

THE IMPACT OF PAY SECRECY ON INDIVIDUAL TASK PERFORMANCE

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We generate and test a moderated mediation model of the effects of pay secrecy—a pay communication policy restricting employees' access to information regarding the level of other employees' pay in the organization—on individual task performance. According to this model, the effects of such a policy are posited to be mediated by informational fairness, procedural fairness, and performance-pay instrumentality perceptions, and moderated by tolerance for inequity. Using a lab-based simulation, our findings partially support this model, suggesting that perceived instrumentality mediates the adverse effect of pay secrecy on individual task performance but only for those low in inequity tolerance. For them, the instrumentality-mediated indirect effect accounted for over 20% of the total effect of pay secrecy on individual task performance. For those highly tolerant of inequity, a policy of pay secrecy was found to be directly associated with a higher level of individual performance than pay openness. The implications of the findings for research and practice are discussed.

For the past century, pay secrecy—a pay communication policy restricting employees' access to information regarding the level of other employees' pay in the organization and ability to exchange personal pay-related information with others (Colella, Paetzold, Zardkoohi, & Wesson, 2007)—has been one of the most controversial yet under researched topics in the management sciences (Colella et al., 2007; Gely & Bierman, 2003). Despite its questionable legality under the National Labor Relations Act (NLRA) and the subject of a recent Congressional investigation (Edwards, 2005; Gely & Bierman, 2003), pay secrecy remains an established practice in many workplaces both in America and abroad (Day, 2007; Gely & Bierman, 2003). Indeed, well over a third of those American employers surveyed indicated that they provide only a limited amount of pay information to their employees and enforce rules prohibiting

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employees from discussing their wages with coworkers (HRnext.com Survey, 2001).

The issue of pay secrecy is no less contentious among researchers with studies indicating that secrecy may have both benefits and costs to employees, employers, and society at large (Colella et al., 2007; Gely & Bierman, 2003; Tremblay & Chenevert, 2008). Among the primary costs of pay secrecy discussed by researchers is its impact on individual task performance. More specifically, in their recent review of the relevant literature, Colella et al. (2007: 60) suggest that pay secrecy may have an adverse effect on task performance by reducing employee motivation. Unfortunately, however, such a notion remains at the level of theoretical speculation, with empirical research regarding the impact of pay secrecy on individual task performance being extremely limited (Colella et al., 2007). Moreover, whereas Colella et al. (2007) also speculate on a number of mechanisms explaining the effects of pay secrecy on task performance as well as on individual difference factors likely to attenuate or amplify these effects, these mechanisms remain poorly understood. Indeed, we are unaware of any empirical research to date testing either mediating variables or the possible conditioning effects of individual differences on the link between pay secrecy and individual task performance.

In this study, we therefore build on existent theory to generate a moderated-mediation model in which pay secrecy is posited to have a generally adverse effect on individual task performance. In generating our theory below, we first draw from expectancy theory notions to explain how the effects of pay secrecy on perceived performance-pay instrumentalities are likely to generate a generally adverse effect on individual task performance. We then draw from equity and justice models to suggest that informational and procedural fairness perceptions may also play a role in generating such outcomes, partially mediating the effect of pay secrecy on individual task performance. Finally, building on Colella et al.'s (2007) suggestion that the effects of pay secrecy may not be universal, we explain how this indirect effect of pay secrecy on individual task performance via instrumentality, informational fairness, and procedural fairness perceptions is likely to be moderated by tolerance for inequity, a construct reflecting a dispositional characteristic regarding the sensitivity of individuals to the presence (or absence) of equity in social exchange. We test the hypotheses suggested by these theories in a lab-based simulation in which, while holding base pay constant, we manipulate the pay communication policy regarding performance-based bonuses. In this way, we offer a theoretical and empirical contribution to the literature on pay administration by proposing and testing: (a) the psychological mechanisms linking pay secrecy and individual task performance, as well as (b) a key dispositional factor—namely inequity tolerance—as a potential moderator of such relations.

Pay Secrecy and Individual Task Performance

In a large and increasing proportion of contemporary organizations, employees are at least partially compensated on the basis of their individual performance, with a significant portion of such performance-based pay coming in the form of a bonus (Milkovich & Newman, 2005). Underlying such performance-based pay systems is the recognition that monetary rewards that follow goal accomplishment tend to strengthen employees' commitment to the performance goal (Locke & Latham, 2002).

However, cognitive choice theories of motivation suggest that just how committed an individual may be to a given task, and hence just what proportion of their cognitive and attentional resources they are likely to allocate towards that task, is likely to depend upon a variety of factors. More specifically, expectancy models suggest that employees are likely to be more strongly committed to those tasks for which they perceive stronger performance-outcome contingencies, or in other words hold greater instrumentality perceptions (Kanfer & Ackerman, 1989; Naylor, Pritchard, & Ilgen 1980; Vroom, 1964). Similarly, equity and justice models suggest that the degree to which employees allocate their cognitive and attentional resources towards a particular task is likely to vary as a function of employee perceptions of the fairness of the means used to determine outcomes, or in other words, procedural fairness as well as the adequacy with which such procedures are explained, that is, informational fairness (Adams, 1963; Greenberg, 1982, 1993).

Drawing from such theory, conceptual and theoretical treatments of pay transparency (e.g., Colella et al., 2007; Colella, Zardkoohi, Paetzold, & Wesson, 2003; Gely & Bierman, 2003) have suggested that pay secrecy may reduce employee motivation and consequently have an adverse effect on individual task performance. Although, as noted above, the precise mechanisms governing this effect have yet to be empirically investigated, findings from a limited number of studies (e.g., Futrell, Omer, & Jenkins, 1978; Lawler, 1966a, 1966b) generally support the notion that pay secrecy may indeed have a generally adverse impact on performance-related attitudes and behaviors. Consequently, we posit:

Hypothesis 1: Pay secrecy (relative to pay openness) has a negative effect on individual task performance.

However, given that the mechanisms underlying the effects of pay secrecy on individual task performance remain poorly understood, we next draw from these same theories to propose that much of this main effect of pay communication policy on performance is likely to be explained by instrumentality, informational, and procedural fairness perceptions.

Perceived instrumentality as a mediator: Instrumentality perceptions, "the perceived relationships between levels of performance and

second-level outcomes such as pay" (Kanfer, 1990: 115), are at the core of cognitive-episodic models of motivation. Decades of research indicate that there is a robust link between individuals' instrumentality perceptions and individual task performance (Kanfer, 1990; Vroom, 1964). Moreover, studies suggest that individuals' instrumentality perceptions are sensitive to the nature of the pay system (Schwab, 1973). Although researchers have yet to examine whether and how instrumentality perceptions may be influenced by pay system transparency, there are strong theoretical and empirical grounds upon which to posit that individuals' ability to draw accurate inferences regarding the linkage between task performance and pay are likely to be impeded as a result of pay secrecy, causing individuals to underestimate performance-pay instrumentalities. To the extent that they do so, it is likely that relative to a policy of pay openness, pay secrecy will be associated with diminished individual task performance.

Limited access to pay-related information is likely to reduce the accuracy of individuals' instrumentality perceptions because individuals often form their understanding of pay-related contingencies precisely on the basis of such information (Thierry, 2001). As noted by Naylor et al. (1980), in the absence of objective instrumentality information or in an attempt to verify the accuracy of such information, individuals attempt to infer the nature of pay-related contingencies on the basis of their own or others performance-pay experiences. However, because the need for multiple pairs of performance-pay events as well as the often lengthy lag between performance and pay can complicate the formation of perceived contingencies on the basis of individual experience alone, individuals tend to rely on formal or informal cues from referent others regarding multiple performance-pay events among such others as a basis upon which to deduce the probability that a given level of performance will lead to a given outcome (Naylor et al., 1980).

When pay is secret, such cues tend to be unavailable, leading individuals to formulate their instrumentality perceptions largely around *inferred* estimates of others pay (Colella et al., 2007; Edwards, 2005; Gely & Bierman, 2003). Although we are unaware of any research directly assessing the accuracy of individuals' inferences regarding performance-pay instrumentalities, Lawler (1966a, 1966b) demonstrated that managers lacking information on others' pay tend to underestimate the pay of colleagues at higher organizational levels but overestimate the pay of those at their own and lower levels. On the basis of these and other similar findings (e.g., Milkovich & Anderson, 1972), Colella et al. (2007) conclude that in the absence of information on others' pay, individuals perceive the lower boundary of the pay range to be higher than it is in fact, effectively compressing it. One consequence of such a compressed perceived pay range is that, whereas pay may still be perceived as monotonically increasing

as a function of contribution or performance, the perceived strength of this contingency is likely to be diminished. Put in other words, to the degree that pay secrecy results in the implicit compression of the perceived pay range, by definition it is also likely to reduce individuals' perceived probability that any incremental improvement in performance will be accompanied by a larger (rather than smaller) incremental reward. Given the established linkage between perceived instrumentality and performance dominant in the motivation literature (Naylor et al., 1980; Vroom, 1964), as well as the demonstrated impact of instrumentality perceptions on individual task performance (Kanfer, 1990), the discussion above suggests that pay secrecy may have an adverse effect on individual task performance as a result of its negative impact on perceived performance-pay instrumentalities. However, because (as we detail below) the negative impact of pay secrecy on individual task performance may also be mediated by fairness perceptions, following the recommendations of Jaccard and Jacoby (2010) we posit only a partial mediation role for instrumentality perceptions, or in other words:

Hypothesis 2a: The inverse association between pay secrecy (relative to pay openness) and individual task performance is partially mediated by perceived pay instrumentalities.

