

WHAT DO YOU MEAN WHEN YOU PAY FOR PERFORMANCE? CONDITIONAL
EFFECTS OF PAY-FOR-PERFORMANCE ON JOB SATISFACTION AND
PERFORMANCE

By

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ABSTRACT OF THE DISSERTATION

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Drawing on the psychology theory of self-determination and economic perspectives on pay-for-performance, this study proposes that the effects of pay for performance (PFP) on job satisfaction, which in turn affects performance outcomes, can be influenced by the organizational contexts that support employee autonomy, competence, and relatedness. I specifically expect that PFP has a positive impact on job satisfaction and performance outcomes if an organization adopts PFP along with HR practices that support employee autonomy, competence, and relatedness. On the contrary, if an organization uses PFP without such HR practices, PFP may negatively influence job satisfaction and performance outcomes. While the direct effects of PFP on performance outcomes are positive, the total effects of PFP on performance outcomes may also be conditioned by those organizational contexts because of the conditional indirect effects. I tested this model in two independent studies using data collected from workplace sites. Study 1 employed a hierarchical linear modeling with multi-level data from R&D units. Study 2 tested the same model at the organizational level using a nationally representative longitudinal data. I also discuss the implications for theory and research on PFP.

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INTRODUCTION

*“The cumulative evidence shows that **financial incentives ... are more effective than we previously thought.**”* (Shaw & Gupta, 2015; emphasis added)

*“Under certain conditions, output related performance measurement and **pay-for-performance produce negative outcomes**”* (Frey, Homberg, & Osterloh, 2013; emphasis added)

Management scholars and practitioners hold discrepant views on pay-for-performance (PFP), a reward system for employees wherein some or all of their compensation is related to their individual or organizational performance. On the one hand, drawing on economic perspectives, scholars suggest that PFP sorts and motivates workers by creating a link between performance and monetary rewards (Cadsby, Song, & Tapon, 2007; Lazear, 2000). Consistent with this view, the use of PFP practices in the United States has increased from 80% in 2010 to 88% in 2016 (WorldatWork, 2016). The diffusion of incentive systems among the firms is based on the assumption that employees are economically rational and self-interested, and therefore PFP will yield better performance outcomes through sorting and motivating mechanisms (Nyberg, Pieper, & Trevor, 2016). On the other hand, based on psychological perspectives, other scholars suggest that PFP (one form of extrinsic rewards) can undermine intrinsic motivation and job satisfaction, thereby limiting PFP’s potential positive effects (Gagné & Deci, 2005; Ryan & Deci, 2000). Consistent with this notion, a recent survey reported that only 20% of employers in North America think that PFP is effective in their companies (Emerman, 2016).

Reflecting the theoretical debate, empirical findings on the relationship between PFP and performance outcomes is not conclusive although substantial research has investigated the effects of PFP on individual and organizational outcomes. When it comes to the PFP-organizational performance relationship, some scholars have found that PFP is positively associated with firm performance (Delaney & Huselid, 1996; Guest & Conway, 2004; Blasi, Freeman, & Kruse, 2016) whereas other scholars have demonstrated that PFP negatively affects organizational performance (Batt & Colvin, 2011; Batt, Colvin, & Keefe, 2002; Poulain-Rehm & Lepers, 2013). Still other scholars have found no significant relationship between PFP and organizational performance (Fey, Björkman, & Pavlovskaya, 2000; Harel & Tzafrir, 1999; Kepes, Delery, & Gupta, 2009; Kim & Ouimet, 2014). In sum, existing knowledge on the relationship between PFP and firm performance remains incomplete at best.

Although meta-analytic evidence shows an overall positive relationship between PFP and employee performance (Garbers & Konradt, 2014), there is substantial variation in estimates of the size and direction of the relationship. We know little regarding how environmental differences produce variation in the PFP-employee performance relationship. Moreover, researchers still debate whether PFP always enhance employees' performance that requires creativity and innovation (Baer, Oldham, & Cummings, 2003; Hennessey & Amabile, 2010). When it comes to the PFP-creativity relationship, some scholars demonstrated that PFP is positively related to creativity (Eisenberger & Armeli, 1997; Eisenberger, Armeli, & Pretz, 1998; Eisenberger & Aselage, 2009; Eisenberger & Rhoades, 2001; Friedman, 2009), whereas other scholars have reported that PFP negatively affects creativity (Amabile, 1982; Amabile, 1996; Amabile, Hennessey, &

Grossman, 1986). Still other studies have found no significant relationship between PFP and creativity (Zhang, Long, Wu, & Huang, 2015). Thus, extant literature suggests that PFP may improve creativity only under certain conditions and therefore calls for more studies to identify its boundary conditions in different contexts (Baer, Oldham, & Cummings, 2003; Byron & Khazanchi, 2012; Ederer & Manso, 2013; Erez & Nouri, 2010; Friedman, 2009).

Previous research has taken economic perspectives to study PFP that focus primarily on extrinsic motivations (i.e., financial incentives) and expect a positive relationship between PFP and performance outcomes. This approach, however, is limited in explaining the mixed findings in previous research. This study suggests that one omission in the PFP literature is the potential effects of PFP on intrinsic motivation. Based on self-determination theory that argues PFP can have a negative impact on intrinsic motivation under certain conditions and both extrinsic and intrinsic motivations influence the overall motivation and performance, this study incorporates another key domain of motivation—intrinsic motivation—in the PFP literature. Indeed, scholars have recently urged that further research should synthesize aspects of economic and psychological theories to understand more fully how and when PFP makes a positive or a negative contribution to employee and organizational performance outcomes (Gerhart & Fang, 2015; Maltarich, Nyberg, Reilly, Abdulsalam, & Martin, 2017; Nyberg, Pieper, & Trevor, 2016). In answering this call, I develop my hypotheses based on the psychological theory of self-determination as well as economic perspectives on PFP, which offers a promising conceptual framework for both explaining and resolving the inconsistency in the literature. Specifically, I propose that PFP has not only a positive

direct (economic) effect on performance outcomes, but also a conditional indirect (psychological) effect via job attitudes. Furthermore, I suggest that the indirect effect will vary under differing levels of organizational autonomy, competence, and relatedness support. By decomposing the total effects of PFP on performance into both direct and indirect pathways, this study seeks to provide a more complete understanding of the effects of PFP than previous efforts that rely on either theoretical framework.

