle 4. Intentional asymmetries directly attributable to the informed party may be interpreted by an underinformed party as a signal of intent, which may in turn influence the underinformed party's interpretation of other signals transmitted by the informed party.

Signaling, and the Incentive and Sorting Effects of Pay Secrecy

As noted earlier, empirical evidence regarding the consequences of pay secrecy is both limited and equivocal. Moreover, while justice and expectancy

theories have been proposed to explain the possible performance and sorting effects of pay secrecy (Colella et al., 2007; Colella, Zardkoohi, Paetzold, & Wesson, 2003), in the one study empirically testing hypotheses drawn from both of these theories (Bamberger & Belogolovsky, 2010) no support was found for a justice-based explanation—and only limited, person-contingent support was found for the notion that PFP perceptions underlie the effect of pay communication on performance. Given that pay secrecy, by its very nature, creates a situation of information asymmetry, we build on the four signaling-related principles derived above (see "Information Assymetry and Signaling Theory") to extend the findings of Bamberger and Belogolovsky (2010), and to develop a more comprehensive, context-sensitive theoretical model of the incentive and sorting effects of pay secrecy.

An understanding of the performance–pay relationship is vital to employees whose pay is at least partially contingent upon performance, since it is difficult to estimate the utility of marginal effort (and hence difficult to make choices about how much additional effort to exert on the job) without such an understanding (Heneman, Greenberger, & Strasser, 1988). Understanding the nature of performance–pay contingencies strictly on the basis of one's *own* experience is problematic in that it demands the consideration of multiple performance–pay events, which, in the case of a single individual, can often be inferred only over time. In contrast, information on the pay associated with varying levels of co-worker performance facilitates employees' timely estimation of performance–pay relations (Naylor, Pritchard, & Ilgen, 1980).

However, when PFP is applied in the context of pay secrecy, it is more difficult for employees to estimate the nature of performance–pay relations. As suggested in our review of information asymmetry research, under such conditions underinformed agents (i.e., employees) tend to monitor their environment for signals providing insights into the nature of pay-related contingencies. Because some of these signals may be weak and hence rather equivocal, they may be open to misinterpretation (Principles 2 and 3). Frank (1985) offers an excellent example of how weak signals may affect employees' pay-related impressions. He suggests that, in attempting to distill others' pay status in the context of information asymmetry, individuals tend to ground their inferences on the observation of others' acquisition of "positional goods"—that is,

“things whose value depends relatively strongly on how they compare with things owned by others,” such as cars and clothing (Frank, 1985: 101). Because positional goods are precisely those highly observable goods on which individuals tend to overspend, individuals may tend to overestimate the pay of those whom they would otherwise expect to be earning the same or less than themselves.

Aside from generating a situation of information asymmetry demanding employee inference of performance–pay relations from weak signals, pay secrecy and the information asymmetry that it generates may signal a heightened risk of managerial opportunism or deceptive intent. Such a signal may both set the basis for the negative misinterpretation of the weak signals used to estimate performance–pay contingencies, as well as directly result in downwardly biased perceptions of these contingencies.

Pay secrecy may signal to employees a heightened risk of managerial opportunism or deceptive intent because, as suggested by Principle 4, it generates a situation of *intentional* information asymmetry that, by its very nature, may raise employee concerns of managerial ill intent (Wanasika & Adler, 2011; Williamson, 1975). Furthermore, while there may be objectively valid and positive factors underlying the adoption of pay secrecy (e.g., to avoid employee jealousies), consistent with research on positive–negative asymmetry the inferences that employees draw from pay secrecy are likely to be more strongly influenced by negative (i.e., opportunistic) factors (Baumeister et al., 2001; Peeters & Czapinski, 1990). Finally, because the informational asymmetry generated by pay secrecy relates directly to individuals’ social standing within the organization, pay secrecy creates a situation conducive to the sinister attribution error (Kramer, 1998, 2001).

To the extent that pay secrecy signals management opportunism and deception, it may create a malevolent frame for interpreting the weak signals used to estimate performance–pay contingencies in that, as noted by Connelly et al. (2011: 55), weak signals tend to be interpreted “in accordance with preconceived notions.” For example, in the absence of other information, employees may base inferences regarding performance–pay contingencies on their perceptions of procedural or informational fairness (Greenberg, 2003). But as Colella et al. (2007: 59) suggest, if these are viewed in a negative light (likely because information is being withheld), “then distributive judgments are likely

to be negative as well.” The net result, as suggested by Lawler (1966a, 1966b) and others (Milkovich & Anderson, 1972), is that when employees draw inferences from the weak pay-related signals around them, they tend to overestimate the pay of their coworkers and underestimate the pay of those hierarchically superior to them. By perceiving the upper boundary of pay dispersion as lower and the lower boundary as higher, individuals effectively compress the perceived range of pay associated with varying levels of contribution. Given this reduction in the perceived range of pay, while rewards may still be perceived to be monotonically increasing as a function of performance, the perceived strength of this contingency is likely to be diminished. To the degree that pay secrecy elicits the implicit compression of the perceived range of pay, it reduces the perception that any incremental increase in performance level will be accompanied by a larger incremental return, and as such is likely to adversely affect PFP perceptions.

Additionally, this signal of managerial opportunism and deception may *directly* result in employees’ underestimation of performance–pay contingencies. In other words, consistent with the notion of Spence (2002) that the costs of signaling positive qualities (in this case, signaling fairness and trustworthiness as an employer through a policy of pay transparency) are higher for those with less to offer or “what to hide” (i.e., those employers whose pay systems are inherently unfair to begin with), pay secrecy may signal to employees that performance–pay contingencies fail to reflect fairly the added value generated by greater employee contributions. From the employees’ perspective, were these contingencies to reflect fairly the added value generated by greater employee contributions, there would be no real reason to hide this fact. Accordingly, the malevolent signals that employees may directly infer from pay secrecy may further weaken the perception that any increase in performance level will be accompanied by a larger incremental return. And because the link between PFP perceptions and individual task performance is well established in the motivation literature (e.g., Naylor et al., 1980; Vroom, 1964), and has been widely demonstrated (Kanfer, 1990), this discussion suggests that the adverse effect of pay secrecy on employees’ PFP perceptions is likely to have negative implications on task performance. Accordingly, we posit:

Hypothesis 1. PFP perceptions mediate the (adverse) impact of pay secrecy on individual task performance.

Beyond these adverse incentive effects, pay secrecy's negative effect on PFP perceptions may also elicit detrimental sorting effects (Gerhart et al., 2009; Trevor, Reilly, & Gerhart, 2012), manifesting itself in diminished intentions to remain (i.e., continuation intentions), particularly among high performers (Lazear, 1986; Milkovich et al., 2013). Research indicates that high performers find PFP to be appealing (Cadsby et al., 2007), tending to remain in firms perceived to reward high performance more aggressively and to migrate away from those firms perceived to offer smaller performance-based pay differentials (Leventhal et al., 1980; Trevor, Gerhart, & Boudreau, 1997). For example, Lazear (2000) observed that the adoption of piece-rate pay at Safelite resulted in reduced turnover among its more productive workers and the tendency of its less productive employees to self-select out of the firm. Similarly, when organizations communicated the nature of performance-based pay contingencies, Shaw and Gupta (2007) found stronger PFP contingencies (manifested in higher pay dispersion) to be positively associated with the retention of high performers. Consistent with these findings, research on the effects of pay dispersion in top management teams shows that when pay dispersion is high, it is executives with a *lower* relative pay position within the top management team who are more likely to leave (Messersmith, Guthrie, Ji, & Lee, 2011). Moreover, the continuation intentions of low performers appear to be less related to PFP perceptions than are those of high performers (Harrison, Virick, & William, 1996). Taken together, these findings suggest that:

Hypothesis 2. Task performance moderates the second stage of the mediated relationship between pay secrecy and continuation intentions such that the indirect effects of pay secrecy on continuation intentions via PFP perceptions are stronger when task performance is high.

Moderating Effects of PFP Characteristics

The fact that the vast majority of organizations do not disclose pay information and that secrecy is more the rule than the exception suggests, however, that (all else being equal) the level of malevolence that employees infer from this practice is unlikely to be deterministic. Rather, the degree to

which pay secrecy adversely affects employee cognition and behavior is likely to be contextually contingent, conditioned by inferences drawn from other related practices. Indeed, research suggests that the nature of the PFP system—and in particular two main PFP system attributes—is likely to moderate the consequences of pay secrecy.

The first of these attributes has to do with how performance is measured and, in particular, the *subjectivity of performance assessment*. Highlighting the potential centrality of this issue, Futrell and Jenkins (1978: 214) posited that “one critical variable affecting whether to have an open pay system is the ability of management to measure task performance, [and that] organizations not capable of objectively measuring performance are likely to have difficulty with the open system.” Similarly, Colella et al. (2007: 65) noted that “the nature of (performance) measurement helps to determine whether costs or benefits will be experienced during pay secrecy.”

The second attribute has to do with how measured performance is translated into an actual incentive amount, or what may be referred to as *pay determination criteria* (Lazear & Oyer, 2013; Murphy & Cleveland, 1995). As Gerhart et al. (2009) argue, while some well-known organizations (e.g., General Electric) base their PFP on employee performance determined relative to that of the employee's peers, others concerned about the competition-related implications of an employee–employee comparisons ground their PFP on more absolute criteria under which rates are evaluated against some predetermined standard.

Signaling theory offers a useful, overarching theoretical framework for understanding how variability in these two aspects of the broader pay context moderate the incentive and sorting effects of pay secrecy. As noted by Gomez-Mejia et al. (2010), signaling theory suggests that employers may use PFP system attributes to signal to employees the objectives that they deem to be of high priority. For example, choices made by the employer with regard to pay determination criteria may be used to signal to employees that situational constraints are taken into account (with subpar performance still rewarded as long as it exceeds some dynamic norm). Similarly, choices made with regard to the subjectivity of performance assessment may signal to employees an emphasis on recognizing and rewarding the employee's full range of performance, even those not readily measured objectively.

Ultimately, however, the moderating effect of both of these PFP system attributes depends on the inferences that employees—the signal recipients—draw from them. And, as suggested earlier, these employee inferences may not necessarily be those intended by the employer. As such, inferences drawn from both PFP system attributes may have unintended consequences with respect to individual beliefs that a given reward is contingent upon assessed performance and/or the individual's beliefs regarding the degree to which measured performance captures actual performance. Based on such a notion, and as we detail next, we posit that pay determination criteria (i.e., relative vs. absolute) are likely to interact with pay secrecy in shaping PFP perceptions, thus moderating the first stage of the mediation model developed above. Similarly, we posit that the subjectivity of performance assessment is likely to influence inferences regarding the degree to which variance in actual performance is recognized, hence moderating the second stage of the mediation model developed above (i.e., the effects of PFP perceptions on performance and continuation intentions).

Moderating effect of pay determination criteria. Research differentiates between PFP systems based on relative vs. absolute performance criteria (Baron & Kreps, 1999; Lazear & Oyer, 2013). Signaling theory suggests that employees are likely to draw different inferences from these alternative pay determination criteria and that these inferences are likely to interact with those drawn from the transparency of the overall pay system to affect PFP perceptions.