Perceived informational fairness as a mediator. Informational fairness refers to the extent to which employees receive timely, accurate, and reasonable explanations about decision-making processes or the outcomes of those processes (Colquitt, 2001). Considered to be a component of interactional fairness, which focuses on the quality of treatment received during the enactment or implementation of organizational procedures, informational fairness represents the adequacy with which procedures are explained and is distinct from the interpersonal component of decision makers' behavior in communicating decisions (Greenberg, 1993).

Although pay secrecy need not necessarily restrict individuals' access to timely information about how pay is allocated *in theory*, by definition it restricts employees' access to information relating to how pay is *actually* allocated. The obstacles to employee monitoring presented by pay secrecy and the inability of employees to verify the information provided to them may generate questions about the accuracy, truthfulness, and reasonableness of the explanations provided to them. Indeed, previous research suggests that although as noted by Cloutier and Vilhuber (2008: 717), "individuals attribute to system transparency the virtue of encouraging decision makers to fulfill their tasks rigorously," a lack of system transparency may raise suspicions that decision makers have "what to hide" and are less than forthcoming in the explanations provided

(Heyman & Mellors, 2008: 696). Accordingly, it is likely that relative to pay openness, pay secrecy is associated with lower levels of perceived informational fairness. Diminished perceptions of informational fairness may, in turn, adversely affect an individual's sense that they are valued by their employer and thus reduce their motivation to contribute (Tyler, 1999; Colquitt, 2001). Moreover, meta-analytic results have consistently demonstrated that informational fairness has a positive impact on behavioral outcomes such as performance (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Cohen-Charash & Spector, 2001). Consequently, we propose that:

Hypothesis 2b: The inverse association between pay secrecy (relative to pay openness) and individual task performance is partially mediated by perceived informational fairness.

Perceived procedural fairness as a mediator. Pay secrecy may also have adverse implications for individuals' perceptions of procedural fairness, or in other words, the perceived fairness of the means used to determine outcomes (Colquitt, 2001; Greenberg, 1990) and general principles used to make decisions within organizations (Folger & Konovsky, 1989). Administrative practices are likely to be perceived as being less fair to the extent that they are seen as being biased, favoring one individual or group over others, or grounded on inaccurate or irrelevant information (Andersson-Straberg, Sverke, & Hellgren, 2007). Procedural fairness perceptions may also be impeded to the extent that employees feel unable to monitor, influence, or correct administrative practices or the outcomes they produce (Colquitt, 2001; Greenberg, 1990).

Research suggests that people use implicit social standards as a gauge by which to assess the fairness of procedures (Cropanzano & Ambrose, 2001; Van den Bos, 1996). More specifically, individuals make judgments about the fairness of procedures used to determine certain outcomes by comparing the treatment they receive relative to that received by others (Folger, Rosenfield, Grove, & Corkan, 1979; Grienberger, Rutte, & Knippenberg, 1997). However, when administrative practices such as pay secrecy limit the ability to engage in social comparison, individuals have little choice but to either guess at the treatment received by others or infer procedural fairness on the basis of other information. To the extent that they guess, the research of Lawler (1966a, 1966b) and others (e.g., Milkovich & Anderson, 1972) noted above suggests that estimates of the outcomes of referent peers are likely to be upwardly biased. In contrast, egocentric biases are likely to generate a downward bias in perceptions of referent peers' performance (i.e., inputs) relative to one's own (Ross & Sicoly, 1979). Combined, such biases may generate perceptions of

inequity with individuals questioning the overall fairness of the mechanisms used to either assess performance and/or allocate the rewards based upon such assessments (Leventhal, Karuza, & Fry, 1980; Thibaut & Walker, 1975).

Such concerns over the fairness of performance assessment and reward allocation procedures are likely to only be exacerbated by employees' inability to access pay-related information, in that they are likely to perceive the organization as limiting their ability to monitor, influence, or correct pay-related decisions (Noy, 2007)—key elements of the procedural fairness construct (Leventhal et al., 1980; Colquitt, 2001). In addition, as noted earlier, lacking the ability to effectively monitor pay-related outcomes, employees may become suspicious that decision makers have “what to hide” with respect to the consistency and bias-free nature of pay-related decisions (Cloutier and Vilhuber, 2008)—two other key aspects of the procedural justice construct according to Leventhal et al. (1980). Diminished perceptions of procedural fairness may, in turn, adversely affect an individuals' commitment to the greater collective and the objectives it has laid out for the individual, thus reducing their motivation to contribute to the achievement of these objectives (Greenberg, 1990; Colquitt, 2001). Because, like informational fairness perceptions, such perceptions of procedural unfairness have also been consistently found to have negative effects on individual task performance (Colquitt et al., 2001; Cohen-Charash & Spector, 2001), we propose that:

Hypothesis 2c: The inverse association between pay secrecy (relative to pay openness) and individual task performance is partially mediated by procedural fairness perceptions.

The Moderating Effect of Tolerance for Inequity

In their review of the pay secrecy literature, Colella et al. (2007) suggest that pay secrecy may not necessarily have the same effects on all employees. One reason that the effects of pay secrecy may be inconsistent across individuals is that the *relative* level of pay may be more salient for some individuals than for others (Milkovich & Newman, 2005; Williams, McDaniel, & Nguyen, 2006). More specifically, as noted earlier, the absence of pay information may activate a general tendency to guess at or infer performance-pay relations equity-relevant information, when making such inferences some individuals may have a tendency to over weigh relative outcome-input discrepancies. A number of researchers argue that the tendency to do so is indicative of equity sensitivity, a dispositional

characteristic reflecting the sensitivity of individuals to the presence (or absence) of equity in exchange (Huseman, Hatfield, & Miles, 1985, 1987).

Research on equity sensitivity (Huseman et al., 1985, 1987; Miles, Hatfield, & Huseman, 1989) has demonstrated that individuals differ in terms of their degree of tolerance for disparities in outcome/input ratios that place them at a relative disadvantage to their referents and that these differences in tolerance have a meaningful impact on employee attitudes and behaviors in the workplace (Huseman et al. 1985, 1987; King, Miles, & Day, 1993; Miles et al., 1989; Sauley & Bedeian, 2000). More specifically, these studies suggest that relative to those *less* concerned with such disparities (so-called "benevolents"), those *more* concerned with such disparities (so-called "entitleds") are likely to overweigh disparities that are to their disadvantage and view any given level of perceived inequity resulting from such comparisons as more problematic.

Based on such findings, we posit that whereas the lack of pay information may be less salient to those *more* tolerant of inequity, it is likely to be highly salient to and have a more significant impact on the fairness perceptions of those *less* tolerant of inequity. More specifically, given the increased saliency of any disparity in input/output ratios to those less inequity tolerant, it is likely that relative to those more inequity tolerant, the former are likely to view the inability to readily access and monitor information regarding such ratios as more problematic and disturbing. Accordingly, as the level of inequity tolerance declines, it is likely that any of the concerns more generally created by pay secrecy with regard to the accuracy, truthfulness, and reasonableness of pay-related information (i.e., perceived informational fairness) will be amplified, or in other words:

Hypothesis 3a: The relationship between pay secrecy (relative to pay openness) and informational fairness perceptions is moderated by inequity tolerance such that the relationship is more negative among those with lower levels of tolerance for inequity.

Furthermore, whereas as noted earlier, pay secrecy may generally activate a tendency to compare one's own outcome-input ratio with the *inferred* ratio of others; when making such inferences, those less tolerant of inequity are likely to overweigh any outcome/input disparity operating to their disadvantage and find such disadvantageous disparities to be particularly disturbing. As noted earlier, pay secrecy is likely to raise suspicions in general regarding the procedures used to assess performance (input) and/or allocate the rewards based upon such assessments (outcomes), to the degree that individuals are more sensitive to outcome-input disparities

operating to their disadvantage such procedural fairness concerns are only likely to be amplified. Consequently, we posit that:

Hypothesis 3b: The relationship between pay secrecy (relative to pay openness) and procedural fairness perceptions is moderated by inequity tolerance such that the relationship is more negative among those with lower levels of tolerance for inequity.