This study makes a number of contributions to PFP research. First, despite the considerable research on PFP in general, the conditions under which PFP is most likely to benefit individual and organizational performance are still largely unknown (Baer et al., 2003; Byron & Khazanchi, 2012; Malik, Butt, & Choi, 2015; Trevor & Wazeter, 2006). Indeed, research has not paid much attention to the larger context within which PFP influences employee attitudes and organizational performance outcomes (Nyberg et al., 2016). Understanding the organizational context within which firms operate is vital because the effectiveness of PFP may depend on the fit between the compensation practice and the organizational contexts (Balkin & Gomez-Mejia, 1987; Balkin & Gomez-Mejia, 1990). Accounting for these organizational contexts can provide insight regarding the conditions under which PFP is most likely to benefit organizational functioning. This is also necessary for the theoretical development of the field as it is consistent with the contingency theory of human resource management (Delery & Doty, 1996; Gerhart, 2012; Wright & McMahan, 1992).

Second, this study examines the mediating mechanism of job satisfaction that underlies the relationship between PFP and performance outcomes. Strategic human resource management scholars have suggested that HR practices may first affect

employees' attitudes such as job satisfaction, organizational commitment, psychological empowerment, perceived organizational support, and turnover intention which in turn enhance performance outcomes (Kehoe & Wright, 2013; Liao, Toya, Lepak, and Hong, 2009; Messersmith, Patel, Lepak, & Gould-Williams, 2011; Nishii, Lepak, & Schneider, 2008; Takeuchi, Chen, & Lepak, 2009). However, examining the mediating role of psychological attitudes in the relationship between PFP and performance outcomes has been relatively neglected and there is limited research evidence. Thus, it is not surprising that the literature suggests "researchers need to begin measuring mediating psychological variables such as employee attitudes, beliefs, and behaviors" (Rynes, Gerhart, & Park, 2005, p. 592) and there continues to be a need for research on PFP "with the most valuable research including measures of mediating variables to better understand causal processes" (Gerhart, Rynes, & Fulmer, 2009; p. 276). Accordingly, this study contributes to compensation research by exploring the mediating role of job satisfaction in the relationship between PFP and performance outcomes.

Third, this study contributes to the literature on self-determination theory by testing the conditional effects of PFP on job satisfaction using two data sets collected from workplace sites. One of the weaknesses of self-determination theory is that the majority of studies have occurred in experimental settings (Conroy & Gupta, 2016). Although those studies generally support the idea proposed by self-determination theory (Gagné & Deci, 2005), the external validity of the findings is limited because one may not be able to create a situation identical to a real-world workplace in the experimental settings (Cadsby et al., 2007). Moreover, most of these studies used samples of children and college students who generally lack work experience and are homogeneous in terms

of demographic characteristics. Thus, the effects of PFP “might play out considerably differently in the workplace than they do in the educational laboratory” (Rynes, et al., 2005, p.576). While there is “a far greater need for research that is conducted under conditions that are more realistic” (Rynes et al., 2005, p. 591), scholars still have neglected testing the effects of PFP in the workplace context. Consequently, we still know little about how PFP influences workers’ attitudes and performance in the workplace context.

Fourth, most studies on PFP are cross-sectional which limits any inferences regarding causation (Gagné & Deci, 2005). Although most research adopts a static approach to studying PFP, understanding the dynamics of PFP is important because incentive pay schemes and performance outcomes may influence each other. For example, the Year 1 success of PFP may lead organizations to use PFP more aggressively. It is also plausible that the organization raises the standard used to compute payouts if their employees do well under PFP and the total payouts exceed the organization’s expectation (Beer & Cannon, 2004; McClurg, 2001; Murphy, 2000). Also, employees are likely to perceive PFP positively as “employees learn what is actually rewarded” (Conroy & Gupta, 2016, p. 25). Moreover, economic perspectives suggest that examining the effectiveness of PFP should incorporate both incentive and sorting effects (Lazear, 2000). For example, new employees with high levels of performance orientation or self-efficacy could enter a firm with PFP while employees who are dissatisfied with PFP could leave the organization. Experimental and field studies show that both sorting and incentive effects are important (Cadsby et al., 2007; Lazear, 2000). Cross-sectional studies are limited in their ability to capture the sorting effects of PFP. Thus, “longitudinal field

studies ... are essential” (Conroy & Gupta, 2016, p. 26) and “we need longitudinal studies of incentives” (Shaw & Gupta, 2015). This study contributes to PFP literature by analyzing longitudinal data collected from multiple industries.

Lastly, this study helps to bridge the gap between economic perspectives on PFP and the psychological theory of self-determination. Although economic perspectives portray PFP as an incentive and sorting mechanism that should lead to better performance outcomes (Lazear, 2000), self-determination theory portrays PFP as an extrinsic motivation that potentially has a negative impact on employee attitudes when support for autonomy, competence, and relatedness is absent (Gagné & Deci, 2005). My hypotheses and findings help to bridge the gap between these two perspectives by suggesting that PFP may have the strongest positive effects on performance outcomes when employees perceive autonomy, competence, and relatedness support. To be specific, in keeping with economic perspectives, PFP may generally have a positive impact on performance outcomes, but in keeping with the psychological theory of self-determination, the relationship between PFP and performance outcomes is not always positive. Rather, the relationship will be moderated by autonomy, competence, and relatedness support because of its conditional indirect effect through job satisfaction. Therefore, to properly understand the effects of PFP, scholars must gain greater insight into PFP than those considered by either theory in isolation.

THEORY DEVELOPMENT

Literature Review

While the meta-analytic evidence on the relationship between PFP and performance outcomes is generally positive, there is substantial variation in estimates of the size and direction of the relationship depending on the types of PFP (e.g., individual

vs. organizational) and performance measures (e.g., quantity vs. quality). At the individual level, for example, Locke, Feren, McCaleb, Shaw, & Denny's (1980) meta-analysis showed that PFP increased productivity by an average of 30 %. Similarly, Jenkins, Mitra, Gupta, & Shaw's (1998) meta-analysis found that individual PFP had a positive relationship with performance quantity ($\rho = .34$). However, they found no significant relationship between PFP and performance quality ($\rho = .08$). Cerasoli, Nicklin, & Ford's (2014) meta-analysis show consistent results that the effect of extrinsic incentive on quantitative performance ($\beta = .35$) was much stronger than that on qualitative performance ($\beta = .06$). Compared to extrinsic incentive, intrinsic motivation such as task enjoyment and satisfaction explained a much greater proportion of variance in quality performance ($\beta = .35$). In their analyses, performance measures such as creativity and research proposal were coded as qualitative performance and these results are consonant with the literature on creativity that suggests the main motivator of creative behavior is intrinsic motivation rather than extrinsic motivation (Amabile, 1983; Hennessey & Amabile, 1998). However, another meta-analysis conducted by Byron & Khazanchi (2012) found that PFP is positively related to creative performance in both experimental ($g = .62$) and nonexperimental ($r = .07$) settings. Thus, the effects of PFP on product quality and creativity are still a matter of debate.