Relative performance criteria signal to employees that incentive pay is based not only on their own performance, but also takes that of others into account as well, with incentive magnitude being a function of the individual's assessed performance relative to that of others. Employees may infer certain benefits from such a signal—namely, that the PFP system has been designed to “filter out shocks common to the whole peer group” (Lazear & Oyer, 2013: 484). However, such an attribute may also send the signal that reward-eligible performance standards are dynamic and that meeting them is a matter of luck (Lazear, 1995), depending not only on one's own measured performance, but also on that of some comparative set of peers (Murphy & Cleveland, 1995). To the degree that employees overweight this negative aspect of relative pay determination (as would be expected on the basis of the positive–negative attribution effect), relative

pay determination is likely to heighten employees' uncertainty regarding their status in the organization. And because such a condition is conducive to sinister attribution error (Kramer, 1998), it may stimulate or intensify employee concerns regarding the motives underlying the pay system overall. In the context of such concerns, the (negative) inferences that employees draw from pay secrecy regarding the nature of performance–pay relations are likely to be more salient, thus intensifying any tendency of pay secrecy to be associated with a weakening of subjective expectations that shifts in measured performance will be associated with commensurate shifts in pay (Lazear, 1995; Sloof & van Praag, 2008). Accordingly, we posit:

Hypothesis 3a. Pay determination criteria moderate the first stage of the mediated relationship between pay secrecy and task performance such that the indirect effects of pay secrecy on task performance via PFP perceptions are stronger when pay determination criteria are relative.

Hypothesis 3b. Pay determination criteria moderate the first stage of the mediated relationship between pay secrecy and continuation intentions such that the indirect effects of pay secrecy on continuation intentions via PFP perceptions are stronger when pay determination criteria are relative.

Moderating effect of the subjectivity of performance assessment. In the same way that PFP system attributes transmit signals about how assessed performance will be rewarded (i.e., performance–reward contingencies), they also transmit signals about how performance will be assessed and, more specifically, the ability of the system to recognize variance in employee contribution accurately. This is important in that, beginning with the seminal work of Vroom (1964), organizational psychologists and economists have posited, and found, that employee perceptions regarding performance–reward contingencies interact with perceptions regarding the validity of performance assessments to affect employee performance and continuation intentions (Kanfer, 1987; Lazear & Oyer, 2013). More specifically, this body of research suggests that the impact of PFP perceptions on task performance and the continuation intentions of high-performing employees are likely to be conditional upon inferences drawn from the PFP system regarding the degree to which any increase in effort will be reflected by a

commensurate increase in assessed performance. Such effort–performance perceptions are affected by the degree of imprecision, or “noise,” with which the performance measure reflects actual effort. To the degree that employees associate the PFP system with noisier performance measures, “the relationship between effort and measured performance is weakened” (Sloof & van Praag, 2010: 752), and any positive association between employees’ PFP perceptions and performance is likely to be attenuated (Kanfer, 1987). Similar attenuation effects can be expected with regard to the impact of PFP perceptions on the continuation intentions of high performers. To the degree that the approach taken to measure performance signals that “employees’ (measured) output is imperfectly related to actual output (that is, measures of the worker’s productivity),” even those higher-performing employees with strong PFP perceptions are likely to be motivated to seek alternative employment, signaling an enhanced ability to better recognize their differential contribution (Lazear & Oyer, 2013: 481).

Such noise problems may be avoided when objective criteria providing a comprehensive picture of employee contribution are available (Bamberger & Meshoulam, 2000). The performance appraisal literature (DeNisi, 1996; Murphy & Cleveland, 1995) suggests that when performance appraisal is based on such objective (as opposed to subjective) performance criteria, pay is perceived as less disposed to effort–performance weakening rater biases such as leniency and centrality (Moers, 2005; Rynes, Gerhart, & Parks, 2005). However, when such objective data are either less readily available, or do not provide a real-time and comprehensive indication of both output and quality, organizations are likely to have little choice but to rely on noisier, more subjective performance assessment methods (Gerhart et al., 2009). Because subjective performance assessments are based on personal judgments, they are difficult to predict *ex ante* and non-verifiable *ex post*, thus signaling to employees a greater degree of uncertainty regarding which actions prompt which performance ratings, and a heightened likelihood that bias and favoritism influenced appraised performance (Ittner, Larcker, & Meyer, 2003). Accordingly, we posit:

Hypothesis 4a. Subjectivity of performance assessment moderates the second stage of the mediated relationship between pay secrecy and task performance such that the indirect

effects of pay secrecy on task performance via PFP perceptions are stronger when performance assessment is subjective.

Similarly, we posit that the subjectivity of performance appraisal attenuates the otherwise positive association between PFP perceptions and continuation intentions—particularly among higher performers, who tend to be more sensitive to inaccuracies in performance assessment, such as those associated with more subjective performance appraisal (Bol, 2011). Overall, more precise forms of performance measurement may signal a higher level of procedural fairness to such employees (Bol, 2011). Research suggests that employees may reciprocate such fair treatment with a heightened sense of loyalty to the employer (Jones & Skarlicki, 2003). Indeed, meta-analytic results indicate a corrected correlation of $-.46$ between procedural justice and turnover intention (Colquitt et al., 2001). Such a heightened sense of loyalty would serve only to reinforce the positive association between PFP perceptions and continuation intentions, particularly among high performers who, by definition, have more to gain from stronger performance–pay contingencies. Moreover, PFP systems characterized by a combination of strong PFP perceptions and more objective performance appraisal signal to employees that even if, in the short run, owing to performance deficiencies, their rewards were to be lower than hoped for, they may still gain a favorable return on their effort in the long run (Tyler, 1994). To the degree that (particularly high-performing) employees infer from more precise approaches to performance measurement more favorable organizational treatment overall (Colquitt, Greenberg, & Zapata-Phelan, 2005; Greenberg, 2003), they may be more willing to accept unfavorable PFP outcomes in the short run (Brockner & Wiesenfeld, 1996) and to delay any consideration of alternative employment opportunities. In contrast, even high-performing employees with strong PFP perceptions may not be so patient in the context of a PFP system characterized by the potential for imprecise performance measurement. This is because PFP systems characterized by less precise performance measurement (such as more subjective assessment) can signal a heightened potential for unfair treatment, leading particularly high-performing employees to infer a lack of utility in waiting for more favorable pay-related outcomes in the long run. Hence:

Hypothesis 4b. Subjectivity of performance assessment and task performance jointly moderate the second stage of the mediated relationship between pay secrecy and continuation intentions such that the indirect effects of pay secrecy on continuation intentions via PFP perceptions are stronger when performance assessment is subjective and task performance is high.

But what if employees perceive that the subjectivity of performance assessment is likely to work in their favor? The notion that positive (i.e., leniency) bias may actually amplify the link between PFP perceptions and task performance (Bol, 2011) suggests that the relationships posited in Hypotheses 4a and 4b may themselves be contingent on pay system attributes' signaling as to whether the subjectivity of performance appraisal is likely to work in or against the employee's interest. Pay secrecy may play a key role in signaling to employees what to expect from subjective performance assessment. More specifically, Principle 4 of signaling theory noted earlier (see "Information Assymetry and Signaling Theory") suggests that the adverse effects of the subjectivity of performance assessment on the positive association between PFP perceptions and task performance may themselves be amplified under conditions of pay secrecy (vs. transparency). To the extent that the intentional nature of informational asymmetry created by pay secrecy may be inferred as signaling managerial opportunism or deceptive intent, it may generate suspicion on the part of employees as to the underlying purpose of assessment subjectivity. For example, in the context of PFP, employees may interpret pay secrecy as signaling that subjective assessment is being used "to give management more freedom in distributing compensation dollars to employees" (Gomez-Mejia et al., 2010: 98). To the degree that employees draw such inferences from pay secrecy, perceptions of downward bias under conditions of subjective performance assessment may be accentuated, thus amplifying the adverse effects of subjective assessment on the link between PFP perceptions and both performance and continuation intentions. Thus we posit:

Hypothesis 5a. Pay secrecy and performance assessment subjectivity jointly moderate the second stage of the mediated relationship between pay secrecy and individual task performance such that the indirect effects of pay secrecy on individual task performance via

PFP perceptions are stronger when pay is secret and performance assessment is subjective.

Hypothesis 5b. Pay secrecy, performance assessment subjectivity, and individual task performance jointly moderate the second stage of the mediated relationship between pay secrecy and continuation intentions such that the indirect effects of pay secrecy on continuation intentions via PFP perceptions are stronger for higher performers when pay is secret and performance assessment is subjective.

METHOD

Participants

A total of 320 undergraduate students in an Israeli university participated in the experiment. Owing to a bug in the simulation software, no data were recorded for five participants. An additional 35 observations were excluded from our analyses because of either suspect or excessive missing data (e.g., 33% or more incomplete items) resulting from the same bug. This left us with a final sample of 280 (138 and 142 in the transparent and secret conditions, 137 and 143 in the objective and subjective conditions, 141 and 139 in the absolute and relative conditions, respectively). To assess any biasing effect of participants excluded from the analysis because of this bug, we followed the approach of Goodman and Blum (1996), applying logistic regression to test a model in which the dependent variable was a dichotomous variable (1 = *Observations used in the analyses*, 0 = *Excluded observations*) and the independent variables were all of the variables specified in our model. With all of the coefficients statistically insignificant, the results suggest that all attrition was random and hence unlikely to bias our findings (Little & Rubin, 1987).

Design

Although performing their tasks autonomously, participants were randomly assigned to four-person groups, with each group randomly assigned to one of the conditions specified by the 2 (*pay communication* conditions: secret vs. transparent) \times 2 (*pay determination criteria* conditions: relative vs. absolute) \times 2 (*subjectivity of assessment* conditions: objective vs. subjective) \times 3 (*performance phases*) repeated measures, mixed-factorial design. The between-subject factors were pay communica-

tion policy, pay determination criteria, and subjectivity of assessment conditions.

Given that the majority of contemporary, private sector employees are at least partially rewarded for individual performance, with a substantial portion of PFP coming in the form of a bonus (Milkovich et al., 2013), to maximize the study's external validity each participant received NIS20 (US\$5.70) base pay, as well as a bonus of up to NIS8 (\$2.28) for each task round.

Procedure

The experiment included three task rounds that each lasted 5 minutes and three breaks between these rounds, each lasting 10 minutes (see Appendix A). The task (i.e., a computer-based simulation) was adopted from that employed by Bamberger and Belogolovsky (2010). The object of the task was to place "magic stones" in each of several squares appearing in rows on the screen, such that each square turned into "gold." Stones were accepted for placement if they matched adjacent stones already on the screen in either color, or shape, or both. Participants scored points by turning as many rows as possible into "gold" before the end of the performance phase. The experimental simulation was designed to emulate a virtual work group, the members of which, working autonomously, may occasionally communicate with each other. Therefore while participants were unable to communicate with each other during task rounds, they *were* able to do so between task rounds using an intragroup e-mail system.

Upon arrival to the laboratory, participants were asked to fill out a questionnaire including demographic items. Next, the participants were informed that they would participate in a study of performance in a computer task. The experimenter then explained the pay system noted above (see "Design")—i.e., base pay of NIS20 (\$5.70) and an opportunity to earn an additional bonus—and the intragroup e-mail system, which participants could use during scheduled breaks between task rounds to communicate with each other. Participants were then assigned to a computer and guided through an online tutorial. The first of three task rounds followed. At the end of each task round, the computer screen of each participant displayed either (a) his or her score on the task for that round and a bar graph of the bonus pay to be received for that round (*pay secrecy* condition), or (b) his or her total score and bar graph of the additional pay to be received

for that task round and a graph of his or her pay relative to that of the others (by code number) in his or her group (*pay transparency* condition). After the third task round, participants completed the questionnaire accessing their study continuation intentions and the manipulation check questionnaire.