Tolerance for inequity may also play a moderating role in the relationship between pay communication policy and performance-pay instrumentality perceptions. As noted earlier, pay secrecy requires employees to compensate for the lack of information on performance-pay contingencies by relying on their own *inferred* estimates of others' performance-pay ratios. And as hypothesized earlier, pay secrecy is likely to generate inferences that, in general, result in more attenuated perceptions of performance-pay contingencies. However, because those less tolerant of inequity tend to overweigh outcome/input disparities not operating in their favor, this tendency towards attenuation may be even more extreme in the case of those less inequity tolerant. That is, because of the tendency to overweight outcome-input disparities operating to their disadvantage (i.e., assume those with lower levels of performance than themselves are receiving disproportionately greater rewards than themselves), inequity intolerance may be associated with an even greater tendency to underestimate performance-pay contingencies. Accordingly, we posit that:

Hypothesis 3c: The relationship between pay secrecy (relative to pay openness) and instrumentality perceptions is moderated by inequity tolerance such that the relationship is more negative among those with lower levels of tolerance for inequity.

Because we hypothesize that fairness and instrumentality perceptions partially mediate between pay secrecy and individual task performance (Hypotheses 2a–2c) and that tolerance for inequity moderates the pay secrecy perceived fairness and instrumentality relationships (Hypotheses 3a–3c), by extension we also predict that tolerance for inequity moderates the indirect relationship between pay secrecy and individual task performance. That is, given that we posit that the inverse pay secrecy perceived fairness and instrumentality relationships will be stronger among those with lower levels of tolerance for inequity (Hypotheses 3a–3c) and that these relations themselves serve as the first stage of the mediated secrecy performance relationships posited earlier (H2a–H2c), following the logic of moderated-mediation proposed by Edwards and Lambert (2007), we posit:

- Hypothesis 4a:* The perceived informational fairness mediated relationship between pay secrecy and individual task performance is moderated by tolerance for inequity, such that this mediated relationship is amplified among those with low levels of tolerance for inequity.
- Hypothesis 4b:* The perceived procedural fairness mediated relationship between pay secrecy and individual task performance is moderated by tolerance for inequity, such that this mediated relationship is amplified among those with low levels of tolerance for inequity.
- Hypothesis 4c:* The perceived instrumentality-mediated relationship between pay secrecy and individual task performance is moderated by tolerance for inequity, such that this mediated relationship is amplified among those with low levels of tolerance for inequity.

In addition, assuming tolerance for inequity moderates at least one of the relationships linking pay secrecy to individual task performance (Hypothesis 3a–3c), it logically follows that tolerance for inequity will also influence the strength of the main effect of pay secrecy on individual task performance (Hypothesis 1; Edwards & Lambert, 2007). Hence, we posit that:

- Hypothesis 5:* The relationship between pay secrecy (relative to pay openness) and individual task performance is moderated by inequity tolerance such that the relationship is more negative among those with lower levels of tolerance for inequity.

Method

Participants and Design

Given the difficulty of manipulating pay systems in the field, the hypotheses specified above were tested in the context of a lab-based simulation, which was designed to mirror a virtual work group whose members, while working independently of one another, may still periodically communicate with one another. One hundred forty-four students studying towards an undergraduate engineering degree in an Israeli university participated in the experiment. Although participants performed their tasks independently, each was randomly assigned to a four-person work group. Each group completed the task under one of two conditions (secrecy vs. openness) in the context of a repeated measures (i.e., four

performance phases), between-subject design. The between-subject factor was pay communication policy. Seventy-two participants were assigned to each pay condition, with participants in both conditions receiving a base payment of NIS 20 (\$5.00), as well as an additional, performance-based bonus of up to NIS 8 (\$2.00) in each phase of the experiment.

Task and rewards. Participants were asked to complete a computer-based simulation requiring significant concentration and planning but little training and technical ability. 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.” In this simulation exercise, stones are only accepted for placement if they match 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.

Overall there were four 5-minute phases of task performance and three 10-minute breaks between phases. Participants were unable to communicate with each other during performance phases. However, they *were* able to do so between phases via an intra group e-mail system. All participants received varying amounts of performance and pay information (depending on the pay communication condition) at the end of each performance phase (see below).

Participants were differentially rewarded on the basis of their performance. More specifically, whereas participants were informed that they would all receive the same base pay, they were told that they could also receive a bonus payment in each round, with this bonus contingent upon their level of task performance. As we describe below, unknown to the participants, bonuses were actually allocated on the basis of ranked performance in each round in order to maximize external validity.

Measures

Exogenous variable. Pay communication policy (2 conditions: secret vs. open): Participants in the **pay secrecy condition** received information on their *own* absolute level of individual performance and bonus pay only. In addition, prior to the first round of the simulation, participants in this condition were told that pay is a personal matter and were requested not to discuss any pay-related matter with other participants in the study at any time. We monitored all communications between participants, and whereas five participants attempted to engage in such correspondence in the first round, after being politely reminded that such communications were not allowed and that their message was consequently being returned to them undelivered, at no time following this did participants in this condition ever attempt to discuss pay-related issues with their fellow group members. In contrast, participants assigned to the **open pay condition**

received information regarding their *own* individual performance and bonus pay as well as information regarding the pay (but not performance level) of their fellow group members (listed by code-numbers in order to ensure privacy). Participants in the open condition were told that their post phase, e-mail-based communications with their fellow group members would be completely unrestricted. In fact, 95% of the participants in the open condition *did* disclose pay-related information (typically their code number) to at least one other group member in at least one of the performance rounds.

Moderator. Tolerance for inequity was assessed prior to the first round of the simulation using Sauley and Bedeian's (2000) Equity Preference Questionnaire (EPQ). The EPQ was developed to overcome measurement shortcomings of the equity sensitivity instrument (ESI; Huseman et al., 1985) associated with the content domain for the items in the scale, sample-specific scoring, and the associated problem of using cut-off scores to artificially trichotomize an otherwise continuous measure. Wheeler's (2007) comparison of the predictive abilities of the EPQ and the ESI yielded almost identical results for each of these two measures of equity sensitivity in their relationship with key correlates. Items in the EPQ relate to individuals' preferences for various outcomes in exchange relations (e.g., "When I am at my job, I think of ways to get out of work," "It is really satisfying to me when I can get something for nothing at work"), with participants indicating their degree of disagreement (1) or agreement (7) on a seven-point Likert scale. We reversed the scaling such that higher scores indicate a high tolerance for inequity (paralleling Huseman et al's [1985] notion of benevolence tendencies) and lower scores represent a low tolerance for inequity (paralleling Huseman et al's [1985] notion of entitlement tendencies). Cronbach alpha was .87.

Endogenous variables. Informational fairness perceptions were assessed after the third round of task performance (T3) in order to allow for the emergence of basic fairness impressions. Using Colquitt's (2001) five-item informational justice scale, participants were asked to respond (1 = *strongly disagree*; 7 = *strongly agree*) to such items as "The experimenter has been candid in her communications with you" and "The experimenter has explained the procedures thoroughly" Cronbach alpha was .91.

Procedural fairness perceptions were, for similar reasons, assessed after the third round of task performance (T3) using Colquitt's (2001) seven-item procedural justice scale. Participants were asked to reflect on the procedures used to make decisions about their rewards and respond (1 = *strongly disagree*; 7 = *strongly agree*) to such items as "These procedures are based on accurate information" and "These procedures are applied consistently." Cronbach alpha was .82.

Perceived instrumentality was also assessed after the third round of task performance (T3) in order to allow participants the performance-pay

experience necessary to generate basic instrumentality impressions. We used a measure developed on the basis of the approach recommended by Ilgen, Peterson, Martin, & Boeschel (1981) and validated against a more complex instrumentality measure developed by Erez and Isen (2002).¹ This measure is based on the notion that perceived instrumentality can be assessed as the percentage of total pay that an individual perceives to be contingent on performance. Participants were asked to estimate the likely bonus (ranging from NIS 0 to receiving NIS 8) associated with (a) a low performance level and (b) a high performance level. These performance levels were set on the basis of pretest sample scores with the low performance score equal to a level of two standard deviation units below the mean pretest score and the high performance score equal to a level of two standard deviation units above the mean. Perceived instrumentality was then calculated as the difference between the bonuses expected by the participant under conditions of high and low performance as a proportion of total pay (NIS 20) and could thus range from 0% $((0-0)/20)$ to 40% $((8-0)/20)$. We assessed the convergent validity of this measure by comparing the participants' perceived instrumentality scores on this scale with those generated by the same participants on the measure developed and validated by Erez and Isen (2002), which involves the calculation of the vector of participant-expected rewards for specified performance levels on the basis of linear regression. Across participants, Erez and Isen's (2002) regression-based, perceived instrumentality estimate correlated at .41 ($P < .001$) with the perceived instrumentality estimate generated on the basis of Ilgen et al.'s (1981) approach.