The effects of PFP on performance outcomes at the organizational-level are also equivocal. On the one hand, Lazear (1986) found that a company's productivity was increased by 44% when the firm switched from fixed salaries to PFIP. Similarly, Delaney and Huselid (1996) reported that PFIP had a positive and significant impact on perceived organizational performance. On the other hand, Batt & Colvin (2011) found that PFIP

was positively related to turnover rate which in turn was negatively associated with organizational performance. It is also noteworthy that Guest, Conway, & Dewe (2004) found that PFIP was positively related to overall performance, but it was not significantly associated with innovation. Although meta-analyses generally reported a weak positive relationship between PFOP and organizational performance (Doucouliagos, 1995; Kruse & Blasi, 1995; O'Boyle et al., 2016), research on PFOP reported mixed results. For example, Blasi, Freeman, & Kruse (2016) found that PFOP such as profit sharing, gain sharing, and employee stock ownership enhances employee participation, information sharing, trust in management, intention to stay, and organizational performance. However, Poulain-Rehm & Lepers (2013) reported that employee stock ownership, one form of PFOP, was negatively related to a series of organizational performance outcomes such as market value added, shareholder value added, and creditor value added. Given there was substantial variability across the studies, O'Boyle et al. (2016, p.19) concluded that future research should delve into the “moderators explaining differences in gains from employee ownership.” In sum, existing knowledge on the effects of PFP remain incomplete and further research that examine the boundary conditions of PFP is needed.

Direct Effect of PFP on Performance Outcomes

While this study focuses on the conditional effects of PFP on job satisfaction and performance outcomes, I expect that PFP may have a positive direct impact on employee and organizational performance. PFP literature suggests that there are two important mechanisms by which PFP can enhance employee performance outcomes: sorting and incentive effects (Cadsby, Fei, & Tapon, 2007; Lazear, 2000). The sorting effect refers to the attraction and retention of the most capable employees to a firm providing PFP

(Cadsby, Fei, & Tapon, 2007; Gerhart & Rynes, 2003). To maximize their compensation, high performers will be attracted to an organization with a PFP program rather than an organization with a fixed salary, because productive workers are likely to receive higher income with PFP (Cadsby et al., 2007). Moreover, high performers will leave an organization if their performance does not lead to sufficient financial rewards due to a lack of PFP (Trevor, Gerhart, & Boudreau, 1997). On the other hand, low performers will prefer a compensation scheme with a larger fixed component (i.e., fixed pay) and they are more likely to leave their job when their rewards are linked to performance (Harrison, Virick, & William, 1996). This perspective is consistent with the attraction-selection-attrition (ASA) model which argues individuals are attracted to, and stay in, organizations they fit with (Schneider, 1987). In sum, PFP can act as a sorting device through the retention of the most capable employees and the attrition of low performers (Jensen, 2003; Lazear, 1986).

The incentive effect refers to the impact of PFP on current employees' motivation and performance (Rynes, Gerhart, & Parks, 2005). Expectancy theory is useful for explaining the incentive effect of PFP. Vroom (1964) proposes that individuals are motivated to select a specific behavior over others due to what they expect the result of that selected behavior will be. There are three important factors within expectancy theory: expectancy, instrumentality, and valence. Expectancy refers to the belief that one's effort will result in better performance. Instrumentality is the likelihood that this performance will result in a reward. Lastly, valence is the attractiveness of the reward. According to expectancy theory, people are motivated when they believe that their effort will lead to better performance and ultimately to attractive rewards. Compared to other compensation

schemes (e.g., fixed pay), PFP provides a very clear, direct, and explicit link between performance and rewards because PFP is defined as the extent to which financial rewards are linked to performance measures (Nyberg, Pieper, & Trevor, 2016; Maltarich, Nyberg, Reilly, Abdulsalam, & Martin, 2017). Therefore, PFP will enhance employee motivation and performance in general. This perspective is consistent with the agency theory that justifies PFP as an effective contracting mechanism that aligns the objectives of firms with those of employees, and therefore motivates employees to exert their maximum effort to produce as much as possible for their organization and resolves agency problem (Eisenhardt, 1989; Fama, 1980; Fama & Jensen, 1983).

Empirical studies generally support both sorting and incentive arguments. In his field study, for example, Lazear (2000) found that PFP resulted in a 44% increase in organizational performance that was divided roughly equally between the two effects. Using a laboratory experiment, Cadsby et al. (2007, p. 397) also found that PFP resulted in significantly higher productivity “through both sorting and incentive effects.” These theoretical arguments and empirical findings suggest that PFP should enhance future performance outcomes through sorting and incentive effects because the most capable employees will be attracted to an organization with a PFP and these capable employees will exert a sustained, focused cognitive and behavioral effort toward the attainment of the performance goals to maximize incentive payouts when valued rewards are aligned with clear objectives (Fama, 1980; Fama & Jensen, 1983; Vroom, 1964). In sum, PFP may lead to greater employee and organizational performance because of the sorting and incentive effects (Gerhart, 2017; Gerhart & Fang, 2015; Rynes, Gerhart, & Parks, 2005). Therefore, I propose the following:

***Hypothesis 1.** PFP will have a positive direct effect on employee performance.*

***Hypothesis 2.** PFP will have a positive direct effect on organizational performance.*

Conditional Effects of PFP on Employee Job Satisfaction

Self-determination theory is an integrated theory of total motivation that suggests both intrinsic motivation and extrinsic motivation direct human behavior (Deci & Ryan, 1985; Deci & Ryan, 2000; Ryan & Deci, 2000). On the one hand, people are often motivated by external factors such as reward systems, evaluations, or threat of punishments. Such external forces are considered as extrinsic motivators. On the other hand, people are just as frequently motivated from within, by their interest, curiosity, or the inherent fun of an activity. These intrinsic motivators can sustain passions and efforts. The self-determination theory argument is that extrinsic and intrinsic factors operate in parallel to influence the overall motivation and performance outcomes (Boivie, Graffin, & Pollock, 2012).

While self-determination theory predicts that both extrinsic and intrinsic factors motivate individuals, the theory suggests that these two types of motivators have distinct effects on job attitudes such as job satisfaction, organizational commitment, locus of control, and task interest (e.g., Gagné, Forest, Gilbert, Aube, Morin, & Malorni, 2010; Tremblay, Blanchard, Villeneuve, Taylor, & Pelletier, 2009). Intrinsic motivators are experienced as autonomous motivation which refers to pursuing a goal with a sense of volition. This is something that they genuinely *want* to do. Since the behavior is self-determined, those who are autonomously motivated towards a goal are generally

interested, excited, and engaged in the behavior, leading to positive psychological outcomes such as work engagement (Deci, Koestner, & Ryan, 2001), job satisfaction (Bono & Judge, 2003; Richer et al., 2002), and psychological well-being (Baard et al., 2004; Levesque et al., 2004). Extrinsic motivators, on the other hand, can be experienced as controlled motivation which refers to pursuing a goal out of obligation or pressure. It is something that the person feels that they *have* to do. Since the behavior is not initiated or governed by the self, controlled motivation is negatively associated with job satisfaction, organizational commitment, turnover intention, citizenship behavior, and deviance behavior (Gagné et al., 2010; Tremblay et al., 2009).