Measures

Exogenous variables. *Pay communication policy* variables comprised two conditions: pay secrecy vs. pay transparency. Consistent with Bamberger and Belogolovsky (2010), participants in the *pay secrecy* condition received information on their *own* level of performance and bonus pay. Additionally, prior to the first task round, participants were asked not to discuss any pay-related issue with others at any time. All communication between participants (even during breaks) was monitored, allowing us to confirm that participants in this condition did not attempt to disclose pay or performance information to other participants. In contrast, participants in the *pay transparency* condition received information regarding (a) their *own* performance and bonus pay, and (b) the pay (but not the performance levels) of their fellow group members (listed by code numbers to ensure privacy). Participants in this condition were told that e-mail communications with their fellow group members would be unrestricted. In fact, 90% of the participants in this condition *did* disclose pay- and performance-related information (typically, their assigned study code number) to at least one other group member in at least one of the task rounds.

Pay determination criteria variables comprised two conditions: absolute vs. relative. Participants in the *absolute* condition were informed that bonus pay would be allocated on an absolute (i.e., set and predetermined) basis according to their level of performance. In contrast, participants assigned to the *relative* condition were informed that bonus pay would be allocated according to the points-based ranking of each participant within his or her group.

Subjectivity of performance assessment variables comprised two conditions: objective vs. subjective. Participants in the *objective* condition were told that the magnitude of each rounds' performance score would be calculated objectively, entirely contingent upon the individual's point count in that phase. In contrast, given that, in many organizations, subjective assessments are often used in com-

bination with objective assessments (Gibbs, Merchant, Van der Stede, & Vargus, 2004), participants assigned to the *subjective* condition were told that the magnitude of each rounds' performance score would be calculated according to the combination of the individual's objective point count in that phase with the investigator's subjective assessment, based on his or her observation of the individual's performance. In reality, however, for those in the subjective condition, in all rounds the performance score was calculated according to the following formula:

$66\% \times \text{Objective score} \times \text{Random number}$
(range: 0.50–1.50)

Endogenous variable. *Pay-for-performance perceptions* were assessed after the second round of task performance using a modified version of a measure developed by Erez and Isen (2002). Participants were asked to estimate the probability that a given level of performance (i.e., score) would result in specific levels of bonus pay. The performance levels given ranged from the lowest performance level ($-2SD$, i.e., 100) to the highest performance level ($+2SD$, i.e., 900) that we identified in pretest samples. The bonus pay levels ranged from no pay to NIS8 (\$2.28). An expected bonus pay score was calculated for each performance level by multiplying the probabilities that participants assigned to each level of bonus pay by the performance levels. These products were then summed and divided by 100, such that each performance level (i.e., 100, 300, 500, 700, 900) had an expected bonus pay level associated with it. Accordingly, each participant in the data set had a five-point vector representing an expected level of bonus pay for each level of performance. The PFP perceptions were calculated by correlating the vector of expected bonus pay levels with the specified performance levels on the basis of regression analysis.

Dependent variables. *Individual task performance* was assessed in terms of participants' level of performance (i.e., score) in the third and final task round (T_3). Scores ranged between 90 and 1261 ($M = 730.42$, $SD = 186.52$).

Continuation intention was assessed after the third and final task round (T_3) using a single-item measure. Participants were asked to indicate, using a seven-point Likert scale (1 = *Not at all willing* and 7 = *Very willing*), the degree to which they would be willing to participate in additional rounds of this experiment.

Manipulation Checks

The effectiveness of the *pay communication policy* manipulation was assessed using a three-item measure developed by Bamberger and Belogolovsky (2010). Participants were asked to indicate, using a Likert scale (1 = *Low* and 7 = *High*), the degree to which they received information about (for example) other participants' level of pay. Cronbach's alpha was .79.

The effectiveness of the *pay determination criteria* manipulation was measured by asking participants to indicate the degree (1 = *Completely disagree* and 7 = *Completely agree*) to which they agreed or disagreed with each of the following statements: (a) "My pay was influenced only by my level of performance (i.e., number of points earned)," (b) "The amount I was paid was determined strictly on the basis of my level of performance," (c) "The amount I was paid was influenced by how well others performed" (reversed item), and (d) "My pay was influenced by my performance relative to my coworkers" (reversed item). Cronbach's alpha was .70.

The effectiveness of the *subjectivity of performance assessment* manipulation was measured by asking participants to indicate the degree (1 = *Completely disagree* and 7 = *Completely agree*) to which they agreed or disagreed with each of the following statements: (a) "My pay was calculated entirely on the basis of my objective performance of the assigned task" (reversed item), and (b) "In this experiment, pay is entirely determined by one's objective performance" (reversed item). Cronbach's alpha was .70.

Analytical Procedure

Level of analysis. Given that all participants were nested in groups of four, our analysis began with a test for the random effects of group assignment (Singer, 1998). The results indicated that the random effect of group assignment was significant in all of the models tested. We therefore tested our hypotheses using a multilevel moderated-mediation model (Bauer, Preacher, & Gil, 2006). However, in our study, all variables were measured as fixed effects at the individual level of analysis. Additionally, our model implies that the mediation effect is consistent across the upper level of analysis (i.e., groups), such that there is no variation in the mediation effect across the groups. Nevertheless, since participants were nested within groups, we took

into account this nested structure by allowing the intercepts to vary across the groups. Accordingly, we used a modified version of the multilevel moderated-mediation SAS macro (Preacher & Hayes, 2004), in which the indirect effect does not vary across the upper level (i.e., the groups), yet the variation in the intercepts is taken into account.

Data were analyzed using maximum likelihood (ML) and restricted maximum likelihood (REML) methods, which, while yielding similar results in terms of fixed effects (regression parameters), produce different estimates of variance components (Snijders & Bosker, 1999): REML takes into account the degrees of freedom from the fixed effects and therefore creates variance components estimates that are less biased. While in small samples with balanced data REML is preferable to ML for estimating variance components because it is unbiased, ML is preferable to REML for testing model fit (McCoach, 2010). Therefore we present the results of the regression analyses using REML and the results of model fit tests using ML.

Procedure. We tested our hypotheses following the approach recommended by Edwards and Lambert (2007). In testing our hypotheses, we controlled for pay determination criteria and subjectivity of performance assessment in order to understand the impact of pay secrecy on individual task performance and continuation intentions above and beyond these two PFP characteristics. Furthermore, in modeling the base-free measure of the change in task performance, we used the repressor variable method, taking participants' starting levels of performance (i.e., performance at T_1) into account because they had a true causal effect on performance at T_3 ($r = .47, p < .01$) (Allison, 1990).

The significance of the indirect, direct, and total effects was calculated by means of parametric bootstrap tests (Preacher & Hayes, 2004). The relative predictive utility of each model was assessed on the basis of the significance of the likelihood ratio-based R^2 (R^2_{LR}), estimated as:

$$1 - \exp\left(-\frac{2}{n}(\log L_M - \log L_o)\right)$$

where:

$\log L_M$ is the maximum log-likelihood of the model of interest,

$\log L_o$ is the maximum log-likelihood of the intercept-only model, and

n is the number of observations (Cox & Snell, 1989; Magee, 1990).

The calculation of the R^2_{LR} is based on ML, rather than REML, because the REML log likelihood cannot be used to compare models with different fixed-effects specifications.

RESULTS

Manipulation Checks

The effectiveness of the experimental manipulations was confirmed by t -tests that were performed on the three manipulation check measures. First, a t -test confirmed that participants in the transparent pay condition reported significantly higher perceived pay transparency perceptions ($M = 5.11, SD = 1.43$) than those assigned to the pay secrecy condition ($M = 2.33, SD = 1.40; t_{(277)} = 16.49, p < .01$). Second, the participants in the absolute pay determination criteria condition rated absolute pay determination criteria higher ($M = 3.43, SD = 1.52$) than those in the relative condition ($M = 3.01, SD = 1.58; t_{(277)} = 2.23, p < .05$). Finally, the participants assigned to the objective performance assessment condition reported the subjectivity of performance assessment to be significantly lower ($M = 4.16, SD = 1.46$) than those assigned to the subjective condition ($M = 4.46, SD = 1.39; t_{(277)} = 1.70, p < .05$).

These results indicate that all three manipulations were effective.

Descriptive Statistics

Table 1 shows the means, standard deviations, and intercorrelations among the variables. The findings indicate significant negative correlations between pay communication policy (pay secrecy = 1) and performance at T_3 ($r = -.13, p < .05$), and between pay communication policy and continuation intentions at T_3 ($r = -.13, p < .05$). In addition, the results showed a significant positive correlation between performance at T_3 and continuation intentions at T_3 ($r = .16, p < .01$). Moreover, the results indicate a significant positive correlation between performance at T_1 and performance at T_3 ($r = .47, p < .01$). Separate calculations show that there is no significant difference in mean performance at T_1 between those in the transparent ($M = 537.1, SD = 206.9$) versus secret ($M = 560.5, SD = 181.2; t_{(278)} = -1.01, n.s.$) conditions. Nevertheless, mean performance in the transparency condition rose to 756.93 ($SD = 188.78$) at T_3 , while the mean performance

TABLE 1
Means, Standard Deviations, and Intercorrelations of the Variables^a

Variable	<i>M</i>	<i>SD</i>	(1)	(2)	(3)	(4)	(5)	(6)
1. Pay communication policy (Transparency = 0, Secrecy = 1)	.49	.50						
2. Performance at <i>T</i> ₁	549.22	197.56	.07					
3. Performance at <i>T</i> ₃	730.42	186.52	-.13**	.47*				
4. Continuation intentions at <i>T</i> ₃	5.74	1.45	-.13**	.06	.16*			
5. PFP perceptions at <i>T</i> ₂	.91	.22	-.02	.002	.12**	.01		
6. Pay determination criteria (Absolute = 0, Relative = 1)	.53	.50	.008	.08	-.05	-.01	-.01	
7. Subjectivity of performance (Objective = 0, Subjective = 1)	.50	.50	-.01	.11	.05	-.03	-.09	-.03

^a *n* = 280.
 * *p* ≤ .01
 ** *p* ≤ .05

in the pay secrecy condition rose to only 702.03 (*SD* = 175.96) at *T*₃. In other words, mean performance in the transparency condition increased from *T*₁ to *T*₃ by 28.93% versus 20.16% in pay secret condition. Notable also is a significant positive correlation between PFP perceptions at *T*₂ and performance at *T*₃ (*r* = .12, *p* < .05).

Hypotheses Testing

The results of an analysis of the baseline control models (Model 1 in Tables 2 and 3) showed that PFP characteristics were not significantly associated with either *T*₃ task performance or continuation intentions. They also indicate that task performance at *T*₁ (estimate = .46, *p* < .01) explained 23% of the variance in the task performance at *T*₃. Following the recommendation of Becker (2005), we tested all of the models both with and without controlling for *T*₁ performance. The analyses without controlling for *T*₁ performance yielded similar effects with similar relative magnitude of the estimates. However, because “failing to include relevant control variables could inflate the amount of explainable variance in the dependent variable, thereby increasing the chances of a Type I error” (Becker, 2005: 288)—that is, concluding that there is an effect when, in fact, there is not—we present the results of the analyses when controlling for *T*₁ performance.

Incentive and sorting effects of pay secrecy: The mediating effect of PFP perceptions. The regression results for the tests of mediation indicate that, after controlling for performance at *T*₁, pay determination criteria, and subjectivity of performance assessment, pay secrecy is inversely related to performance at *T*₃ (estimate = -60.14, *p* < .01) (see Model 2 in Table 2). They also indi-

cate that, after controlling for pay determination criteria and subjectivity of assessment, pay secrecy is inversely related to continuation intentions (estimate = -.38, *p* < .05) (Model 2 in Table 3). However, the results of Model 3a in Tables 2 and 3 show that pay secrecy is inversely, but not significantly (estimate = -.02, n.s.), related to PFP perceptions at *T*₂, thus suggesting that, in contrast to Hypotheses 1 and 2, PFP perceptions fail to mediate the effects of pay secrecy on task performance. This is not surprising given that, as suggested by Hypotheses 3–5, such a mediated effect may be contingent upon the nature of pay determination criteria and performance assessment subjectivity.