Dependent variable. *Individual task performance* was assessed in terms of the participant's level of performance in the fourth and final round of the task performance (T4).

Control variable. As suggested above, the mediated effects of pay secrecy on task performance are likely to emerge only subsequent to the first round of performance as individuals formulate their impressions of fairness and instrumentality. Accordingly, in assessing the impact of secrecy on performance, we controlled for individual's task performance in the initial round (T1).

Procedure and Manipulation Check

Each group of four participants was run separately. Upon arrival to the lab, participants were asked to complete a questionnaire containing

¹We opted for the approach recommended by Ilgen et al. in that a large proportion of pre-test participants complained that the instructions accompanying the Erez and Isen measure were difficult for them to understand.

demographic items and the tolerance for inequity measure. Next, the experimenter explained that they would participate in a study examining factors associated with performance on a computer-based task. The participants were then informed about the payment conditions noted above (i.e., base pay of NIS 20, with the ability to earn additional bonus pay contingent upon performance) and general policy regarding communication between players (same across conditions). Although *not* disclosed to participants, bonus pay was in fact allocated in each round according to the ranked performance of each of the group members, with best performer getting a bonus of 40% of base pay (i.e., NIS 20), the second best receiving 27.5%, the third best 15%, and the lowest scorer receiving no bonus pay.

Next, participants were taught how to perform the task. As part of the instructions, they were again reminded that they could use e-mail as a means by which to communicate with others in their group during the three scheduled 10-minute, between-round breaks. Participants were then assigned to a computer and were guided through a computer-driven tutorial. After the experimenter checked that all participants were comfortable performing the task, the first of four 5-minute performance phases was initiated. At the end of each phase, the screen of each participant's computer displayed either (a) his/her game score for that phase as well as a bar graph of the additional bonus pay to be received for that phase (pay secrecy condition) or (b) his/her game score and bar graph of the additional pay to be received for that phase as well as a graph of his/her payment relative to that of the others (by code number) in his/her group (pay openness condition). Upon the conclusion of performance Phase 4, participants were asked to complete the manipulation check instrument.

Manipulation check. We assessed the effectiveness of the pay secrecy manipulation by means of a three-item instrument. Participants were asked to indicate the degree (1 = *low degree*; 7 = *high degree*) to which they (a) were able to compare their reward level with that of the other participants, (b) received information about other participants' level of performance, and (c) received information about other participants' level of reward. Cronbach alpha for this measure was .79.

Analytical Procedure

Level of analysis. With all respondents assigned to four-person groups, we began our analysis by testing for random effects at the group level (Singer, 1998). Because the random effect of group assignment was non-significant in all of the models tested, we tested our hypotheses on the basis of OLS models assuming nondependence among the values of the dependent variable within groups.

Procedure. Following the approach recommended by Edwards and Lambert (2007), we tested our hypotheses in three steps. First, we tested the main effect model suggested by Hypothesis 1 (see Figure 1a). We then tested the simple mediation model suggested by Hypotheses 2a–2c (see Figure 1b). Finally, we incorporated into this same model tolerance for inequity as a moderator variable in order to test for the moderated main effect suggested by Hypothesis 5, as well as the direct- and moderated-mediation effects (posited in Hypotheses 3a–3c and 4a–4c, respectively) nested within any such moderated main effect (see Figure 1c). Prior to the analyses, the moderator measure was mean centered as recommended by Aiken and West (1991). The significance of the indirect effects was found by applying bootstrap procedures following the strategy of Preacher and Hayes (2004). Due to a software glitch, data from five participants in the open pay condition were unusable, resulting in a final sample size of 139 (72 and 67 in the secrecy and open conditions, respectively).

Results

Manipulation Check

To ensure that the pay communication manipulations were perceived in the expected way, we contrasted the manipulation check scales across the open and secret conditions. A *t*-test confirmed the difference in the pay communication perceptions of those assigned to the pay openness (mean = 4.98, *SD* = 1.40) versus pay secrecy (Mean = 2.73, *SD* = 1.67) conditions ($t_{(2,139)} = 8.57, P < .05$).

Descriptive Statistics

The means, standard deviations, and intercorrelations among the variables are presented in Table 1. Notable is the significant positive correlation between pay communication policy (pay secrecy = 1), denoted as pay secrecy for brevity, and individual task performance (i.e., “performance”) at Time 1 ($r = .21, P < .05$) and positive (but statistically nonsignificant) correlation between pay secrecy and performance at Time 4 ($r = .03, ns$). Moreover, the findings show a significant positive correlation between performance at Time 1 and performance at Time 4 ($r = .47, P < .05$). Separate calculations show that mean performance in the pay openness condition rose from 429.79 (*SD* = 156.34) at Time 1 to 744.25 (*SD* = 169.91) at Time 4, whereas the mean performance in the secrecy condition rose from 505.67 (*SD* = 199.1) at Time 1 to 755.07 (191.51) at Time 4. Notable also are the significant positive correlations between perceived informational and procedural fairness at Time 3 ($r = .56, P < .05$) and

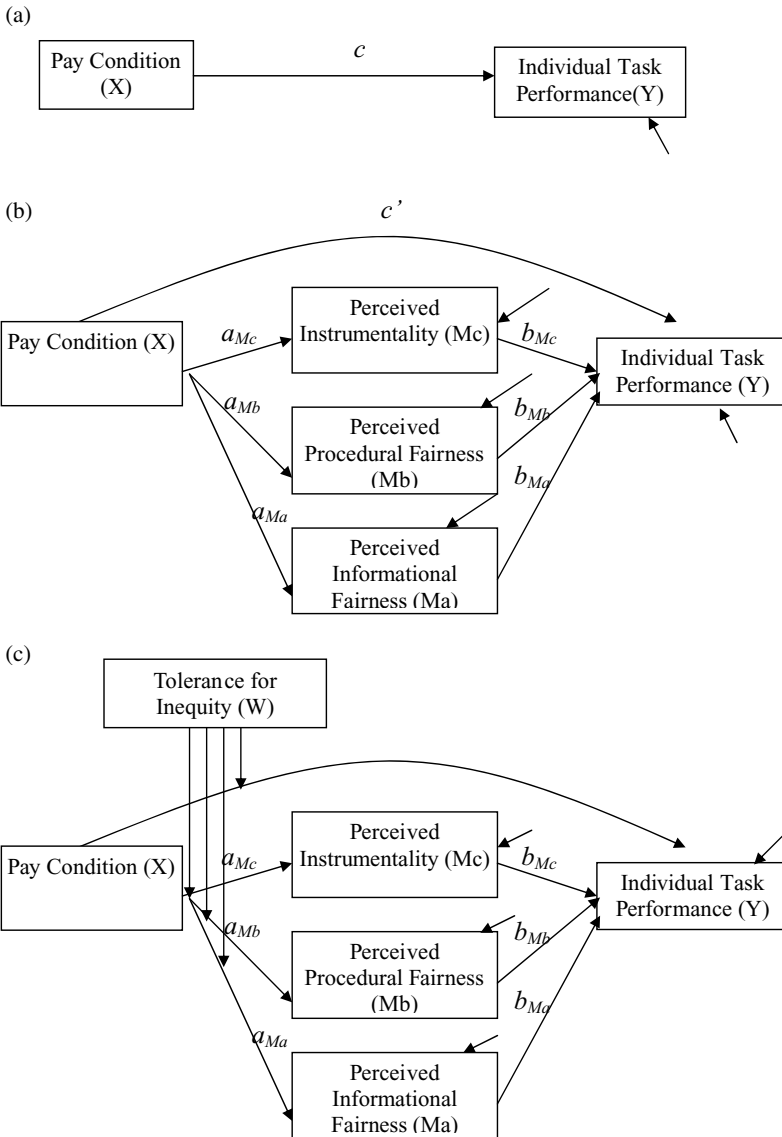


Figure 1: (a) Step 1-Total Effect of Pay Condition (X) on Individual Task Performance (Y). (b) Step 2-The Effect of Pay Policy (X) on Individual Task Performance (Y), Mediated by Perceived Informational Fairness (Ma), Procedural Fairness (Mb), and Instrumentality (Mc). (c) Step 3-Moderated Mediation Model of Pay Policy (X) on Individual Task Performance (Y).

Note: Arrows not originating from variables indicate residuals. The Arrows from W represent the moderation of the causal effects tested in our model.