It is particularly noteworthy that self-determination theory does not suggest that extrinsic sources of motivation such as PFP are always experienced as controlled motivation (Gagné & Deci, 2005; Gagné & Forest, 2008). Rather, it is possible to be autonomously extrinsically motivated through *internalization* which refers to the process in which individuals attempt to transform social requests into personally endorsed values and self-regulations (Ryan et al., 1985; Deci & Ryan, 2000). Organismic integration theory within self-determination theory extensively examines this issue and explains the different forms of extrinsic motivation and the contextual factors that either promote or hinder internalization of the regulation for these behaviors (Deci & Ryan, 2002; Ryan & Patrick, 2009). The distinct forms of extrinsic motivation, which include *external regulation*, *introjection*, *identification*, and *integration*, are seen as falling along a continuum of internalization. The more fully external motivators are internalized, the more they become part of the integrated self and the more they are the basis for self-determined behavior (Ryan & Deci, 2000).

External regulation is the least autonomous form of extrinsic motivation.

Individuals experience externally regulated behavior as controlled motivation and their actions have an external perceived locus of control (deCharms, 1968). This is because individuals merely engage in a behavior to satisfy an external demand under external regulation. A second type of extrinsic motivation is introjected regulation which is a relatively controlled form of regulation in which behaviors are performed to maintain feelings of worth or to avoid guilt or anxiety. Introjected behaviors are still having an external perceived locus of control and are not experienced as part of the self. In such situations, employees perceive that engaging in a behavior is controlled by external factors. Thus, both external regulation and introjected regulation are considered as a controlled motivation (Deci & Ryan, 2000; Gagné & Forest, 2008; Ryan, 1985; Ryan & Deci, 2000). In such a situation, moreover, employees will show low levels of job satisfaction because they perceive that they have to engage in their jobs because of external factors that are beyond their control.

A more autonomous form of extrinsic motivation is identified regulation. Since identified regulation involves a conscious valuing of a behavioral goal, the action is accepted or owned as personally important. When individuals identify with the goal and the action, they endorse them and thus identifications are accompanied by a high degree of perceived autonomy. Lastly, integrated regulation is the most autonomous form of extrinsic motivation. Integration occurs when identified regulations are fully assimilated to the self. Although integrated motivation is still considered extrinsic motivation because they are done to attain separable outcomes rather than for their inherent enjoyment, actions characterized by integrated motivation share many qualities with intrinsic

motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). Thus, identified regulation and integrated regulation are considered as autonomous motivation along with intrinsic motivation (Gagné & Forest, 2008). Research shows that extrinsic sources of motivation that are identified and integrated (i.e., autonomous motivation) are related to more positive experiences than the less fully internalized forms of extrinsic motivators (i.e., controlled motivation) (Ryan & Deci, 2000). Specifically, employees will show high level of job satisfaction because they will voluntarily engage in their job because of their own interest, curiosity, or the inherent fun of the tasks.

Insert Table 1 about here

The separation of extrinsic motivation into two motivation types (i.e., controlled motivation and autonomous motivation) and four regulation types (i.e., external regulation, introjection, identification, and integration) implies that PFP can have varying effects on job satisfaction depending on how PFP is regulated and perceived by employees. Under external regulation and introjection situations, for example, PFP will be negatively related to job satisfaction because employees perceive that their job-related behaviors are controlled by external demands or contingencies that they may not fully understand. In other words, when PFP is experienced as controlled motivation, employees' perceived degree of self-regulation will be low and the locus of control will be external, which reduces employee job satisfaction (Judge & Bono, 2001; Skaalvik & Skaalvik, 2014). This view is consistent with the perspective that, without giving employees a meaningful opportunity to improve their performance, PFP can be seen as shifting financial risk onto employees and consequently results in negative employee

outcomes as most workers are risk averse (Kruse et al., 2010). Under identification and integration situations, however, PFP can be positively related to job satisfaction because employees will be motivated to engage in job-related behaviors that are personally important and central to self-identity. In other words, when PFP is experienced as autonomous motivation, employees' perceived degree of self-regulation will be high and locus of control will be internal, which enhances employee job satisfaction (Judge & Bono, 2001; Skaalvik & Skaalvik, 2014).

Reflecting this view that PFP can be experienced as both controlled and autonomous motivation that may have different impact on job satisfaction, empirical evidence on the relationship between PFP and job satisfaction is at best mixed. On the one hand, for example, Eisenberger and Cameron's (1996) meta-analysis reported that financial incentives had no overall reliable effect on job attitudes (satisfaction, task interest, or enjoyment) while non-financial incentives (e.g., verbal praise) had a significant and positive relationship with job attitude. While the overall relationship between PFP and job attitudes was insignificant, further analyses revealed that quality dependent financial incentives had a positive association with job attitudes ($d = .19$). On the other hand, Deci, Koestner, & Ryan (1999) conducted a meta-analysis on the same issue which concluded that financial incentive generally has a significant and negative relationship with job attitudes ($d = -.07$). The negative effect of PFP on job attitudes was especially strong when the financial rewards were contingent on engagement ($d = -.15$) or completion ($d = -.17$). Although the conclusions were somewhat different, both Eisenberger and Cameron (1996) and Deci et al. (1999) agreed that there is significant variation in the relationship between PFP and job attitude and the effect sizes vary

depending on the types of financial rewards. This study contributes to the literature on the relationship between PFP and job attitude (i.e., job satisfaction) by suggesting that the relationship is moderated not only by the types of PFP, but also by organizational context that support employee autonomy, competence, and relatedness.