Moderated mediation analysis. The results of tests of the moderated mediation models specified in Hypotheses 3–5 are presented in Model 4 of Tables 2 and 3.

Moderating effect of PFP system attributes on the performance consequences of pay secrecy. Model 4a in Table 2 shows a negative and significant interaction of pay communication policy (i.e., pay secrecy) and pay determination criteria (estimate = -.21, *p* < .05). As recommended by Aiken and West (1991), we used interaction plots and simple slopes analyses (i.e., comparing each of the simple slopes to 0) to assess the degree to which these effects were consistent with those hypothesized. The slope of pay secrecy on PFP perceptions is negative and significantly different from 0 when pay determination criterion is relative (estimate = -.12, *p* < .05), but positive and not significantly different from 0 when pay determination criterion is absolute (see Figure 2). Accordingly, our data suggest support for Hypotheses 3a and 3b, demonstrating that the impact of pay secrecy (relative to pay transparency) on PFP perceptions is contingent upon the nature of pay determi-

TABLE 2
Effects of Pay Communication Policy on Individual Task Performance: Results of Moderated-Mediation Analysis

Dependent Variable	Control Model			Total effect model			Moderated-mediation model												
	Model 1			Model 2			Model 3a		Model 3b		Model 4a		Model 4b		Model 4c				
	Est.	SE	Task performance at T_3	Est.	SE	Task performance at T_3	Est.	SE	PPF perceptions at T_2	Task performance at T_3	Est.	SE	PPF perceptions at T_2	Task performance at T_3	Est.	SE	Task performance at T_3		
Intercept	495.94*	32.42		522.60*	32.95		.93*	.04		432.38*	52.81		.88*	.05		299.36*	76.63	278.05*	78.20
Performance at T_1	.46*	.05		.47*	.05		—	—		.47*	.05		—	—		.46*	.05	.47*	.05
Pay determination criteria (Absolute = 0, Relative = 1)	-33.33	22.61		-33.44	21.58		-0.0004	.04		-32.86	21.44		.10	.06		-23.24	30.68	-22.64	31.10
Subjectivity of assessment (Objective = 0, Subjective = 1)	-3.91	22.66		-4.03	21.64		-.05	.04		.04	21.57		-.05	.04		205.95**	92.39	388.86*	148.98
Pay communication policy (Transparency = 0, Secrecy = 1)				-60.14*	21.55		-.02	.04		-59.05*	21.41		.09	.06		-48.83	31.51	344.86	383.74
PPF perceptions at T_2										98.47**	45.23		-.21**	.08		245.96*	80.68	255.61*	82.73
Pay policy × Relative pay determination criteria																-33.48	43.67	-33.36	44.23
PPF perceptions at T_2 × Subjectivity of assessment																-226.49**	98.52	-410.90*	159.47
PPF perceptions at T_2 × Pay policy																		-399.99	402.13
Pay policy × Subjectivity of assessment																		-594.53	408.81
PPF perceptions at T_2 × Subjectivity of assessment × Pay policy																		604.87	430.19
-2 log likelihood	3646.1			3638.3			-83.2			3633.4						3627.4		3624.20	
Δ-2 log likelihood	—			7.8*			—			4.9*						10.9*		9.20	
Likelihood ratio-based R^2				(relative to Model 1)						(relative to Model 2)						(relative to Model 3b)		(relative to Model 3b)	
Δ Likelihood ratio-based R^2	.23			.25			.006			.27			.03			.29		.29	
	—			.02*			—			.02**			.02*			.02*		.02	
				(relative to Model 1)						(relative to Model 2)						(relative to Model 3b)		(relative to Model 3b)	

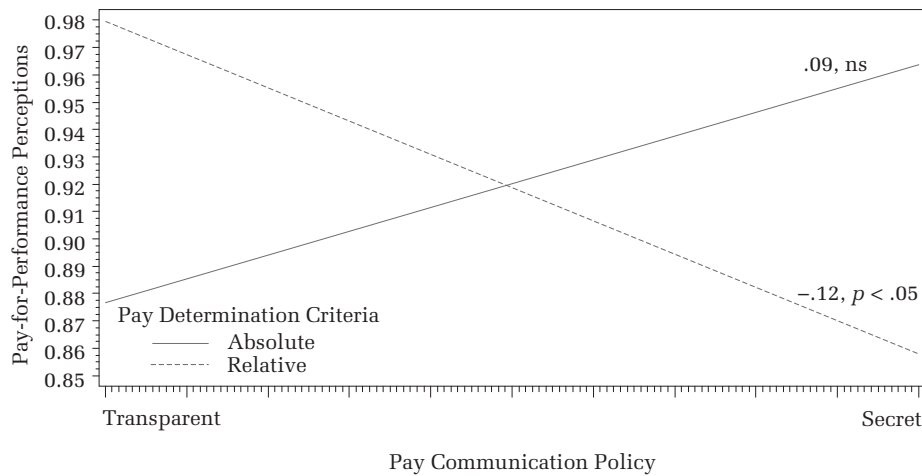
* $p \leq .01$

** $p \leq .05$

TABLE 3
Effects of Pay Communication Policy on Continuation Intention: Results of Moderated Mediation Analysis

Dependent Variable Independent Variable	Control Model			Total Effect Model			Mediation Model			Moderated-mediation Model																				
	Model 1			Model 2			Model 3a			Model 3b			Model 3c			Model 4a			Model 4b			Model 4c								
	Est.	SE		Est.	SE		Est.	SE		Est.	SE		Est.	SE		Est.	SE		Est.	SE		Est.	SE		Est.	SE				
Intercept	5.79*	.16		5.98*	.18		.93*	.04		5.94*	.41		5.98*	.47		.88*	.05		4.04*	1.02		4.74*	1.07		4.74*	1.07		4.74*	1.07	
Pay determination criteria (Absolute = 0, Relative = 1)	-.03	.18		-.03	.17		-.00	.04		-.03	.17		-.005	.18		.10	.06		-.17	.25		-.19	.26		-.19	.26		-.19	.26	
Subjectivity of assessment (Objective = 0, Subjective = 1)	-.09	.18		-.09	.17		-.05	.04		-.09	.18		-.11	.18		-.05	.04		2.30 ^b	1.14		1.95	1.74		1.95	1.74		1.95	1.74	
Pay policy (Transparency = 0, Secrecy = 1)				-.38**	.17		-.02	.04		-.38**	.17		-.32	.18		.09	.06		-.50	.26		-.8.14**	3.55		-.8.14**	3.55		-.8.14**	3.55	
PPP perceptions at T ₂							.05	.40		.05	.40		-.03	.45		-.21**	.08		2.13**	1.10		1.49	1.16		1.49	1.16		1.49	1.16	
Pay policy × Pay determination criteria																			-.28	.36		.29	.37		.29	.37		.29	.37	
PPP perceptions at T ₃																			-.003	.002		-.002	.002		-.002	.002		-.002	.002	
Subjectivity of assessment × Performance at T ₂																			-.2.58**	1.21		-.2.39	1.86		-.2.39	1.86		-.2.39	1.86	
PPP perceptions at T ₂ × Subjectivity of assessment																			-.009**	.004		-.001	.008		-.001	.008		-.001	.008	
Subjectivity of assessment × Performance at T ₃																			-.005**	.002		-.004	.003		-.004	.003		-.004	.003	
PPP perceptions at T ₂ × Performance at T ₃																			-.01**	.004		-.000	.009		-.000	.009		-.000	.009	
PPP perceptions at T ₂ × Subjectivity of assessment × Performance at T ₃																														
PPP perceptions at T ₂ × Pay policy																														
Pay policy × Subjectivity of performance																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment																														
Pay policy × Performance at T ₃																														
PPP perceptions at T ₂ × Pay policy × Performance at T ₃																														
Pay policy × Performance at T ₃ × Subjectivity of assessment																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment of assessment × Performance at T ₃																														
-2 log likelihood	1002.17			997.41						997.39			990.78																	
Δ-2 log likelihood	—			4.76**			—			.02			6.63																	
Likelihood ratio-based R ²				(relative to Model 1)			(relative to Model 2)			(relative to Model 2)			(relative to Model 2)																	
Δ Likelihood ratio-based R ²	.001			.02			.006			.02			.04																	
Likelihood ratio-based R ²	—			.019**			—			0			.02																	
Δ Likelihood ratio-based R ²	—			(relative to Model 1)			(relative to Model 2)			(relative to Model 2)			(relative to Model 2)																	
PPP perceptions at T ₂ × Pay policy																														
Pay policy × Subjectivity of performance																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment																														
Pay policy × Performance at T ₃																														
PPP perceptions at T ₂ × Pay policy × Performance at T ₃																														
Pay policy × Performance at T ₃ × Subjectivity of assessment																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment of assessment × Performance at T ₃																														
-2 log likelihood	1002.17			997.41						997.39			990.78																	
Δ-2 log likelihood	—			4.76**			—			.02			6.63																	
Likelihood ratio-based R ²				(relative to Model 1)			(relative to Model 2)			(relative to Model 2)			(relative to Model 2)																	
Δ Likelihood ratio-based R ²	.001			.02			.006			.02			.04																	
Likelihood ratio-based R ²	—			.019**			—			0			.02																	
Δ Likelihood ratio-based R ²	—			(relative to Model 1)			(relative to Model 2)			(relative to Model 2)			(relative to Model 2)																	
PPP perceptions at T ₂ × Pay policy																														
Pay policy × Subjectivity of performance																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment																														
Pay policy × Performance at T ₃																														
PPP perceptions at T ₂ × Pay policy × Performance at T ₃																														
Pay policy × Performance at T ₃ × Subjectivity of assessment																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment of assessment × Performance at T ₃																														
-2 log likelihood	1002.17			997.41						997.39			990.78																	
Δ-2 log likelihood	—			4.76**			—			.02			6.63																	
Likelihood ratio-based R ²				(relative to Model 1)			(relative to Model 2)			(relative to Model 2)			(relative to Model 2)																	
Δ Likelihood ratio-based R ²	.001			.02			.006			.02			.04																	
Likelihood ratio-based R ²	—			.019**			—			0			.02																	
Δ Likelihood ratio-based R ²	—			(relative to Model 1)			(relative to Model 2)			(relative to Model 2)			(relative to Model 2)																	
PPP perceptions at T ₂ × Pay policy																														
Pay policy × Subjectivity of performance																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment																														
Pay policy × Performance at T ₃																														
PPP perceptions at T ₂ × Pay policy × Performance at T ₃																														
Pay policy × Performance at T ₃ × Subjectivity of assessment																														
PPP perceptions at T ₂ × Pay policy × Subjectivity of assessment of assessment × Performance at T ₃																														
-2 log likelihood	1002.17			997.41						997.39			990.78																	
Δ-2 log likelihood	—			4.76**			—			.02			6.63																	
Likelihood ratio-based R ²				(relative to Model 1)			(relative to Model 2)			(relative to Model 2)			(relative to Model 2)																	
Δ Likelihood ratio-based R ²	.001			.02			.006			.02			.04			</														

FIGURE 2
Moderation of the Effect of Pay Communication Policy on PFP Perceptions (T_2)



nation criteria and, more specifically, more adverse when these criteria are relative (as opposed to absolute).