TABLE 1
Means, Standard Deviations, and Intercorrelations of the Variables (n = 139)

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)
(1) Pay communication policy (Openness = 0, Secrecy = 1)	.52	.50						
(2) Performance (T1)	469.09	183.12	.21					
(3) Performance (T4)	749.86	180.84	.03	.47				
(4) Perceived informational fairness (T3)	4.76	1.54	-.09	.06	.10			
(5) Perceived procedural fairness (T3)	4.02	1.14	-.02	-.05	.12	.56		
(6) Perceived instrumentality (T3)	17.07	12.44	-.05	.07	.23	-.05	.02	
(7) Tolerance for Inequity	5.26	1.18	-.19	-.15	-.009	.03	.05	.08

Note: Correlation coefficients with an absolute value of .18 are significant at the .05 level.

instrumentality perceptions at Time 3 and performance at Time 4 ($r = .23$, $P < .05$).

Hypotheses Testing

To provide a baseline against which to compare the predictive utility of our more specified models, we began our multivariate analysis by testing a control model capturing the effects of performance at Time 1. As can be seen in Table 2 in the column labeled "control model" (Model 1), task performance at Time 1 explains 22% of the variance in the task performance at Time 4 (estimate = .46, $P < .05$).

Tests of simple mediation. Estimates of the total effect of pay communication policy (X) on individual task performance (Y) are shown in the column labeled "Model 2" in Table 2. As shown, the coefficient for performance on pay communication policy (i.e., pay secrecy), although negative, was also nonsignificant ($c_x = -20.88$, ns), in violation of the first condition for any test of mediation (Baron & Kenny, 1986) and in contrast to Hypothesis 1. This suggests that there is no unconditional, main effect of pay communication policy on performance to be mediated either directly or indirectly by instrumentality perceptions and/or informational or procedural fairness perceptions. Accordingly, there is also no basis for testing Hypotheses 2a–2c, specifying the mediation of such an unconditional relationship by perceived instrumentality (Hypothesis 2a), informational fairness (Hypothesis 2b), and/or procedural fairness (Hypothesis 2c; Baron & Kenny, 1986).

Tests of moderated mediation. The results of tests for the moderated mediation implied by Hypotheses 3a–c and 4a–c are shown in Models 3–5 of Table 2. Because the moderation of indirect effects (such as those proposed in Hypotheses 3a–c & 4a–c) is possible only to the extent that

TABLE 2 (continued)

Dep. variable	Control model (Model 1)		Total effect model (Model 2)		Moderated direct effect model (Model 3)		Moderated-mediation model (Model 4)				Final moderated-mediation model (Model 5)				
	Task performance at T4	Estimate	SE	Task performance at T4	Estimate	SE	Task performance at T4	SE	Task performance at T4	SE	Task performance at T4	SE	Task performance at T4	SE	Task performance at T4
Perceived procedural fairness at T2															
* tolerance for inequity (Mb * W)															
Perceived instrumentality at T3 *															
tolerance for inequity (Mc * W)															
R ²	.22			.23			.27		.015		.04		.05		.33
ΔR ²	—			.01 (relative to Model 1)			.05* (relative to Model 1)		—		—		—		.06* (relative to Model 3)
Indirect effect															
Total effect															

* $P < .05$.

[§]In a separate analysis including these parameters, the coefficients were not statistically significant ($P > .05$) in all cases.

Low tolerance for inequity: ab = -17.65; Sampling CI = -46.41, -2.87
 High tolerance for inequity: ab = 10.47; Sampling CI = -1.62, 33.95
 Low tolerance for inequity: C = -85.54; Sampling CI = -154.62, -13.30
 High tolerance for inequity: C = 52.25; Sampling CI = -19.55, 128.72

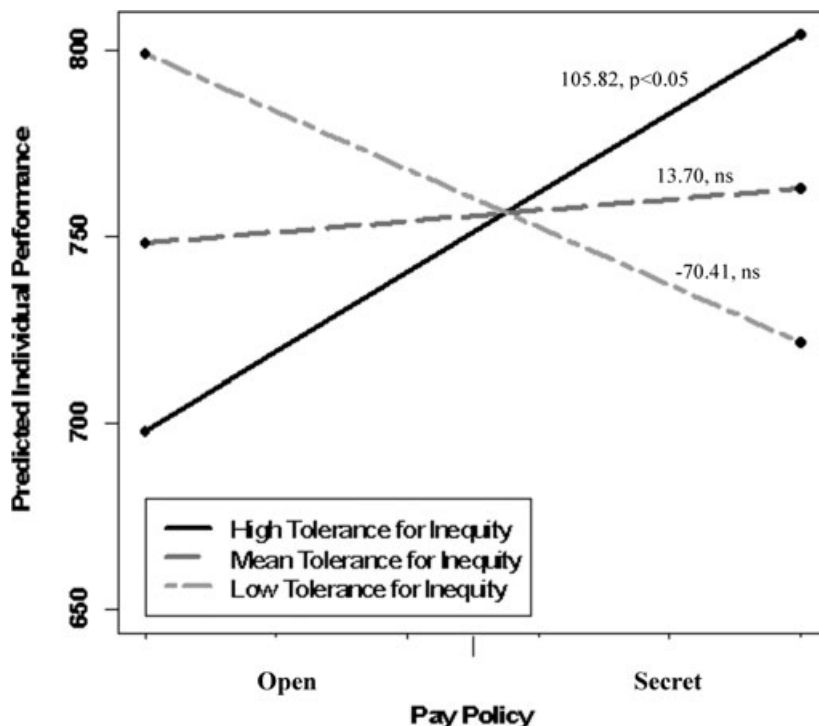


Figure 2: Moderated Model of Pay Policy (X) on Individual Task Performance (Y).

there is evidence of the moderation of the main effect (shown by path “c” in Figure 1), we began by testing Hypothesis 5 (predicting that the direct association between pay secrecy and individual task performance would be moderated by tolerance for inequity such that the relationship would be more negative among those with lower levels of tolerance for inequity).

As can be seen from Model 3 in Table 2, the interaction term (pay communication policy * tolerance for inequity) was significantly associated with the dependent variable (individual task performance at Time 4) ($c_{xw} = 64.21, P < .05$), indicating that the direct effect of pay communication policy on task performance is, as suggested by Hypothesis 5, significantly moderated by inequity tolerance. The nature of this moderation effect (see Figure 2) is consistent with Hypothesis 5 in that, although there is a significant positive effect of secrecy on performance among those more inequity tolerant among those less inequity tolerant this effect is not only not significant, it is downward sloping (i.e., negative).

Moreover, this moderated main effect model (Model 3) explains a significantly greater share of the variance in task performance than the control model ($\Delta R^2_{\text{relative to Model 1}} = .05, P < .05$).

The significance of the moderated main effect provides justification for testing the moderation of the indirect effects as suggested by Hypotheses 3a–3c and 4a–4c. To do so, we utilized a modified version of a SAS macro designed by Bauer, Preacher, and Gil (2006). This macro facilitates the implementation of the recommended bootstrapping methods and provides a method for calculating the value and the significance of conditional indirect effects at different levels of the moderator variable. We tested the full, moderated-mediation model shown in Figure 1c in which (a) the effects of pay communication policy on informational fairness perceptions (Hypothesis 3a), procedural fairness perceptions (Hypothesis 3b), and instrumentality perceptions (Hypothesis 3c) are moderated by inequity tolerance; and (b) informational fairness, procedural fairness, and instrumentality perceptions mediate the effects of pay secrecy on task performance (Hypotheses 4a–4c). Per Edwards and Lambert (2007), all three submodels of this total effects model are tested simultaneously rather than on the basis of a piecemeal approach. The results of this full, moderated-mediation model are presented in Model 4 of Table 2.

As can be seen from the first submodel (i.e., with perceived informational fairness at Time 3 as the dependent variable), the interaction term (pay communication policy \times inequity-tolerance) was not significantly associated with the mediator (informational fairness perceptions) (estimate = $-.21$, *ns*). Moreover, given the nonsignificant effect of informational fairness perceptions on performance (see submodel 4 of Model 4 in Table 2), there is no evidence of moderated mediation via informational fairness perceptions as suggested by Hypothesis 4a. Consequently, neither Hypothesis 3a (positing that the association between pay secrecy and informational fairness perceptions is moderated by tolerance for inequity) nor Hypothesis 4a (positing that the informational fairness-mediated relationship between pay secrecy and individual task performance is moderated by tolerance for inequity) are supported by our data.

Similarly, as can be seen from the second submodel (i.e., with perceived procedural fairness at Time 3 as the dependent variable), the interaction term (pay communication policy \times inequity-tolerance) was not significantly associated with the mediator (procedural fairness perceptions; estimate = $-.27$, *ns*). Moreover, given the nonsignificant effect of procedural fairness perceptions on performance (see submodel 4 of Model 4 in Table 2), there is no evidence of moderated mediation via procedural fairness perceptions. Accordingly, neither Hypothesis 3b (positing that the association between pay secrecy and procedural fairness perceptions is moderated by tolerance for inequity) nor Hypothesis 4b

(positing that the procedural fairness-mediated relationship between pay secrecy and individual task performance is moderated by tolerance for inequity) is supported by our data.