Indeed, self-determination theory discusses the contextual factors that either promote or hinder internalization of extrinsic motivation that impact the way employees view their job. Specifically, self-determination theory suggests that there are three important social contexts that promote autonomous regulation for extrinsically motivated behaviors: (a) autonomy support, (b) competence support, and (c) relatedness support (Gagné & Deci, 2005; Ryan & Deci, 2000). First, autonomy support refers to providing conditions that support the employee's initiative, volition, and integrity (Deci & Ryan, 2012) and it allows individuals to actively transform extrinsic values into their own. Individuals must grasp the meaning of an external motivator and synthesize that meaning with respect to their own goals and values. Such process is "facilitated by a sense of choice, volition, and freedom from excessive external pressure toward behaving or thinking a certain way" (Ryan & Deci, 2000, p. 74). Therefore, autonomy support can yield autonomous regulation. Organizations may be able to support employee autonomy through programs that increase employee empowerment and involvement, such as self-directed work teams. Second, the relative internalization of an extrinsic motivator is also a function of competence support that allows employees to feel capable when they work by developing the knowledge, skills, and abilities required for the job. This is because individuals are more likely to engage in behaviors when they feel efficacious with respect to those behaviors. Thus, competence support should facilitate internalization of an

extrinsic motivator (Vallerand et al., 1997; Ryan & Deci, 2000). Organizations may be able to support employee competence through extensive training. Third, relatedness support, in which employees are provided conditions that cause them to feel they are cared for when they interact within a social environment, is important for internalization of an extrinsic motivator. When desired behaviors are prompted, modeled, or valued by significant others to whom they feel attached or related, individuals are more likely to internalize the value of such behavior and perform the action. Thus, internalization is more likely to occur when there are ambient supports for feelings of relatedness. Organizations and managers may be able to support employee relatedness through task-related support, friendly/open communication, and attentiveness (Sparks, Dimmock, Whipp, Lonsdale, & Jackson, 2015).

Although few studies have used data from workplace samples, empirical evidence from developmental psychology, social psychology, and educational psychology generally supports the idea that supports for autonomy, competence, and relatedness facilitate the internalization process of external regulations. For example, Deci, Eghrari, Patrick, and Leone (1994) found that autonomy and relatedness supports promoted internalization of extrinsic motivation. Similarly, Ryan, Stiller, and Lynch (1994) found that teachers and parents' relatedness support was related to greater internalization of school-related behavioral regulations. These empirical studies support the idea that supports for autonomy, competence, and relatedness facilitate internalization of extrinsic behavioral regulations (Ryan & Deci, 2000).

PFPP refers to a reward system for employees wherein some or all of their compensation is related to their performance (Rynes et al., 2005). According to self-

determination theory, PFP, one form of extrinsic motivators, can have a negative impact on job attitudes when it is experienced as controlling (Gagné & Deci, 2005; Ryan & Deci, 2000). PFP is likely to be experienced as controlled motivation (i.e. external regulation and introjected regulation) especially when PFP is administered in an organization that does not support employees' need for autonomy, competence, and relatedness (Gagné & Deci, 2005). However, organizations can create an autonomy-, competence-, and relatedness-supportive climate for employees by providing relevant managerial practices, such as employee empowerment, extensive training, and open communication. In such a situation, employees are likely to internalize the value of PFP and experience it as autonomous motivation (i.e., identified regulation and integrated regulation) and thus PFP will have a positive effect on job attitudes (Gagné & Deci, 2005; Ryan & Deci, 2000). This provides theoretical basis for this study of the conditional effects of PFP on job satisfaction.

In addition to the theoretical rationale, the empirical evidence of variability in the effectiveness of PFP also highlights both a need and an opportunity to discover moderators of this relationship. In their meta-analysis, Cameron & Pierce (1994) found no significant relationship between extrinsic rewards and job attitudes. The effect sizes ranged from $-.69$ to $+1.98$. Among 64 empirical studies they reviewed, 31 show a positive effect and 15 show a negative effect of reward. There was substantial variability across the studies, with several of them showing negative rather than positive relationships. Despite the fact that this variability suggests the presence of moderators, only a few studies have examined how PFP might interact with organizational characteristics. Thus, little is known about the conditions under which PFP may promote job attitudes.

Among different kinds of employee attitudes, this study examines the conditional effects of PFP on job satisfaction which is one of the important and widely studied employee attitude variables (Brown and Peterson, 1993; Spector, 1997; Zhou & George, 2001). Self-determination theory suggests that the extent to which individuals internalize extrinsic regulations influences the way they see their jobs. When individuals internalize PFP and experience PFP as autonomous motivation, they are likely to be satisfied with their jobs because they possess an internal locus of control and perceive their jobs as something they want to do (Gagné et al., 2010; Tremblay et al., 2009). This is because the external regulations are already assimilated with self so they are included in a person's self-evaluations and beliefs of personal needs. When individuals experience PFP as externally regulated behavior, they are less likely to be satisfied with their jobs because they may perceive their jobs as something they have to do because of external demands or possible rewards. On top of that, this study seeks conditional effects of PFP on job satisfaction as well as conditional indirect effects of PFP on performance outcomes via job satisfaction. Indeed, the behavioral perspective in strategic HR and the empirical studies on the "black box" of HR suggest that job satisfaction is one of the most important mediators that link HR practices and performance outcomes (Messersmith et al., 2011). In their meta-analysis, Jiang et al. (2012) show that HR practices indirectly influence performance outcomes via job satisfaction and other motivation related variables. Thus, this study examines job satisfaction as an important outcome of PFP which in turn affects performance outcomes.

Insert Figure 1 about here

Drawing on self-determination theory, I propose that autonomy, competence, and relatedness supports will moderate the relationship between PFP and employee job satisfaction. First, autonomy support, such as empowerment and involvement, may facilitate the internalization of contingent rewards (Ryan & Deci, 2000), which results in enhanced employee job satisfaction. Indeed, self-determination theory suggests that extrinsic rewards are more likely to enhance job satisfaction when they are administered in an autonomy-supportive climate (Gagné & Deci, 2005; Ryan & Deci, 2000). For example, if employees are empowered to make decisions based on their own judgement without seeking unnecessary permission from their supervisor, they may believe that they are afforded discretion and opportunities to act according to their own inclination. Under this circumstance, employees are more likely to transform extrinsic values into their own which is facilitated by a sense of choice, volition, and freedom. This view is consistent with the economic perspective that suggests combining residual control (e.g., decision making participation) and residual returns (e.g., financial incentives) results in significantly better employee attitudes and performance outcomes (Milgrom & Roberts, 1992). Indeed, Weitzman and Kruse (1990) found that most studies of contingent compensation plans showed weak but positive effects on motivation, with the strongest effects occurring when contingent pay was combined with some employee participation scheme. Likewise, shared compensation schemes were found to have stronger positive effects on employee satisfaction when combined with employee involvement and other empowering policies (Kruse et al. 2010).

On the contrary, if an organization does not provide autonomy support, employees are likely to experience PFP as a controlled motivation and perceive their jobs

as something they have to do because of possible reward contingencies. Consequently, employees are likely to be dissatisfied with their job. For example, Beer and Cannon (2004) reported that PFP led to employee dissatisfaction when employees had very little control over their performance. Giving employees a variable pay scheme without substantial responsibility and discretion may be seen by employees simply as shifting income risk from the company to the employees, which will lead to lower satisfaction among risk-averse employees.