As can be seen from Model 4b, the interaction term of the PFP perceptions with subjectivity of performance assessment is significant and inversely associated with the dependent variable (i.e., task performance at T_3) (estimate = -226.49 , $p < .05$). Simple slopes analyses (Aiken & West, 1991; see Figure 3) show that, when performance assessment is subjective, the slope of PFP perceptions on task performance, while positive, is not significantly different from 0 (estimate = 19.46 , n.s.). In contrast, when performance assessment is

objective, the positive slope is significantly different from 0 (estimate = 245.96 , $p < .01$). These results are consistent with Hypothesis 4a, positing that the subjectivity of performance assessment moderates the second stage of mediation, with the positive impact of PFP perceptions on performance being amplified when performance assessment is objective (as opposed to subjective).

Results of parametric bootstrap analysis—that is, drawing 1,000 random samples with replacement from the full sample (Bauer et al., 2006)—indicate that, under conditions of relative pay determination criteria and objective assessment, the expected indirect effect of pay secrecy on individual task

FIGURE 3
Moderation of the Effect of (Centered) PFP Perceptions at T_2 on Individual Task Performance at T_3

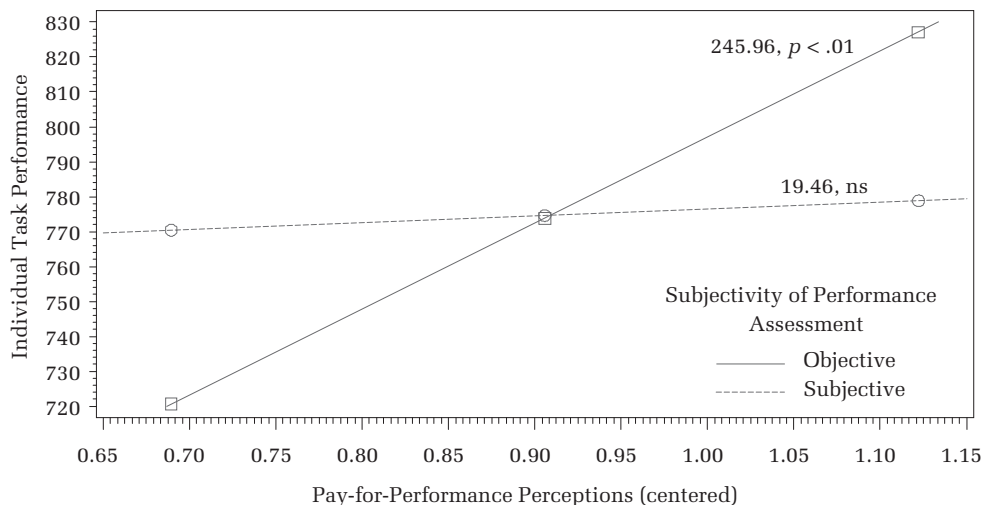
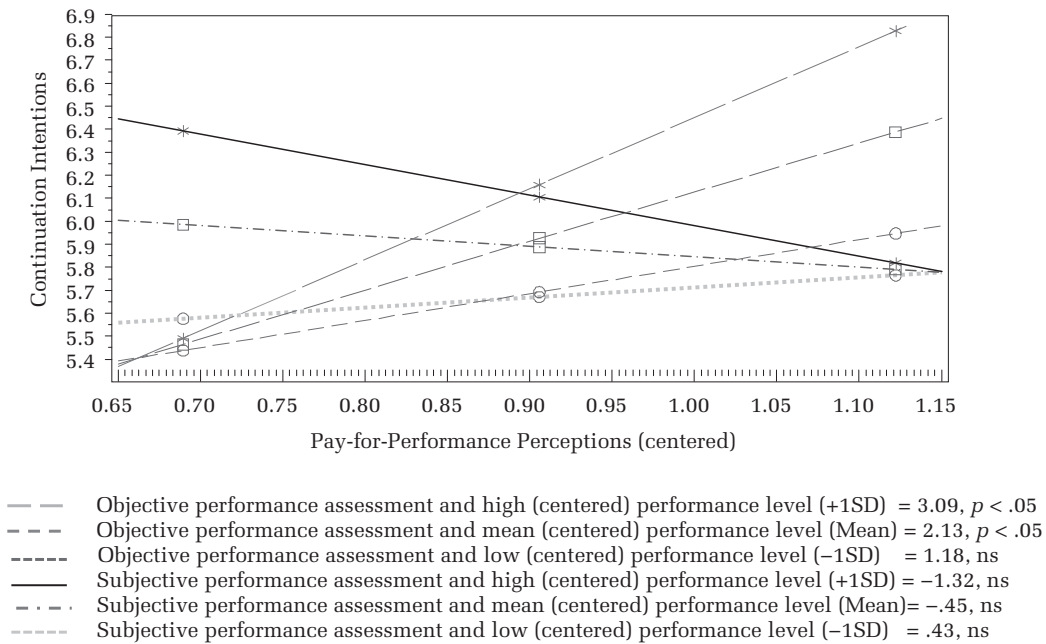


FIGURE 4
Moderation of the Effect of (Centered) PFP Perceptions at T_2 on Continuation Intentions at T_3



performance is -30.02 (90% CI = $-54.45, -8.88$) and the expected total effect is -112.61 (90% CI = $-158.34, -67.29$). With mediation present when the indirect effect differs significantly from 0 (Edwards & Lambert, 2007), our results, indicating that the 90% confidence interval (CI) of this indirect effect excluded 0, are consistent with Hypothesis 4a. Moreover, this moderated indirect effect (via PFP perceptions) accounts for 26.66% of the total effect of pay secrecy on task performance. It also explains 7.41% more of the variance in task performance than the unmoderated mediation model ($\Delta R^2_{\text{relative to Model 3b}} = .02, p < .01$).¹

However, we found no support for Hypothesis 5a, which posited that this attenuation of any positive impact of PFP perceptions on task performance by subjective performance assessment would itself be amplified by pay secrecy. More

specifically, as can be seen in Model 4c in Table 2, the three-way interaction of the PFP perceptions with the subjectivity of performance assessment and the pay communication policy is not statistically significant.

Moderating effects of PFP system attributes on the sorting consequences of pay secrecy. The results of Model 4b in Table 3 indicate that, consistent with Hypothesis 4b, the three-way interaction of PFP perceptions, subjectivity of assessment, and task performance is significantly associated with continuation intentions at T_3 (estimate = $-.01, p < .05$). Moreover, as illustrated in Figure 4, simple slopes analyses (Aiken & West, 1991) showed that, among high performers (i.e., +1SD of performance), when performance assessment is objective, the slope of PFP perceptions on continuation intentions is positive and significantly different from 0 (estimate = $3.09, p < .05$). In contrast, for average performers, these same objective performance assessment conditions yield a flatter (yet still significantly different from 0) positive slope (estimate = $2.13, p < .05$). Figure 4 also shows that, consistent with Hypothesis 4b, this amplification of the impact of PFP perceptions on continuation intentions is absent under conditions of subjective performance assessment. More specifically, under conditions of subjective performance assessment,

¹ Although the effect sizes reported in Table 2 appear to be rather small, it must be emphasized that effect sizes estimated in the context of hierarchical models reflect the impact of explanatory variables on multiple, level-specific components of variance (with some variables reducing the variance at one level, but potentially increasing it at another). Accordingly, it is likely that the absolute size of the effects estimated in the current study are systematically smaller than those typically obtained in single-level linear regression (Recchia, 2010; Snijders & Bosker, 1999).

the PFP perceptions–continuation intentions slope is not significantly different from 0 for high, average, and low performers. In sum, as posited, the subjectivity of performance assessment and individual task performance jointly moderate the second stage of the mediated relationship, with the positive impact of PFP perceptions on continuation intentions being amplified when performance assessment is objective and this amplification being particularly pronounced among high performers.

The results of parametric bootstrap analysis (Bauer et al., 2006) provide further support for Hypothesis 4b. More specifically, among average performers, when the PFP system is characterized by the relative pay determination criterion and objective assessment, the expected indirect effect of pay secrecy on continuation intentions is $-.26$ (90% CI = $-.52, -.04$) and the expected total effect is $-.47$ (90% CI = $-.89, -.07$). In other words, under such PFP conditions, the indirect effect of pay secrecy via PFP perceptions accounts for 55.32% of pay secrecy's total effect on continuation intentions. In contrast, this same moderated indirect effect is, as predicted, more robust among high performers. For them, the expected indirect effect is $-.38$ (90% CI = $-.74, -.07$) and the expected total effect $-.59$ (90% CI = $-1.08, -.13$), with this indirect effect explaining 64.41% of the total effect. This moderated-mediation model (Model 4b in Table 3) also explains a significantly greater share of the variance in continuation intentions than the unmoderated mediation model ($\Delta R^2_{\text{relative to Model 3b}} = .05, p < .05$).

Finally, the results of Model 4c in Table 3 show that the four-way interaction term of PFP perceptions, pay secrecy, subjectivity of performance assessment, and task performance is inversely (estimate = $-.02$, n.s.), but not significantly associated with continuation intentions. Accordingly, Hypothesis 5b—positing that the attenuation of the beneficial impact of PFP perceptions on continuation intentions by subjective performance assessment would itself be amplified by pay secrecy—was not supported.

DISCUSSION

Pay secrecy continues to be a contentious issue among scholars and practitioners alike, with both theory and empirical evidence regarding the implications of pay secrecy remaining equivocal. Drawing from signaling theory, we aimed to enhance understanding of the psychological mechanisms

underlying pay secrecy's performance and sorting effects, and to explore how aspects of the broader pay context within which pay communication policies are embedded may condition these effects. Based on the notion that pay secrecy generates information asymmetries that heighten the uncertainty surrounding employees' effort allocation decisions, we argued that employees seek to glean whatever information they can from the broader pay context. More specifically, we proposed that employees may infer signals from pay secrecy itself, as well as from two attributes of the PFP system—a dominant aspect of the broader pay context in many organizations enforcing pay secrecy—in order to reduce such uncertainty. Accordingly, we developed a moderated-mediation model specifying that these two PFP system attributes—namely, pay determination criteria and the subjectivity of performance assessment—condition the PFP-related inferences that employees draw from pay secrecy, as well as the impact of these inferences on both performance and continuation intentions.

Our findings largely support this moderated-mediation model. First, consistent with earlier findings (Bamberger & Belogolovsky, 2010; Futrell & Jenkins, 1978), our results indicate that pay secrecy has an adverse effect on individual task performance. Second, although we found no support for Hypotheses 1 and 2, suggesting that PFP perceptions *unconditionally* mediate the performance and sorting (respectively) effects of pay secrecy, we *did* find support for the moderated-mediation effects specified by Hypotheses 3, 4a, and 4b. More specifically, we found that pay determination criteria moderate the effects of pay secrecy on PFP perceptions (consistent with Hypothesis 3). As posited, while PFP perceptions are relatively insensitive to pay transparency or secrecy when pay determination criteria are absolute, they are highly sensitive when these criteria are relative. Moreover, while, as expected, PFP perceptions were the lowest under conditions of pay secrecy and relative pay determination criteria, they were highest under conditions of pay transparency and relative (vs. absolute) criteria. This is interesting in that while pay–performance contingencies unbounded by some absolute standard may signal potentially higher rewards for superior performance, the uncertainties associated with relative criteria should theoretically heighten risk, thus potentially limiting PFP perceptions. Our results suggest that, in the context of relative pay determination criteria, transparency may actually

signal reduced risk, thus facilitating higher PFP perceptions.

Additionally, we found that the positive effects of PFP perceptions on task performance are amplified under conditions of objective (vs. subjective) performance assessment (consistent with Hypothesis 4a). Accordingly, our findings suggest that, regardless of the interactive effect of pay transparency and pay determination criteria on PFP perceptions, any positive impact that heightened PFP perceptions may have on individual task performance is likely to be limited to the extent that performance assessment methods signal to employees (as they do when assessment is less objective) that “noise” factors may limit the organization’s ability to accurately differentiate strong from weak performers.