In contrast, consistent with Hypothesis 3c (positing that the association between pay secrecy and instrumentality perceptions is moderated by tolerance for inequity), the third submodel of Model 4 in Table 2 (i.e., with perceived instrumentality as the dependent variable) indicates a positive and significant interaction of pay policy (secrecy) and tolerance for inequity (estimate = 4.50, $P < .05$).

In order to ascertain whether the interaction pattern was consistent with that posited by Hypothesis 3c, we reran our moderated-mediation model without the perceived fairness variables (justifiable in that our earlier findings indicated no basis for positing a moderated-mediation role for informational and procedural fairness perceptions). The results of this trimmed model are presented in Model 5 of Table 2.

Per Aiken and West (1991), we conducted simple slopes analyses and plotted the interactions specified in this trimmed model (shown in Figure 3). The slopes of the total effect of pay communication policy (i.e., secrecy) on instrumentality perceptions for those respondents with mean and high tolerance for inequity were nonsignificant (estimate = -1.28 and 3.99 , respectively). In contrast, for those with low (i.e., 1 standard deviation below the mean) tolerance for inequity, the slope was negative and significant (estimate = -6.55 , $P < .05$), suggesting that the negative effect of pay secrecy on individual task performance via perceived instrumentality is, as predicted by Hypothesis 3c, more negative among those with lower levels of inequity tolerance.

This conclusion is also supported on the basis of Bauer et al.'s (2006) tests of the expected value of the indirect effect of pay secrecy on individual task performance at the two levels of tolerance for inequity (1 *SD* above and 1 *SD* below the mean). Specifically, for those with *high* levels of tolerance for inequity (+1 *SD*) the expected indirect effect of pay secrecy on perceived instrumentality was 10.47 (bootstrap 95% confidence intervals [-1.62 , 33.95]) and the expected total effect was 52.25 (bootstrap 95% confidence intervals [-19.55 , 128.72]), demonstrating the nonsignificance of the indirect effect for the *high* levels of tolerance for inequity. In contrast, we found that for those with *low* levels of tolerance for inequity (i.e., -1 *SD*), the expected indirect effect of pay secrecy on instrumentality perceptions was -17.65 (bootstrap 95% confidence intervals [-46.41 , -2.87]), and the expected total effect is -85.54 (bootstrap 95% confidence intervals [-154.62 , -13.30]), demonstrating the significance of the indirect effect for the *low* levels of tolerance for inequity. The perceived instrumentality-mediated indirect effect accounts for 20.63% of the total effect of pay secrecy on individual task

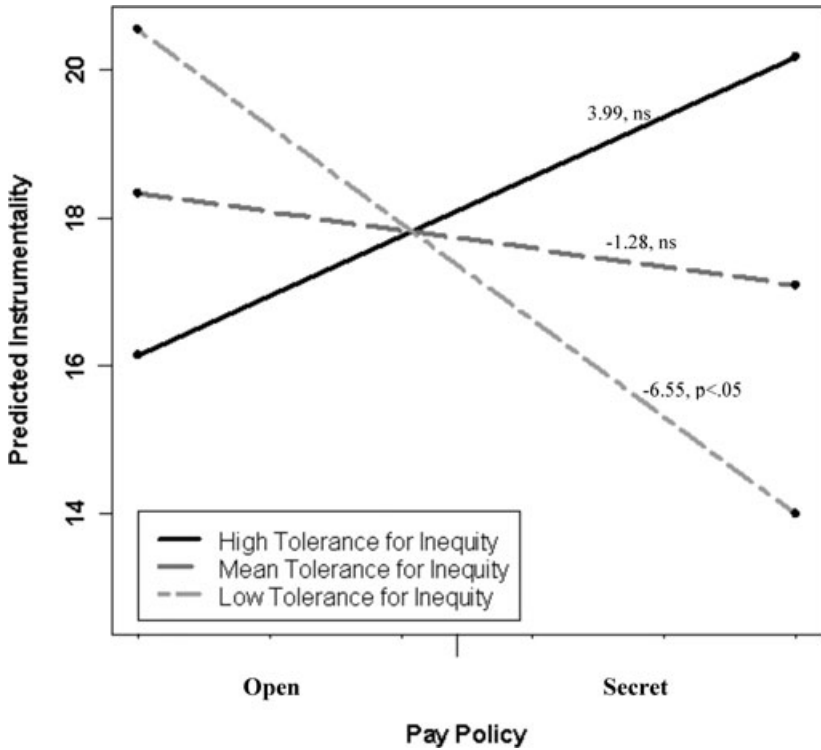


Figure 3: Moderation of the Effect of Pay Policy (X) on Perceived Instrumentality (Mc).

performance. In addition, as noted at the bottom of Table 2, the specification of these moderated mediation effects significantly contributes to our ability to explain the variance in task performance ($\Delta R^2_{\text{relative to Model 1}} = .11, P < .05$, and $\Delta R^2_{\text{relative to Model 3}} = .06, P < .05$), lending further support to Hypothesis 4c.

In order to verify that tolerance for inequity moderates the first stage of the instrumentality-mediated link between pay communication and performance (as suggested by Hypothesis 3c) rather than the second stage links between either instrumentality or fairness perceptions and performance, we reran the analyses including all three of these potential second-stage moderation effects in the model. None of the second-stage parameter estimate was found to be statistically significant.

Taken as a whole, these results indicate substantial support for Hypotheses 3c and 4c and suggest that perceived instrumentality (but neither informational fairness nor procedural fairness perceptions) mediates the

adverse effect of pay secrecy on individual task performance but only for those low in inequity-tolerance.

Discussion

The findings presented above indicate partial support for our hypotheses and the notion that, relative to pay openness, pay secrecy may have detrimental performance consequences for those less tolerant of inequity in exchange relations (i.e., those more equity sensitive). More specifically, we found that among individuals with *lower* levels of tolerance for inequity, pay secrecy (in contrast to pay openness) is associated with significantly weaker individual task performance and that these adverse effects are partially explained by reduced performance-pay instrumentality perceptions.

Notably, however, we also found that among those with *higher* levels of inequity tolerance, pay secrecy is directly associated with significantly *better* task performance than pay openness. Moreover, given that the proportion of high (1 *SD* or more above the mean) and low (1 *SD* or less below the mean) inequity tolerant participants in our sample was roughly equivalent (17 and 14%, respectively), our results suggest that the negative performance-related effects of pay secrecy cannot necessarily be expected to offset the positive effects. Nevertheless, in organizations or work units having a higher concentration of more equity-sensitive employees, there may indeed be a significant offset, with reduced performance-pay instrumentality perceptions generating less positive or even adverse performance-related consequences.

Our findings are important for several reasons. First, whereas researchers have speculated on the performance-related effects of pay secrecy for half a century, controlled tests of the effects of pay secrecy on individual task performance with random assignment of subjects are rare. Second, our results begin to shed some light on at least one of the psychological mechanisms underlying the effects of pay secrecy on individual task performance and provide an estimate of the role played by such a mechanism in explaining the effects of pay secrecy on individual task performance for individuals with lower levels of tolerance for inequity.

In addition, our findings indicate that the perceived instrumentality-mediated effects of pay communication policy on individual task performance may not be universal. Rather, consistent with Colella et al.'s (2007) theorizing, performance-pay instrumentality perceptions in response to a secret pay system may be disposition contingent. In this study, we found tolerance for inequity (the conceptual obverse of equity sensitivity) to serve as one such disposition-based moderator, with the negative effect of

pay secrecy on individual task performance amplified among those less inequity tolerant.

This moderation effect is largely consistent with the personality literature in that it suggests that individual differences condition the way in which information (or the lack thereof) regarding contribution-reward relations is cognitively processed (Scarr, 1988). The absence of comparative pay information appears to be more salient to lower inequity-tolerant individuals, resulting in diminished perceived performance-pay contingencies (what we referred to as instrumentality perceptions). Perhaps because those less tolerant of inequity tend to overweigh outcome/input disparities not operating in their favor, any general tendency towards the underestimation or cognitive compression of performance-pay contingencies (as suggested by the seminal findings of Lawler [1966a & 1966b]) may be even more extreme in the case of such individuals.

Given the centrality of the pay-performance instrumentality perceptions in the workplace in general (Kanfer, 1990; Kemery, Bedeian, & Zacur, 1996; Vroom, 1964) and in pay administration in particular (Schwab, 1973), our finding of an instrumentality-mediated effect should come as little surprise. Nevertheless, the fact that, at least according to our findings, a substantial portion of the effect of pay secrecy on performance is mediated by performance-pay instrumentality perceptions among individuals with lower levels of tolerance for inequity suggests that organizations subscribing to a policy of pay secrecy should make additional efforts to help employees with lower levels of tolerance for inequity more accurately calibrate their instrumentality perceptions. For example, rather than enforcing a policy of strict pay secrecy, managers might consider adopting a pay administration policy of partial openness with the broad parameters of compensation (e.g., mean bonus associated with a given level of performance or performance improvement) made more transparent.