Taken together, therefore, I expect that the relationship between PFP and employee job satisfaction will be moderated by an organization's autonomy support. Accordingly:

***Hypothesis 3a.** Autonomy support moderates the effect of pay-for-performance on employee job satisfaction, such that the relationship is positive when autonomy support is high, whereas the relationship is negative when autonomy support is low.*

Second, competence support will moderate the relationship between PFP and job satisfaction. According to self-determination theory, competence support facilitates internalization of PFP because individuals like to engage in behaviors in which they feel efficacious. Put differently, employees with high self-efficacy are more likely to attain valued outcomes and thus have favorable attitudes toward their jobs (Judge & Bono, 2001). This relationship is expected to be particularly strong in firms with PFP, as performance and rewards are more closely linked in PFP situations. This suggests that competence supportive practices, such as extensive training, can act as important moderators in the relationship between PFP and employee job satisfaction (Deci & Ryan,

1985; Ryan & Deci, 2000). For example, extensive training may provide employees with organization-specific competence with which to perform their work. Thus, employees will have favorable attitudes toward PFP and readily internalize the extrinsic regulation when their organization supports for competence, as they are likely to be better rewarded. Under this circumstance, moreover, employees are less likely to perceive PFP as a means of control, and they are more likely to perceive it as a signal that the organization wants to enhance employee commitment by aligning employee interests with those of the organization. On the contrary, when an organization does not provide competence support, employees are likely to perceive PFP as a means of control to stimulate employees to work harder and longer, or as simply a way to shift financial risk from the company to employees. This will negatively influence employee job satisfaction. Taken together, it is expected that the relationship between PFP and employee job satisfaction is likely to be moderated by an organization's competence support. Accordingly:

***Hypothesis 3b.** Competence support moderates the effect of pay-for-performance on employee job satisfaction, such that the relationship is positive when competence support is high, whereas the relationship is negative when competence support is low.*

Third, relatedness support will moderate the relationship between PFP and employee job satisfaction. To illustrate, extrinsic motivators are often used for job tasks that are not in and of themselves interesting. The primary reason people initially perform such tasks is because the behaviors are prompted, modeled, or valued by significant others to whom they feel attached or related (Ryan & Deci, 2000). This suggests that relatedness support can be an important moderator in the relationship between PFP and

job satisfaction. Indeed, self-determination theory suggests that employees are more likely to internalize the value of extrinsic rewards when there is ambient support for feelings of relatedness (Ryan & Deci, 2000). When PFP is administered in a supportive climate, employees are less likely to interpret PFP as a means of control, and they are more likely to perceive their locus of control as internal, which results in higher intrinsic motivation, job satisfaction, and organizational commitment. Studies show that workers who experience supervisors as supportive experience more self-motivation and enjoyment at work and thus report higher job satisfaction (Baard, 2002; Ilardi, Leone, Kasser, & Ryan, 1993). On the contrary, if an organization does not provide relatedness support, employees may not fully understand the purpose of PFP and experience PFP as controlled motivation. Under the circumstance, the perceived locus of causality will be external, and the degree of self-regulation will be low and therefore employees will exhibit lower job satisfaction (Judge & Bono, 2001; Bond & Bunce, 2003). Thus, I expect that the relationship between PFP and employees' job satisfaction is likely to be moderated by employees' perceived relatedness support. Accordingly:

***Hypothesis 3c.** Relatedness support moderates the effect of pay-for-performance on employee job satisfaction, such that the relationship is positive when relatedness support is high, whereas the relationship is negative when relatedness support is low.*

Conditional Effects of PFP on Collective Job Satisfaction

Self-determination theory was originally developed at the individual level. However, based on the direct consensus model in multi-level theory (Chan, 1998) and signaling theory (Spence, 1974), I suggest that self-determination theory also can be

applied at the organizational level to explain the conditional effects of PFP on collective job satisfaction. First, although employee job satisfaction and collective job satisfaction are qualitatively different at different levels, Chan (1998)'s direct consensus model suggests that the mean of individual responses within an organization can be used to operationalize an organizational-level variable and this aggregation can be justified by within-group agreement indexes such as the r_{wg} (James, Demaree, & Wolf, 1984) and the ICC (Bliese, 2000). In the direct consensus model, the definition of collective job satisfaction is essentially the same as employee job satisfaction, "except that the former refers to the shared perceptions among the individuals" (Chan, 1998, p. 237). Thus, this study defines collective job satisfaction as a work unit's shared internal state resulting from an appraisal of job or job-related experiences (Whitman, Van Rooy, & Viswesvaran, 2010).

There are at least three theoretical reasons why I expect that shared perceptions regarding job satisfaction exist. First, employees in an organization share similar work environments that are important situational antecedents of job satisfaction. For example, employees in the same organization are likely to experience the same organizational culture and structure, have the same HR practices and policies, work in the same building, and face the same coworkers. Moreover, employees might experience the common leadership (e.g., CEO) that influences job satisfaction (Glisson & Durick, 1988). Because of these shared experiences at work, employees might have "a common interpretation, understanding, and attitudinal evaluation of the job experience (Whitman et al., 2010, p. 46)." Second, employees in an organization might form a shared perception of their job through attraction-selection-attrition (ASA) process. According to Schneider (1987), an

organization increasingly moves toward homogeneity in employee characteristics through the process of attracting, selecting, and retaining employees. This homogeneity among employees will allow them to evaluate their shared job-related experiences in a similar way (Whitman et al., 2010). Third, communication and social interaction among employees will further facilitate the emergence of collective job satisfaction. For example, employees often talk about their managers and how they feel about their job and work environments with their coworkers. Given the shared experience at work and homogeneity in employee characteristics, it is unlikely that they strongly disagree with each other. Instead, they will form a shared perception about their jobs by exchanging similar experiences and therefore by influencing each other's perception. This perspective is consistent with social learning theory (Bandura, 1977) that suggests the attitudes and values individuals hold are learned by observing others' attitudes and values.