Similar support was found for Hypothesis 4b regarding the sorting effects of pay secrecy. As posited, we found pay secrecy’s indirect and inverse effect (through PFP perceptions) on continuation intentions to be attenuated under conditions of objective (vs. subjective) performance assessment, particularly among higher-performing study participants. These results suggest that high performers (relative to average and low performers), when considering whether to stay or leave, tend to be the more sensitive to signals stemming from the nature of pay communication and the broader attributes of the PFP system. In sum, these findings suggest that, when implemented under conditions of relative pay determination criteria and subjective (vs. objective) assessment, the adverse impact of pay secrecy (vs. pay transparency) is unlikely to be limited only to task performance. Pay secrecy, when implemented under such conditions, may also take a toll on the ability of the firm to retain its best performers.

Interestingly, we found no evidence that pay secrecy amplifies the adverse impact of performance assessment subjectivity on the association between PFP perceptions and individual task performance (Hypothesis 5a), and between PFP perceptions and continuation intentions among high performers (Hypothesis 5b). One explanation for this may be that the size of our sample did not provide the statistical power necessary to detect the indirect relationships embedded within the three- and four-way interactions that we posited (Murphy & Myers, 2004; Preacher & Kelley, 2011). Alternatively, it may be that while subjectivity in assessment can sometimes result in *positive* (i.e., leniency) bias, consistent with the notion of Baumeister et al.

(2001: 323) that “bad impressions are . . . more resistant to disconfirmation than good ones,” even in the absence of an intent signal such as pay secrecy individuals implicitly associate assessment subjectivity with the potential for negative (i.e., harshness) bias. Accordingly, any marginal increase in signal strength generated by pay secrecy is neither psychologically meaningful nor statistically significant.

Theoretical Implications

The current study offers several important contributions to theory and research on both signaling and pay communication policy.

Signaling. Our study offers three main implications for signaling theory. First, while signaling theory and research tend to focus on the deterministic effects of individual signals, we posited, and found, that the impact of pay secrecy as a discrete signal may be more dynamic—contingent upon the implicit signals suggested by relevant aspects of the surrounding context. The fact that pay secrecy’s effect on participants’ PFP perceptions was significant only under conditions of relative (but not absolute) pay determination criteria suggests that inferences drawn from related policies or practices likely frame the interpretation of the target signal and influence its salience. Accordingly, our findings offer a more nuanced, context-sensitive (Johns, 2006) approach to understanding signaling in management, taking into account the potentially interactive effects of multiple signals inferred from a variety of related policies, practices, and artifacts. They also reinforce the argument of Bowen and Ostroff (2004) regarding the beneficial effect of adopting human resources policies and practices that transmit unequivocal, consistent, and consensual signals to employees. As Bowen and Ostroff (2004: 207) note, “the more [human resources management] practices send strong signals about what strategic goals are most important and what employee behaviors are expected, supported and rewarded relative to those goals, the more likely it is those goals will be achieved.”

Second, our findings extend signaling theory by suggesting that, consistent with the literature on positive–negative asymmetry (Baumeister et al., 2001; Peeters & Czapinski, 1990), even weak signals may have a tendency to drive negative impressions and suspicions of opportunism and deception when interpreted in the context of heightened uncertainty. Moreover, they suggest that these nega-

tive impressions and suspicions can elicit precautionary or loss-reduction behaviors, such as effort reduction or withdrawal. They do so in that while pay secrecy in isolation did not generate reduced PFP perceptions (and, through them, loss-reduction behaviors), it did so when framed within the context of other pay-related policies and practices signaling heightened uncertainty. These findings are important because they raise questions about the efficacy of management policies, practices, and symbols intended to signal or “give sense” to employees (Gioia & Chittipeddi, 1991). Particularly when applied in the context of other policies and practices heightening uncertainty or in other ways potentially raising employee concerns or suspicions, the results of this study suggest that the “sense” employees infer from such policies and practices may be more negative than intended.

Third, we extend signaling theory to the realm of pay administration, shifting away from the focus of Spence (1973; 2002) on employees as signaling differences in ability, toward employers and how their pay systems may implicitly signal differences in their qualities as employers. Applied in such a way, we use the principles of signaling to enhance our understanding of how pay communication policy may influence key compensation outcomes—namely, performance, and continuation intentions. Our finding that the effect of pay communication policy on PFP perceptions is conditioned by the nature of pay determination criteria suggests that the inferences employees glean from one pay policy are contingent upon signals inferred from others. Our finding—that the indirect effects of pay secrecy (via PFP perceptions) on incentive and sorting effects are contingent on the broader attributes of the PFP system—provides further evidence that signals drawn from multiple elements of the pay system interact to affect key compensation outcomes. This has several key theoretical implications. First, it suggests that the performance and sorting effects of pay secrecy may be different depending upon the nature of the PFP context within which it is implemented. Second, while in the current study we limited our analysis to the contingency effects of two attributes of the PFP systems, it suggests that other pay system attributes (e.g., pay mix, dispersion) may also affect the inferences that employees draw from pay secrecy and thus moderate the impact of pay communication policy on these same pay outcomes. Finally, it suggests that, in modeling the impact of pay secrecy, scholars

may need to adopt the more nuanced and context-sensitive frameworks noted here.

Pay communication policy. Our findings also provide important insights into the manner in which pay communication policy may affect key compensation outcomes. Although scholars proposed as early as 30 years ago that weakened PFP perceptions likely underlie any adverse impact of pay secrecy on performance (Futrell & Jenkins, 1978), the empirical evidence in support of this explanation has been limited at best. Indeed, although Bamberger and Belogolovsky (2010) found support for this explanation, they did so only among those highly sensitive to inequity. The current research extends these earlier findings in several important ways. First, our findings demonstrate that PFP perceptions play a key role in linking pay transparency to individual task performance, as well as continuation intentions, irrespective of individual differences. We demonstrate that, in the context of PFP, the adverse effects of pay secrecy are likely to be manifested in, as well as mediated by, reduced PFP perceptions. In particular, the findings indicate that such effects are particularly pronounced when pay secrecy is combined with PFP systems characterized by relative (as opposed to absolute) pay determination criteria. The findings also indicate that the indirect (via PFP perceptions) and adverse effects of pay secrecy are further amplified only under conditions of subjective (relative to objective) assessment. Both of these moderation effects are important in that in the vast majority of firms applying pay secrecy, relative pay determination and subjective performance assessment are also typically in place (Gibbs et al., 2004; Kuhn & Yockey, 2003).

Additionally, we extend past research on the performance-related consequences of pay secrecy to the issue of sorting, theorizing, and demonstrating how—particularly in the context of varying PFP system attributes—pay secrecy may also affect continuation intentions. More specifically, our findings indicate that, particularly when pay secrecy is applied in the context of a PFP system, characterized by relative pay determination criteria and subjective performance assessment (in contrast to a system characterized by absolute pay determination and more objective assessment), such a policy may have an adverse impact on the continuation intentions of better-performing staff. This is important not only because these are precisely the conditions under which pay secrecy is often adopted (Gibbs et al., 2004), but also because agency theory

suggests that PFP generally signals managerial intentions to better reward higher-performing employees, and thus serves as a useful means by which to increase the likelihood of their attraction and retention (Gomez-Mejia et al., 2010). Our findings are also important in that, based on the principles of signaling theory, they shed light on how, under conditions of information asymmetry, the beneficial signals often attributed to PFP may “get crossed,” with the net result being that rather than strengthening the continuation intentions of better-performing employees as suggested by agency theory, PFP may actually weaken them.

Practical Implications

The results of the current investigation also offer a number of significant practical implications. First, they suggest that while pay secrecy may indeed provide managers with greater flexibility in allocating rewards (Colella et al., 2007), when combined with a PFP system in which pay determination criteria are more relative (than absolute) and performance assessment that is largely subjective (as opposed to objective), such a pay communication policy may ultimately do more harm to individual task performance and continuation intentions than good. In this regard, managers may either consider relaxing pay communication policies or changing the nature of their organization’s PFP system. Indeed, although we contrasted a policy of complete pay secrecy with complete transparency, there are more moderate options, often referred to as “partial openness” (Lawler & Jenkins, 1992). For example, organizations might provide employees with information on pay ranges and/or the schedule detailing how, at the aggregate level, merit increases and/or bonus payments link to performance rating and position in the pay range. Although scholars have yet to investigate the incentive and sorting effects of such moderate pay communication practices, they may offer managers a partial solution to the challenge of reducing information asymmetries (and the problems associated with them) while retaining pay-related flexibility and privacy.

Second, they suggest that, to the extent that PFP perceptions explain a substantial portion of the documented indirect effects of pay secrecy on performance and continuation intentions, managers unable to adjust their organization’s pay communication policy or PFP system attributes might consider taking steps to otherwise bolster employee

PFP perceptions. For example, organizations might take visible steps to heighten rater accountability, such as incorporating assessment quality as a criterion to be considered when assessing the performance of the rater. Such steps might signal to employees that, despite the combination of information asymmetry and subjective assessment, raters have a vested interest to do their utmost to ensure a tighter link between actual effort and appraised performance (Bamberger, 2007; Baron & Kreps, 1999).

Limitations and Avenues for Future Research

Despite these theoretical and practical contributions, a number of limitations of this study should be mentioned, many having to do with the fact that we tested our model by means of a laboratory-based simulation. As noted by others (Falk & Fehr, 2003; Falk & Heckman, 2009), lab experiments offer several significant advantages over naturally occurring field data, such as allowing us to systematically vary our exogenous variables (e.g., transparency of pay communications) while keeping everything else fixed, as well providing the ability to ascertain causality. Nevertheless, several questions may be raised regarding the study’s mundane realism and hence the external validity of our findings.

First, the setting and procedure were not very conducive for the development of negative attitudes regarding pay, such as jealousy, among the study participants—something that, in the real world, could potentially weaken the positive incentive and sorting effects of pay transparency. Similarly, because—regardless of pay communication condition—assessments were based on objective performance (modified randomly in the subjective performance assessment condition), our findings fail to take into consideration that more transparent pay systems may motivate appraisers to bias their ratings centrally so as to avoid the pecuniary costs associated with more extreme scores (Bartol & Martin, 1989; Leventhal, 1976; Leventhal et al., 1980). To the extent that this may occur in actual organizations, it suggests that transparency may be associated with an actual (rather than perceived) attenuation of PFP link, which, like jealousy, could potentially counterbalance the adverse incentive and sorting effects of pay secrecy with similarly adverse pay transparency effects. Indeed, to the extent that transparency might drive centralized ratings and thus result in reduced pay differentials, more talented individuals may not only be

less motivated to perform, but also less motivated to join or to remain (Harrison et al., 1996; Lazear, 2000). In order to address such limitations, researchers may consider replicating the current study in the context of a simulation in which the outcomes are more meaningful to the participants (thus having the potential to create jealousies) and in which subjective ratings are centrally (rather than randomly) biased.

Second, mundane realism may have been limited by assessing participants' performance on a computer game as opposed to a regular work task (Aronson, Wilson, & Brewer, 1998). To the degree that study participants may have been less serious about and engaged in the task than employees in a regular job, one may question the degree to which their responses to varying pay communication and PFP conditions truly reflect those of actual workers. Still, participants indicated to us that the experimental situation was involving and meaningful to them, that they took it seriously, and that they cared about the scores they generated and the income they would receive, suggesting a high degree of experimental and psychological realism (Aronson et al., 1998). Moreover, Brewer (2000: 12) points out that "an experimental setting may have little mundane realism but still capture processes that are highly representative of those that underlie events in the real world." Nevertheless, future research might attempt to address this limitation by replicating our study in a more job-like experimental context.