Our findings are also interesting in terms of the implied or directly hypothesized relations found to be *unsupported* by the data. For example, our data failed to provide conclusive evidence with regard to the impact of procedural unfairness perceptions on individual task performance. On the one hand, this finding is surprising in light of meta-analytic results indicating a corrected population correlation between procedural unfairness perceptions and performance of .35 (Colquitt et al., 2001: 436). On the other hand, Colquitt et al. (2001: 430) refer to the procedural justice-performance linkage as "the most unclear of all relationships in the justice literature" and (along with others such as Conlon, Meyer, & Nowakowski, [2005]) suggest that other (e.g., expectancy-related) perceptions and attitudes may have a more robust impact on behavioral outcomes such as performance. In this context, it is possible that our results reflect a simple

overpowering of the effects of procedural (and informational) fairness perceptions by instrumentality perceptions in explaining the variance in individual task performance.

Similarly, our data failed to support the hypothesized inverse relationship between pay secrecy and informational fairness. One possible explanation for the nonsignificant relationship may be that whereas our theorizing and measurement focused on the perceived accuracy and reasonableness of the information provided, in the context of secrecy such dimensions of informational fairness may be less relevant than the overall inadequacy and/or incompleteness of information provided (an aspect of informational justice that may be underweighted in the Colquitt measure used in our analysis).

Limitations

Although organizational scholars (Cohen-Charash & Spector, 2001; Dipboye, 1990; Locke, 1986) have generally concluded that field and laboratory studies yield similar results—if not in magnitude, then in direction—as with any lab-based study, the results of this study may, for several reasons, have limited external validity. First, it may be that the rewards in this study were too limited and tasks too independent to allow for the emergence of several potentially adverse consequences of pay openness (e.g., jealousy resulting in diminished cooperation), consequences that might have ultimately counterbalanced the adverse effects of pay secrecy. Similarly, external validity may be limited in that, although the students participating in this experiment ran no risk of being “fired” for lowering their performance in response to diminished performance-pay instrumentality perceptions, the same may not hold true in actual workplace settings.

Second, although in many workplaces performance is assessed subjectively and the link between assessed individual performance and pay is uncertain (often contingent to some unknown degree upon group or firm performance), in this study, the bonus was based entirely on participants' ranked performance with the latter assessed objectively (i.e., on the basis of points earned). Thus, our findings may have limited generalizability to those pay contexts in which performance is measured subjectively and/or bonus criteria are uncertain.

Third, this design contrasted two rather extreme pay communication conditions, namely complete secrecy and (nearly) complete pay openness. In fact, however, organizations may implement a wide range of pay communication policies, suggesting that this construct may be best operationalized as a continuous rather than dichotomous variable.

Finally, a brief experiment (under two hours) may not have allowed for the emergence of the kind interpersonal coworker dynamics found in this workplace. Lacking close relationships, participants in the open

condition may have been more hesitant to compare pay or performance-related information than employees working in “real” open pay conditions. Moreover, our study design did not allow us to capture how pay secrecy affects the emergence of perceptions and behavior over more extended periods of time.

Future Research

In addition to the avenues for future research noted above, and taking into account that many firms do provide a limited amount of pay-related information to their employees, researchers may also wish to investigate the performance- and instrumentality-related impact of the *quality* of pay-related information provided to employees by their employers. To the degree that certain types of information have a more robust impact on employees’ instrumentality perceptions than others (especially on low tolerant for inequity employee), such research could be useful for managers attempting to determine what kinds of pay-related information to release.

Researchers may also wish to examine other dispositional characteristics and personality traits aside from tolerance for inequity as possible moderators of the impact of pay communication on instrumentality perceptions, performance, or a variety of other criteria not explored in this study (such as, turnover, absenteeism, OCB, etc.). For example, negative affectivity may serve as an additional personality-based moderator. Given that those with higher levels of negative affect may, like “entitles,” overweight equity disparities operating to their disadvantage, any general tendency to under estimate perceived performance-pay contingencies may be amplified as a function of negative affect.

In addition, whereas we found no evidence that informational and procedural fairness perceptions mediate the relationship between pay communication policy and task performance, this does not rule out the possibility that these and other (e.g., distributive) fairness perceptions do not *moderate* the direct and instrumentality-mediated effects of pay communication policy on task performance. Although such a hypothesis would be difficult to test in an experimental context (due to the complexities involved in manipulating fairness perceptions), testing would be possible using data collected in the context of a field study.

Moreover, several researchers have warned of the risk of making incorrect inferences by studying pay strategy in isolation (Gerhart, 2000; Bamberger & Meshoulam, 2000). Hinting at possible cross-level moderating effects, these researchers suggest that whereas a particular association between pay communication policy and individual task performance may hold true in one type of work context or culture (e.g., a

culture of trust and open communication), it may not hold true in another (e.g., firms relying more on external than internal labor markets). Consequently, it may be important to explore how the broader organizational or unit context (i.e., culture; climate) affects the impact of pay communication policy on individual instrumentality perceptions and hence on task performance.

Similarly, it may be important to take into account the possible moderating role of culture in the relationship between pay communication policy and employee's performance. For example, in cultures characterized by norms and values promoting openness and transparency with regard to pay-related issues, pay secrecy may be more likely to be interpreted as indicative of equity disparities, giving the sense that there is "something to hide." In contrast, in cultures in which the disclosure of pay-related information is considered more taboo, employees may feel more at ease with pay secrecy and be less likely to view it as necessarily indicative of some sort of equity disparity. Consequently, we encourage researchers to test the cross-cultural generalizability of our findings.

Finally, whereas this analysis examined the impact of pay transparency on individual performance, research on the implications of pay transparency at the unit or organizational level (e.g., firm performance) is sorely needed. Although we found that the effects of pay secrecy on individual task performance are likely to be contingent upon individuals' inequity tolerance, the overall impact of pay secrecy on unit- or organization-level performance is likely to depend on far more than the aggregate impact of secrecy on individual task performance alone. For example, even if pay secrecy has a generally adverse impact on individual performance, at the unit or enterprise level, it may still offer a number of significant, performance-*enhancing* benefits, such as (a) minimizing external threats to competitiveness through making salary information unavailable to labor market competitors (Sim, 2001), (b) decreasing the mobility of high-performing employees by reducing the risk of exposing explicit equity discrepancies (Colella et al., 2003; Danziger & Katz, 1997), (c) reducing the risk of employee conflict and jealousies that may be more likely to the extent that employees are more able to compare their pay with that of their fellow employees (Ackley, 1993; Sim, 2001; The ManageMentor, 2003), and perhaps most important, (d) reducing the tendency of pay allocators to shift their allocations toward equality (and hence reducing pay efficiencies; Leventhal, 1976; Leventhal et al., 1980; Bartol & Martin, 1989). Whether these enterprise-level benefits outweigh the potential costs of secrecy on individual task performance identified by this analysis is an empirical question deserving of future research.

REFERENCES

- Ackley D. (1993). What to say about pay. *Compensation and Benefits Review*, 25(1), 18–21.
- Adams JS. (1963). Toward an understanding of inequity. *Journal of Abnormal and Social Psychology*, 67, 422–436.
- Aiken LS, West SG. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Andersson-Straberg T, Sverke M, Hellgren J. (2007). Perceptions of justice in connection with individualized pay setting. *Economic & Industrial Democracy*, 28, 431–464.
- Bamberger PA, Meshoulam I. (2000). *Human resource strategy: Formulation, implementation and impact*. Thousand Oaks, CA: Sage.
- Baron RM, Kenny DA. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bartol KM, Martin DC. (1989). Effects of dependence, dependency threats, and pay secrecy on managerial pay allocation. *Journal of Applied Psychology*, 74, 105–113.
- Bauer DJ, Preacher KJ, Gil KM. (2006). Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: New procedures and recommendations. *Psychological Methods*, 11, 142–163.
- Cloutier J, Vilhuber L. (2008). Procedural justice criteria in salary determination. *Journal of Managerial Psychology*, 23(6), 713–740.
- Cohen-Charash Y, Spector PE. (2001). The role of justice in organizations: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 86, 287–321.
- Colella A, Paetzold R, Zardkoohi A, Wesson M. (2007). Exposing pay secrecy. *Academy of Management Review*, 32, 55–71.
- Colella A, Zardkoohi A, Paetzold R, Wesson M. (2003). Pay secrecy revisited: An integrative model. *Academy of Management Meeting*, Seattle, WA.
- Colquitt J. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology*, 86, 386–400.
- Colquitt JA, Conlon DE, Wesson MJ, Porter COLH, Ng KY. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86, 425–445.
- Conlon DE, Meyer CJ, Nowakowski JM. (2005). How does organizational justice affect performance, withdrawal, and counterproductive behavior? In Greenberg J, Colquitt J (Eds.), *Handbook of organizational justice: Fundamental questions about fairness in the workplace*. Mahwah, NJ: Erlbaum.
- Cropanzano R, Ambrose ML. (2001). Procedural and distributive justice are more similar than you think: A monistic perspective and a research agenda. In Greenberg J, Cropanzano R (Eds.), *Advances in organizational justice* (pp. 119–151). Stanford, CA: Stanford University Press.
- Danziger L, Katz E. (1997). Wage secrecy as a social convention. *Economic Inquiry*, 35(1), 59–65.
- Day NE. (2007). An investigation into pay communication: Is ignorance bliss? *Personnel Review*, 36, 739–762.
- Dipboye RL. (1990). Laboratory vs. field research in industrial and organizational psychology. *International Review of Industrial and Organizational Psychology*, 5, 1–34.
- Edwards MA. (2005). The law and social norms of pay secrecy. *Berkley Journal of Employment and Labor Law*, 26, 41–63.
- Edwards JR, Lambert LS. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, 12, 1–22.