Under PFP, employees are likely to form a shared perception about their job not only because employees experience the same HR practice, but also because they will engage in social interactions in order to better understand why their organization uses PFP and how PFP influences employees. In order to explain why employees are more likely to engage in social interactions under PFP, this study relies on signaling theory (Spence, 1974) that is relevant to understanding behaviors under situations with incomplete and asymmetrical information (Connelly, Certo, Ireland, & Reutzel, 2011). Spence (1974) originally focused on firm hiring as its paradigm problem. In the job market, an asymmetry of information exists between potential employees and employers if employers cannot efficiently ascertain the productivity of applicants during the hiring process. In such a situation, employers seek other observable or accessible attributes of a

target (e.g., education credentials) that can be used as valuable signals by the firm, which reduces the informational gap by enabling employers to infer the unobserved attributes of the target (e.g., ability). By applying signaling theory, HR scholars have shown that employees use accessible organizational information as a signal to infer unclear organizational attributes, such as organizational culture (Cable & Judge, 1994), values (Aiman-Smith, Bauer, & Cable, 2001), and commitment to long-term employment (Suazo, Martinez, & Sandoval, 2009).

A key tenet of signaling theory is that employees seek all observable information to make sense of unclear firm attributions. In general, the purpose of HR practices is often clear, as they are closely associated with the firm's strategy and business-related goals. For example, extensive training is considered a representative HR practice that helps create high-commitment work systems (HCWS) because organizations tend to invest significantly to develop firm-specific skills through extensive training only when they perceive their employees to be valuable and unique (Lepak & Snell, 1999). On the other hand, downsizing can be considered a representative cost-cutting HR practice. As organizations are likely to externalize their employees when they perceive their employees to have low value (Lepak & Snell, 1999), downsizing signals a lack of employer commitment to employee welfare or long-term employment relations (Batt et al., 2002).

Contrary to other HR practices, however, the purpose of using PFP is often unclear as there are distinct organizational intentions to use PFP. For example, Arthur (1992, 1994) argued that organizations use incentive payments to reduce labor costs and to control employees at work. Using a cluster analysis of the data from 30 U.S. steel

mini-mills, he empirically found that incentive payments tend to be used along with control-based HR practices, such as narrowly defined jobs, low levels of participation, intensive supervision, limited training, and low wages and benefits. Meanwhile, MacDuffie (1995) suggested that organizations use PFP to enhance employee commitment through a psychological contract of reciprocal commitment. Similarly, Ichniowski et al. (1997) found that organizations using incentive pay are more likely to adopt other commitment-based HR practices, such as selective staffing, teamwork, employment security, flexible job assignment, extensive training, and labor–management communication. Given that PFP can be used as a means of either controlling labor costs or enhancing employee commitment, employees are likely to seek other information through communication with their coworkers and other source of information to interpret the organization’s intention behind using PFP (Nishii et al., 2008). Through this information seeking and sharing process, employees are likely to form a shared perception about their reward practices.

Consequently, I suggest that the conditional effects of PFP on job satisfaction will occur at the organizational level as well. First, autonomy support may facilitate the internalization of PFP that results in enhanced employee job satisfaction. Given employees in an organization likely experience the same compensation policy, autonomy supportive culture, and other work environments, they are likely to form a shared perception about their job. To be specific, PFP will have a positive impact on collective job satisfaction when an organization provides a high level of autonomy support. This is because a majority of the employees will experience PFP as autonomous motivation and thus will be satisfied with their job. On the contrary, PFP will have a negative impact on

collective job satisfaction when an organization provides low level of autonomy support. Under the circumstance, majority of the employees will experience PFP as controlled motivation or an effort to shift financial risk, and therefore will be less satisfied with their job. Through communication and the social learning process (Bandura, 1977; Whitman et al., 2010), employees' attitudes toward their job will become more homogenous and collective job satisfaction will emerge. Accordingly:

***Hypothesis 4a.** Autonomy support moderates the effect of pay-for-performance on collective job satisfaction, such that the relationship is positive when autonomy support is high, whereas the relationship is negative when autonomy support is low.*

Second, competence support will moderate the relationship between PFP and collective job satisfaction. When an organization use PFP along with a high level of competence support, a majority of employees will have favorable attitudes toward their jobs because competent employees are likely to attain valuable financial rewards when performance and rewards are closely linked in PFP situations (Judge & Bono, 2001). Through social interactions between employees, a positive shared perception about their job will emerge. On the contrary, a majority of employees will perceive that their organization use PFP as a means of control and experience is as controlled motivation if the organization does not provide competence support that helps employees to perform their job better and consequently to better rewarded. In such a situation, the average level of employee job satisfaction will be relatively lower and therefore unfavorable collective job satisfaction will emerge through social interactions and social learning processes (Bandura, 1977; Whitman et al., 2010). Accordingly:

***Hypothesis 4b.** Competence support moderates the effect of pay-for-performance on collective job satisfaction, such that the relationship is positive when competence support is high, whereas the relationship is negative when competence support is low.*

Third, relatedness support will moderate the relationship between PFP and collective job satisfaction. On the one hand, employees are likely to internalize the value of extrinsic rewards when there is ambient support for feelings of relatedness (Ryan & Deci, 2000). This internalization process allows majority of employees to feel that their job and performance goals are personally important and central to self-identity. Simply put, most employees in the organization will experience PFP as autonomous motivation and therefore exhibit high levels of job satisfaction. Through social interactions between employees, a positive shared perception about their job will emerge. On the contrary, PFP will have a negative impact on collective job satisfaction if an organization uses PFP along without relatedness support. When support for feelings of relatedness is absent, a majority of employees will interpret PFP as a means of control and experience it as controlled motivation. Consequently, the mean level of employee job satisfaction will be relatively lower and unfavorable collective job satisfaction will emerge through social interactions and processes (Bandura, 1977; Whitman et al., 2010). Accordingly:

***Hypothesis 4c.** Relatedness support moderates the effect of pay-for-performance on collective job satisfaction, such that the relationship is positive when relatedness support is high, whereas the relationship is negative when relatedness support is low.*

Conditional Indirect Effects of PFP on Employee Performance

Strategic HR scholars suggest that employees' attitudes, along with knowledge, skills, abilities, and other characteristics (KSAOs), mediate the relationship between HR practices and performance outcomes (Liao, Toya, Lepak, & Hong, 2009; Nishii, Lepak, & Schneider, 2008). HR practices can affect employee perceptions of job satisfaction (Takeuchi, Chen, & Lepak, 2009; Messersmith, Patel, Lepak, & Gould-Williams, 2011) and employees who are satisfied with their jobs will be more motivated to engage in discretionary behaviors which ultimately enhance performance outcomes (Messersmith et al., 2011). Thus, this study suggests that employee job satisfaction mediates the conditional effect of PFP on employee performance.