Mundane realism may also have been limited by the somewhat minimalist nature of the subjective vs. objective appraisal manipulation, with the result being empirical effects that, while statistically significant, were of a small magnitude. However, as noted by Prentice and Miller (1992: 161), the strength of such a manipulation "derives not from the proportion of variance [the independent variable] can account for, but instead from the fact that such a slight manipulation . . . can account for any variance at all." In this context, the minimalist nature of our manipulation might best be viewed as heightening the risk of Type II error and generating effects that, if anything, err on the conservative. Moreover, particularly when it comes to task performance and the continuation intentions of employees, even small effects can be practically meaningful (Cortina & Landis, 2009; Prentice & Miller, 1992). Finally, it is important to reinforce that, as indicated earlier (see fn. 1), effect size may be under-

estimated when testing a hierarchical model (Recchia, 2010; Snijders & Bosker, 1999). Nevertheless, scholars seeking to replicate and extend this study should consider the adoption of stronger manipulations in order to capture more accurately the true magnitude of the hypothesized effects. For example, researchers might more clearly differentiate between subjective and objective performance assessment by highlighting how the former will take into account impressions of participants' contextual behaviors, such as helping and sportsmanship.

Third, although this experiment took about 90 minutes, it may still have been too brief to allow for the development of the interpersonal coworker dynamics found in actual workplaces. On the one hand, participants in the transparent condition, lacking close relationships, may have been more cautious about comparing pay- or performance-related information than employees working in "real" transparent pay environments. To the extent that this may have occurred, it would have only weakened the effects noted above, thus suggesting that our findings may err on the conservative side. On the other hand, the limited time frame over which our design allowed pay secrecy to affect perceptions and behaviors may have allowed us to capture only the more immediate effects of pay communication policies. To the degree that the accuracy with which employees estimate performance-pay contingencies increases with their own personal experience over time, or that they find ways over time to compensate cognitively for the uncertainty created by pay secrecy, our findings may not necessarily be indicative of the longer-term consequences of pay secrecy on performance and continuation intentions. In future studies, researchers might consider examining empirically the extent to which seniority attenuates the negative effects of pay secrecy on PFP perceptions, task performance, and continuation intentions.

These context- and time-based threats to mundane realism cannot be discounted, and should be addressed in future replication research in both the lab and the field. Nevertheless, the existing literature on the generalizability of lab-based organizational research in general, and lab-based compensation research in particular, suggest that our results and effect sizes would be more robust in the field, rather than null or in a different direction (Anderson, Lindsay, & Bushman, 1999; Cohen-Cha-

rash & Spector, 2001; Dipboye, 1990; Locke, 1986). Anderson et al. (1999) observed that the correlations between effect sizes obtained in laboratory and field settings generally exceed .70, indicating the similarity between results obtained from field and laboratory studies. Interestingly, in the case of research on incentive pay, results indicate that field studies on average yield larger effects than laboratory studies (Jenkins, Mitra, Gupta, & Shaw, 1998). Indeed, Jenkins et al. (1998), in their meta-analysis examining the impact of incentives on performance, found that incentives had a more powerful effect on performance in field settings than in laboratory settings. Such findings suggest that, if anything, the results presented in our study may actually be conservative, with actual, field-based estimates likely to be of substantially greater magnitude.

Finally, it may be important to test the cross-cultural generalizability of our findings. For example, it may be that in cultures characterized by norms and values promoting transparency about pay-related issues, pay secrecy may be more likely to signal deceptive intent. In contrast, in cultures in which the disclosure of any information related to income or wealth is considered taboo, employees may be less likely to infer from pay secrecy malevolent managerial intent.

REFERENCES

- Adams, J. S. 1965. Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, vol. 2: 267–299. New York: Academic Press.
- Aiken, L. S., & West, S. G. 1991. *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage Publications.
- Akerlof, G. A. 1970. The market for “Lemons”: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics*, 84: 488–500.
- Allison, P. D. 1990. Change scores as dependent variables in regression analysis. *Sociological Methodology*, 20: 93–114.
- Anderson, C. A., Lindsay, J. J., & Bushman, B. J. 1999. Research in the psychological laboratory: Truth or triviality? *Current Directions in Psychological Science*, 8: 3–9.
- Aronson, E., Wilson, T. D., & Brewer, M. B. 1998. Experimentation in social psychology. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology*: 99–142. Boston, MA: McGraw-Hill.
- Balkin, D. B., & Gomez-Mejia, L. R. 1990. Matching compensation and organizational strategies. *Strategic Management Journal*, 4: 153–169.
- Bamberger, P. A. 2007. Competitive appraising: A social dilemma perspective on the conditions in which multi-round peer evaluation may result in counterproductive team dynamics. *Human Resource Management Review*, 17: 1–18.
- Bamberger, P. A., & Belogolovsky, E. 2010. The impact of pay secrecy on individual task performance. *Personnel Psychology*, 63: 965–996.
- Bamberger, P. A., & Meshoulam, I. 2000. *Human resource strategy: Formulation, implementation and impact*. Thousand Oaks, CA: Sage.
- Baron, J. N., & Kreps, D. M. 1999. *Strategic human resources: Frameworks for general managers*. New York: Wiley.
- Bartol, K. M., & Martin, D. C. 1989. Effects of dependence, dependency threats, and pay secrecy on managerial pay allocations. *Journal of Applied Psychology*, 74: 105–113.
- Bauer, D. J., Preacher, K. J., & Gil, K. M. 2006. Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: New procedures and recommendations. *Psychological Methods*, 11: 142–163.
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. 2001. Bad is stronger than good. *Review of General Psychology*, 5: 323–370.
- Becker, T. E. 2005. Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational Research Methods*, 8: 274–289.
- Bloom, M., & Milkovich, G. T. 1998. Relationships among risk, incentive pay, and organizational performance. *Academy of Management Journal*, 41: 283–297.
- Bol, J. C. 2011. The determinants and performance effects of managers’ performance evaluation biases. *Accounting Review*, 86: 1549–1575.
- Bowen, D., & Ostroff, C. 2004. Understanding the HRM-firm performance linkages: The role of the “strength” of the HRM system. *Academy of Management Review*, 29: 203–221.
- Brewer, M. B. 2000. Research design and issues of validity. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology*: 3–16. New York: Cambridge University Press.
- Brockner, J., & Wiesenfeld, B. M. 1996. An integrative framework for explaining reactions to decisions: Interactive effects of outcomes and procedures. *Psychological Bulletin*, 120: 189–208.

- Cadsby, C. B., Song, F., & Tapon, F. 2007. Sorting and incentive effects of pay-for-performance: An experimental investigation. *Academy of Management Journal*, 50: 387–405.
- Card, D., Mas, A., Moretti, E., & Saez, E. 2012. Inequality at work: The effect of peer salaries on job satisfaction. *American Economic Review*, 102: 2981–3003.
- Cloutier, J., & Vilhuber, L. 2008. Procedural justice criteria in salary determination. *Journal of Managerial Psychology*, 23: 713–740.
- Cohen, K. 2006. The pulse of the profession: 2006–07 salary budget survey. *Workspan*, September: 23–26.
- Cohen-Charash, Y., & Spector, P. E. 2001. The role of justice in organizations: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 86: 287–321.
- Colella, A., Paetzold, R. L., Zardkoohi, A., & Wesson, M. J. 2007. Exposing pay secrecy. *Academy of Management Review*, 32: 55–71.
- Colella, A., Zardkoohi, A., Paetzold, R., & Wesson, M. 2003. *Day secrecy revisited: An integrative model*. Paper presented at Academy of Management Meeting, Seattle, WA.
- Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O., & Ng, K. Y. 2001. Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86: 425–445.
- Colquitt, J. A., Greenberg, J., & Zapata-Phelan, C. P. 2005. What is organizational justice? A historical overview. In J. Greenberg & J. A. Colquitt (Eds.), *Handbook of organizational justice*: 3–56. Mahwah, NJ: Lawrence Erlbaum.
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. 2011. Signaling theory: A review and assessment. *Journal of Management*, 37: 39–67.
- Cortina, J. M., & Landis, R. S. 2009. When small effect sizes tell a big story, and when large effect sizes don't. In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity, and fable in the organizational and social sciences*: 287–308. New York: Routledge.
- Cox, D. R., & Snell, E. J. 1989. *Analysis of binary data* (2nd ed.). London: Chapman & Hall.
- Davila, A., Foster, G., & Gupta, M. 2003. Venture capital financing and the growth of startup firms. *Journal of Business Venturing*, 18: 689–708.
- Day, N. E. 2007. An investigation into pay communication: Is ignorance bliss? *Personnel Review*, 36: 739–762.
- DeNisi, A. S. 1996. *Cognitive approach to performance appraisal: A program of research*. London: Routledge.
- Dipboye, R. L. 1990. Laboratory vs. field research in industrial and organizational psychology. *International Review of Industrial and Organizational Psychology*, 5: 1–34.
- Edwards, J. R., & Lambert, L. S. 2007. Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, 12: 1–22.
- Erez, A., & Isen, A. M. 2002. The influence of positive affect on the components of expectancy motivation. *Journal of Applied Psychology*, 87: 1055–1067.
- Falk, A., & Fehr, E. 2003. Why labour market experiments? *Labour Economics*, 10: 399–406.
- Falk, A., & Heckman, J. J. 2009. Lab experiments are a major source of knowledge in the social sciences. *Science*, 326: 535–538.
- Frank, R. H. 1985. The demand for unobservable and other nonpositional goods. *American Economic Review*, 75: 101–116.
- Futrell, C. M., & Jenkins, O. C. 1978. Pay secrecy versus pay disclosure for salesmen: A longitudinal study. *Journal of Marketing Research*, 15: 214–219.
- Gely, R., & Bierman, L. 2003. Pay secrecy/confidentiality rules and the National Labor Relations Act. *Journal of Labor and Employment Law*, 6: 120–156.
- Gerhart, B., Rynes, S. L., & Fulmer, I. S. 2009. Pay and performance: Individuals, groups, and executives. *Academy of Management Annals*, 3: 251–315.
- Gibbs, M., Merchant, K. A., Van der Stede, W. A., & Vargus, M. E. 2004. Determinants and effects of subjectivity in incentives. *Accounting Review*, 79: 409–436.
- Gioia, D. A., & Chittipeddi, K. 1991. Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, 12: 433–448.
- Gomez-Mejia, L. R., Berrone, P., & Franco-Santos, M. 2010. *Compensation and organizational performance: Theory, research, and practice*. New York: M. E. Sharpe.
- Goodman, J. S., & Blum, T. C. 1996. Assessing the non-random sampling effects of subject attrition in longitudinal research. *Journal of Management*, 4: 627–652.
- Greenberg, J. 1990. Organizational justice: Yesterday, today and tomorrow. *Journal of Management*, 16: 399–432.
- Greenberg, J. 2003. Creating unfairness by mandating fair