- Erez A, Isen AM. (2002). The influence of positive affect on the components of expectancy motivation. *Journal of Applied Psychology, 87*, 1055–1067.
- Folger R, Konovsky MA. (1989). Effects of procedural and distributive justice on reactions to pay raise decisions. *Academy of Management Journal, 32*, 115–130.
- Folger R, Rosenfield D, Grove J, Corkan L. (1979). Effects of “voice” and peer opinions on response to inequity. *Journal of Personality and Social Psychology, 37*, 2253–2261.
- Futrell CM, Omer C, Jenkins OC. (1978). Pay secrecy versus pay disclosures 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 BA. (2000). Compensation strategy and organizational performance. In Rynes S, Gerhart B (Eds.), *Compensation in organizations* (pp. 151–194). San Francisco: Jossey-Bass.
- Greenberg J. (1982). Approaching equity and avoiding inequity in groups and organizations. In Greenberg J, Cohen RL (Eds.), *Equity and justice in social behavior* (pp. 389–435). New York: Academic Press.
- Greenberg J. (1990). Organizational justice: Yesterday, today and tomorrow. *Journal of Management, 16*, 399–432.
- Greenberg J. (1993). The social side of fairness: Interpersonal and informational classes of organizational justice. In Cropanzano R (Ed.), *Justice in the workplace: Approaching fairness in human resource management* (pp. 79–103). Hillsdale, NJ: Erlbaum.
- Grienberger IV, Rutte CG, van Knippenberg FM. (1997). Influence of social comparison of outcomes and procedure on fairness judgments. *Journal of Applied Psychology, 82*, 913–919.
- Heyman JE, Mellors B. (2008). Perceptions of fair pricing. In Haugtvedt CP, Herr P, Kardes FR (Eds.), *Handbook of consumer psychology* (pp. 683–699). New York: Psychology Press.
- Hrnext.com Survey. 2001. *More employers ducking pay confidentiality issue—Hrnext.com survey shows many employers view issue as hot potato*. Retrieved from <http://hr.blr.com/whitepapers/HR-Administration/Employee-Privacy/More-Employers-Ducking-Pay-Confidentiality-Issue/>, accessed September 19, 2010.
- Huseman RC, Hatfield JD, Miles EW. (1985). Test for individual perceptions of job equity: Some preliminary findings. *Perceptual and Motor Skills, 61*, 1055–1064.
- Huseman RC, Hatfield JD, Miles EW. (1987). A new perspective on equity theory: The equity sensitivity construct. *Academy of Management Review, 12*, 222–234.
- Ilgen DR, Peterson RB, Martin BA, Boeschen DA. (1981). Supervisor and subordinate reactions to performance appraisal sessions. *Organizational Behavior and Human Performance, 28*, 311–330.
- Jaccard J, Jacoby J. (2010). *Theory construction and model-building skills: A practical guide for social scientists (methodology in the social sciences)*. New York: Guilford.
- Kanfer R. (1990). Motivation theory and industrial/organizational psychology. In Dunnette MD, Hough L (Eds.), *Handbook of industrial and organizational psychology. Volume 1. Theory in industrial and organizational psychology* (pp. 75–170). Palo Alto, CA: Consulting Psychologists Press.
- Kanfer R, Ackerman PL. (1989). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology—Monograph, 74*, 657–690.
- Kemery ER, Bedeian AG, Zacur SR. (1996). Expectancy-based job cognitions and job affect as predictors of organizational citizenship behaviors. *Journal of Applied Social Psychology, 26*, 635–651.
- King WC Jr, Miles EW, Day DD. (1993). A test and refinement of the equity sensitivity construct. *Journal of Organizational Behavior, 14*, 301–317.

- Lawler EE III. (1966a). Managers' attitudes toward how their pay is and should be determined. *Journal of Applied Psychology*, 50(4), 273–279.
- Lawler EE III. (1966b). The mythology of management compensation. *California Management Review*, 9, 11–22.
- Leventhal GS. (1976). The distribution of rewards and resources in groups and organizations. In Berkowitz L, Walster E (Eds.), *Advances in experimental social psychology*, Vol. 9 (pp. 91–131). New York: Academic Press.
- Leventhal GS, Karuza J, Fry WR. (1980). Beyond fairness: A theory of allocation preferences. In Mikula G (Ed.), *Justice and social interaction* (pp. 167–218). New York: Springer-Verlag.
- Locke EA. (1986). Generalizing from laboratory to field: Ecological validity or abstraction of essential elements. In Locke EA (Ed.), *Generalizing from laboratory to field settings* (pp. 3–9). Lexington, MA: Lexington Books.
- Locke EA, Latham GP. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57, 705–717.
- Miles EW, Hatfield JD, Huseman RC. (1989). The equity sensitivity construct: potential implications for worker performance. *Journal of Management*, 15, 581–588.
- Milkovich GT, Anderson PH. (1972). Management compensation and secrecy policies. *PERSONNEL PSYCHOLOGY*, 25, 293–302.
- Milkovich GT, Newman JM. (2005). *Compensation* (8th ed.). New York: McGraw-Hill.
- Naylor JC, Pritchard RD, Ilgen DR. (1980). *A theory of behavior in organizations*. New York: Academic Press.
- Noy L. (2007). *Development of a measure of organizational pay secrecy*. Unpublished doctoral dissertation. Alliant International University, Los Angeles.
- Preacher KJ, Hayes AF. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behaviour Research Methods, Instruments, Computers*, 36, 717–731.
- Ross M, Sicoly F. (1979). Egocentric biases in availability and attribution. *Journal of Personality and Social Psychology*, 37, 322–336.
- Sauley KS, Bedeian AG. (2000). Equity sensitivity: construction of measure and examination of its psychometric properties. *Journal of Management*, 26, 885–910.
- Scarr S. (1988). How genotypes and environments combine: Development and individual differences. In Bolger N, Caspi A, Downey G, Moorehouse M (Eds.), *Persons in context: Developmental processes* (pp. 217–244). New York: Cambridge University Press.
- Schwab DP. (1973). Impact of alternative compensation systems on pay valence and instrumentality perceptions. *Journal of Applied Psychology*, 58, 308–312.
- Sim V. (2001). What should Hank do about the salary debacle? *Harvard Business Review*, 79(5), 44.
- Singer JD. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models and individual growth models. *Journal of Educational and Behavioral Statistics*, 24, 323–355.
- TheManageMentor. (2003). Tossing the coin—pay secrecy, *Back 2 School*. Retrieved from: www.themanagementor.com/enlightenmentorareas/hr/tr/tossingthecoin.htm, accessed July 12, 2009.
- Thibaut J, Walker L. (1975). *Procedural justice: A psychological analysis*. Mahwah, NJ: Erlbaum.
- Thierry H. (2001). The reflection theory on compensation. In Erez M, Kleinbeck U, Thierry H (Eds.), *Work motivation in the context of a globalizing economy* (pp. 149–66). Mahwah, NJ: Laurence Erlbaum Associates.

- 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.
- Tyler TR. (1999). Why people cooperate with organizations: an identity-based perspective. *Research in Organizational Behavior, 21*, 201–46.
- Van den Bos K. (1996). *Procedural justice and conflict*. Unpublished doctoral dissertation, Leiden University, The Netherlands.
- Vroom VH. (1964). *Work and motivation*. New York: Wiley.
- Wheeler KG. (2007). Empirical comparison of equity preference questionnaire and equity sensitivity instrument in relation to work outcome preferences. *Psychological Reports, 100*, 955–972.
- Williams ML, McDaniel MA, Nguyen NT. (2006). A meta-analysis of the antecedents and consequences of pay satisfaction. *Journal of Applied Psychology, 91*, 392–413.