- procedures: The hidden hazards of a pay-for-performance plan. *Human Resource Management Review*, 13: 41–57.
- Harrison, D. A., Virick, M., & William, S. 1996. Working without a net: Time, performance, and turnover under maximally contingent rewards. *Journal of Applied Psychology*, 81: 331–345.
- Heneman, R. L., Greenberger, D. B., & Strasser, S. 1988. The relationship between pay-for-performance perceptions and pay satisfaction. *Personnel Psychology*, 41: 745–759.
- Institute for Women's Policy Research (IWPR) & Rockefeller Survey of Economic Security. 2011. Pay secrecy and wage discrimination. Fact Sheet #C382. Washington, DC: Institute for Women's Policy Research.
- Ittner, C. D., Larcker, D. F., & Meyer, M. W. 2003. Subjectivity and the weighting of performance measures: Evidence from a balanced scorecard. *Accounting Review*, 78: 725–758.
- Jenkins, G. D. J., Jr., Mitra, A., Gupta, N., & Shaw, J. D. 1998. Are financial incentives related to performance? A meta-analytic review of empirical research. *Journal of Applied Psychology*, 83: 777–778.
- Johns, G. 2006. The essential impact of context on organizational behavior. *Academy of Management Review*, 31: 386–408.
- Jones, D. A., & Skarlicki, D. P. 2003. The relationship between perceptions of fairness and voluntary turnover among retail employees. *Journal of Applied Social Psychology*, 33: 1226–1243.
- Kanfer, R. 1987. Task-specific motivation: An integrative approach to issues of measurement, mechanisms, processes, and determinants. *Journal of Social and Clinical Psychology*, 5: 237–264.
- Kanfer, R. 1990. Motivation theory and industrial/organizational psychology. In M. D. Dunnette & L. Hough (Eds.), *Handbook of industrial and organizational psychology*, vol. 1: 75–170. Palo Alto, CA: Consulting Psychologists Press.
- Kramer, R. M. 1998. Paranoid cognition in social systems: Thinking and acting in the shadow of doubt. *Personality and Social Psychology Review*, 2: 251–275.
- Kramer, R. M. 2001. Organizational paranoia: Origins and dynamics. *Research in Organizational Behavior*, 23: 1–42.
- Kuhn, K. M., & Yockey, M. D. 2003. Variable pay as a risky choice: Determinants of the relative attractiveness of incentive plans. *Organizational Behavior and Human Decision Processes*, 90: 323–341.
- Lambert, S. J. 2000. Added benefits: The link between work–life benefits and organizational citizenship behavior. *Academy of Management Journal*, 43: 801–815.
- Lawler, E. E. 1966a. Managers' attitudes toward how their pay is and should be determined. *Journal of Applied Psychology*, 50: 273–279.
- Lawler, E. E. 1966b. The mythology of management compensation. *California Management Review*, 9: 11–22.
- Lawler, E. E. 1967. Secrecy about management compensation: Are there hidden costs? *Organizational Behavior and Human Performance*, 2: 182–189.
- Lawler, E. E. 2003. Reward practices and performance management system effectiveness. *Organizational Dynamics*, 32: 396–404.
- Lawler, E. E., & Jenkins, G. D. 1992. Strategic reward systems. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (3rd ed.): 1009–1055. Palo Alto, CA: Consulting Psychologists Press.
- Lazear, E. P. 1986. Salaries and piece rates. *Journal of Business*, 59: 405–431.
- Lazear, E. P. 1995. *Personnel economics*. Cambridge, MA: The MIT Press.
- Lazear, E. P. 2000. Performance pay and productivity. *American Economic Review*, 90: 1346–1361.
- Lazear, E. P., & Oyer, P. 2013. Personnel economics. In R. Gibsons & J. D. Roberts (Eds.), *Handbook of organizational economics*: 479–519. Princeton, NJ: Princeton University Press.
- Leventhal, G. S. 1976. The distribution of rewards and resources in groups and organizations. *Advances in Experimental Social Psychology*, 9: 92–131.
- Leventhal, G. S., Karuza, J., & Fry, W. R. 1980. Beyond fairness: A theory of allocation preferences. In G. Mikula (Ed.), *Justice and social interaction*: 167–218. New York: Springer-Verlag.
- Little, R. J. A., & Rubin, D. B. 1987. *Statistical analysis with missing data*. New York: John Wiley.
- Locke, E. A. (Ed.). 1986. *Generalizing from laboratory to field settings*. Lexington, MA: Lexington Books.
- Magee, L. 1990. R2 measures based on Wald and likelihood ratio joint significance tests. *American Statistician*, 44: 250–253.
- Major, B., & Adams, J. B. 1983. Role of gender, interpersonal orientation, and self-presentation in distributive-justice behavior. *Journal of Personality and Social Psychology*, 45: 598–608.
- McCoach, D. B. 2010. Hierarchical linear modeling. In G. R. Hancock & R. O. Mueller (Eds.), *The reviewer's*

- guide to quantitative methods in the social sciences:** 123–140. New York: Routledge.
- Messersmith, J. G., Guthrie, J. P., Ji, Y. Y., & Lee, J. Y. 2011. Executive turnover: The influence of dispersion and other pay system characteristics. *Journal of Applied Psychology*, 96: 457–469.
- Milkovich, G. T., & Anderson, P. H. 1972. Management compensation and secrecy policies. *Personnel Psychology*, 25: 293–302.
- Milkovich, G. T., Newman, J. M., & Gerhart, B. 2013. *Compensation* (11th ed.). New York: McGraw-Hill Irwin.
- Moers, F. 2005. Discretion and bias in performance evaluation: The impact of diversity and subjectivity. *Accounting, Organizations and Society*, 30: 67–80.
- Murphy, K. R., & Cleveland, J. N. 1995. *Understanding performance appraisal: Social, organizational, and goal based perspectives*. Thousand Oaks, CA: Sage.
- Murphy, K. R., & Myers, B. 2004. *Statistical power analysis* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Naylor, J. C., Pritchard, R. D., & Ilgen, D. R. 1980. *A theory of behavior in organizations*. New York: Academic Press, Inc.
- Peeters, G., & Czapinski, J. 1990. Positive–negative asymmetry in evaluations: The distinction between affective and informational negativity effects. *European Review of Social Psychology*, 1: 33–60.
- Perry, J. L., Engbers, T. A., & Jun, S. Y. 2009. Back to the future? Performance-related pay, empirical research, and the perils of persistence. *Public Administration Review*, 69: 39–51.
- 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.
- Preacher, K. J., & Hayes, A. F. 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behaviour Research Methods, Instruments and Computers*, 36: 717–731.
- Preacher, K. J., & Kelley, K. 2011. Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16: 93–115.
- Prentice, D. A., & Miller, D. T. 1992. When small effects are impressive. *Psychological Bulletin*, 112: 160–164.
- Recchia, A. 2010. R-squared measures for two-level hierarchical linear models using SAS. *Journal of Statistical Software*, 32: Code Snippet 2. Retrieved from <http://www.jstatsoft.org/v32/c02/paper>
- Rynes, S. L. 1991. Recruitment, job choice, and post-hire consequences: A call for new research directions. In M. D. Dunnette & L. Hough (Eds.), *Handbook of industrial and organizational psychology*, vol. 2 (2nd ed.): 399–444. Palo Alto, CA: Consulting Psychologists.
- Rynes, S. L., Gerhart, B., & Parks, L. 2005. Performance evaluation and pay for performance. *Annual Review of Psychology*, 56: 571–600.
- Shaw, J. D., & Gupta, N. 2007. Pay system characteristics and quit patterns of good, average, and poor performers. *Personnel Psychology*, 60: 903–923.
- Singer, J. D. 1998. Using SAS PROC MIXED to fit multi-level models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics*, 23: 323–355.
- Sloof, R., & van Praag, C. M. 2008. Performance measurement, expectancy and agency theory: An experimental study. *Journal of Economic Behavior and Organization*, 67: 794–809.
- Sloof, R., & van Praag, C. M. 2010. The effect of noise in a performance measure on work motivation: A real effort laboratory experiment. *Labour Economics*, 17: 751–765.
- Snijders, T. A. B., & Bosker, R. J. 1999. *Multilevel analysis. An introduction to basic and advanced multi-level modeling*. London: Sage.
- Spence, M. 1973. Job market signaling. *Quarterly Journal of Economics*, 87: 355–374.
- Spence, M. 2002. Signaling in retrospect and the informational structure of markets. *American Economic Review*, 92: 434–459.
- Stiglitz, J. E. 2002. Information and the change in the paradigm in economics. *American Economic Review*, 92: 460–501.
- Suazo, M. M., Martínez, P. G., & Sandoval, R. 2009. Creating psychological and legal contracts through human resource practices: A signaling theory perspective. *Human Resource Management Review*, 19: 154–166.
- Suazo, M. M., Martínez, P. G., & Sandoval, R. 2011. Creating psychological and legal contracts through HRM practices: A strength of signals perspective. *Employee Responsibilities and Rights Journal*, 23: 187–204.
- Tremblay, M., & Chenevert, D. 2008. Influence of compensation strategies in Canadian technology-intensive firms on organizational and human resources

performance. *Group and Organization Management*, 33: 269–302.

Trevor, C. O., Gerhart, B., & Boudreau, W. 1997. Voluntary turnover and job performance: Curvilinearity and the moderating influences of salary growth and promotions. *Journal of Applied Psychology*, 55: 585–610.

Trevor, C. O., Reilly, G., & Gerhart, B. 2012. Reconsidering pay dispersion's effect on the performance of interdependent work: Reconciling sorting and pay inequality. *Academy of Management Journal*, 55: 585–610.

Tyler, T. R. 1994. Psychological models of the justice motive: Antecedents of distributive and procedural justice. *Journal of Personality and Social Psychology*, 67: 850–863.

Vroom, V. H. 1964. *Work and motivation*. New York: Wiley.

Wanasika, I., & Adler, T. 2011. Deception as strategy: Context and dynamics. *Journal of Managerial Issues*, 23: 364–378.

Williamson, O. E. 1975. *Markets and hierarchies, analysis and antitrust implications: A study in the economics of internal organization*. New York: Free Press.

APPENDIX A
Timeline of the Procedure

Phase	Procedure/Information Provided	Manipulation
Start	Instructions	<i>Absolute condition:</i> Participants were informed that bonus pay would be allocated on an absolute (i.e., set and predetermined) basis according to their level of performance. <i>Relative condition:</i> Participants were informed that bonus pay would be allocated according to the point-based ranking of each participant within his or her group. <i>Objective condition:</i> Participants were told that the magnitude of each rounds' performance score would be calculated objectively, entirely contingent upon the individual's point count in that phase. <i>Subjective condition:</i> Participants were told that the magnitude of each rounds' performance score would be calculated according to the combination of the individual's objective point count in that phase with the investigators' subjective assessment, based on his or her observation of the individual's performance.
Tutorial Task 1 Break 1	Graph(s)	<i>Pay secrecy condition:</i> Participant's score on the task for that round and a bar graph of the bonus pay to be received for that round. <i>Pay transparency condition:</i> Participant's total score and bar graph of the additional pay to be received for that task round and a graph of his or her pay relative to that of the others (by code number) in the group.
	E-mails	<i>Pay secrecy condition:</i> Participants were requested not to discuss any pay-related issue with others. <i>Pay transparency condition:</i> Participants in this condition were told that their e-mail communications with their fellow group members would be unrestricted.
	Questionnaire (PFP perceptions)	
Task 2 Break 2	Repeat of Break 1	
Task 3 Break 3	Graph(s) Questionnaire (continuation intentions) Manipulation check	



Elena Belogolovsky (eb582@cornell.edu) is an assistant professor of human resource studies in the ILR School at Cornell University. She received her PhD in behavioral sciences and management from Technion–Israel Institute for Technology, Israel. Her research interests include compensation administration and strategy, organizational citizenship behavior (OCB), and occupational stress and employee well-being.

Peter A. Bamberger (peterb@post.tau.ac.il) (PhD Cornell

University) is a professor of organizational behavior and human resource studies at the Recanati Business School of Tel Aviv University, and director of research of the Smithers Institute at Cornell University's ILR School. His current research interests include peer relations and employee helping processes, occupational health psychology, and compensation strategy.



Copyright of Academy of Management Journal is the property of Academy of Management and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.