It is noteworthy to mention why I expect that job satisfaction will have a positive impact on employee performance and thus mediate the conditional effect of PFP on employee performance. Indeed, while there is consensus among researchers that HR practices are important antecedents of job satisfaction, there is debate on the relationship between job satisfaction and employee performance. For example, Iaffaldano and Muchinsky (1985) conducted a meta-analysis on the relationship between satisfaction and performance and found an unexpectedly weak relationship between the two variables. Based on 217 correlations from 74 studies, they reported an average correlation of .17 and concluded that "it is almost as if the satisfaction-performance relation is itself what Chapman and Chapman (1969) called an illusory correlation, a perceived relation between two variables that we logically or intuitively think should interrelated, but in fact do not" (Iaffaldano & Muchinsky, 1985, p. 270). This study has had a significant impact on researchers' views about the nature of the relationship between job satisfaction and

employee performance and many researchers have accepted their conclusion that the relationship between the two variables is very low (Cote, 1999; Judge, Hanische, & Drankoski, 1995; Brief, 1998; Spector, 1997).

However, a more recent meta-analysis conducted by Judge, Thoresen, Bono, and Patton (2001) reported that the mean correlation between job satisfaction and job performance was moderate in magnitude and significantly different from zero. Based on 312 samples with a combined *N* of 54,417, specifically, they found that the mean correlation between job satisfaction and employee performance was estimated to be .30. Besides the different number of correlations included in the two meta-analyses, it should be noted that Judge et al. (2001) only used overall job satisfaction while Iaffaldano and Muchinsky (1985) used all different facets of job satisfaction (e.g., pay satisfaction, promotion satisfaction, supervision satisfaction, co-worker satisfaction, etc.) to estimate an overall correlation between satisfaction and performance. Judge et al. (2001) empirically show that this difference in measures was one of the important reasons for why they found a stronger and significant satisfaction-performance relationship than did Iaffaldano and Muchinsky (1985).

Another important debate on the relationship between job satisfaction and employee performance is whether job satisfaction predicts employee performance, or employee performance predicts job satisfaction. On the one hand, for example, researchers suggest that satisfaction leads to performance because people who evaluate their job favorably tend to engage in behaviors that support it (Eagly & Chaiken, 1993; Fishbein & Ajzen, 1974; Judge et al., 2001). On the other hand, researchers suggest that good performance tends to lead to better financial and non-financial rewards, which in

turn lead to higher satisfaction (Lawler & Porter, 1967). Based on these two competing perspectives, other researchers propose a hybrid model that expects a reciprocal relationship between satisfaction and performance (Sheridan & Slocum, 1975). Riketta (2008)'s meta-analysis of panel studies specifically examined this issue. This study reported that the effect of job attitudes (i.e., job satisfaction and organizational commitment) on subsequent performance was positive and significant ($\beta = .06, p < .01$) while the effect of performance on subsequent job attitudes was insignificant ($\beta = .00, n.s.$). The results support the idea that satisfaction leads to performance.

Based on Judge et al. (2001) and Riketta (2008)'s meta-analyses, this study expects that job satisfaction will have a significant and positive impact on employee performance. Specifically, I expect that job satisfaction and employee performance will be positively associated with each other because this study defines job satisfaction as an emotional state resulting from an appraisal of an individual's overall job-related experience (Locke, 1976) rather than a specific facet of job satisfaction. Also, although this study does not explicitly reject the idea that performance leads to satisfaction, it focuses on the effect of job satisfaction on employee performance and expects that job satisfaction will have a positive impact on employee performance. Consequently, given the hypothesized conditional effects of PFP on job satisfaction and the expected positive relationship between job satisfaction and employee performance, I propose that PFP has conditional indirect effects on employee performance via job satisfaction. Accordingly:

***Hypothesis 5a.** The indirect effect of pay-for-performance on employee performance via employee job satisfaction is contingent upon autonomy support, such that the indirect relationship is positive when autonomy*

support is high, whereas the indirect relationship is negative when autonomy support is low.

Hypothesis 5b. *The indirect effect of pay-for-performance on employee performance via employee job satisfaction is contingent upon competence support, such that the indirect relationship is positive when competence support is high, whereas the indirect relationship is negative when competence support is low.*

Hypothesis 5c. *The indirect effect of pay-for-performance on employee performance via employee job satisfaction is contingent upon relatedness support, such that the indirect relationship is positive when relatedness support is high, whereas the indirect relationship is negative when relatedness support is low.*

Conditional Indirect Effects of PFP on Organizational Performance

Strategic HR scholars suggest that HR practices affect organizational performance outcomes through managing employees' attitudes and behavior (Jackson, Schuler, & Rivero, 1989; Schuler & Jackson, 1987; Sun, Aryee, & Law, 2007). Empirical studies show that HR practices affect aggregated job satisfaction at the unit level or organizational level (Messersmith et al., 2011; Nishii et al., 2008). Moreover, collective job satisfaction promotes a host of positive unit-level performance outcomes (e.g., Ostroff, 1992; Ryan, Schmit, & Johnson, 1996). An employee who is satisfied with his or her job will "tend to engage in behaviors that foster or support it" (Eagly & Chaiken, 1993, p.12). Thus when a majority of employees are satisfied with their jobs, they will be more motivated not only to perform their jobs well but also to engage in OCB, leading to

improved organizational performance (Lapierre and Hackett, 2007; Messersmith et al., 2011; Whitman, Van Rooy, & Viswesvaran, 2010). Indeed, previous literature has shown that collective job satisfaction can enhance organizational productivity (Whitman et al., 2010), service performance (Nishii et al., 2008), innovation (Mohamed, 2002), and financial performance (Huang, Li, Meschke, & Guthrie, 2015). In addition, Jiang, Lepak, Hu, and Baer's (2012) meta-analysis of HR practices found that motivation-enhancing HR practices, which include incentive pay, have positive indirect effects on different types of organizational performance outcomes through aggregated employee attitudes (e.g., job satisfaction, organizational commitment, and perceived organizational support). Given the hypothesized conditional effects of PFP on collective job satisfaction and the expected positive relationship between collective job satisfaction and organizational performance, I expect that PFP has conditional indirect effects on organizational performance via collective job satisfaction.

Hypothesis 6a. *The indirect effect of pay-for-performance on organizational performance via collective job satisfaction is contingent upon autonomy support, such that the indirect relationship is positive when autonomy support is high, whereas the indirect relationship is negative when autonomy support is low.*

Hypothesis 6b. *The indirect effect of pay-for-performance on organizational performance via collective job satisfaction is contingent upon competence support, such that the indirect relationship is positive when competence support is high, whereas the indirect relationship is negative when competence support is low.*

***Hypothesis 6c.** The indirect effect of pay-for-performance on organizational performance via collective job satisfaction is contingent upon relatedness support, such that the indirect relationship is positive when relatedness support is high, whereas the indirect relationship is negative when relatedness support is low.*

INTRODUCTION TO TWO STUDIES

I test the hypotheses using two data sets collected from workplace sites. While the proposed model includes both individual- and organizational-level job satisfaction and performance, it was not feasible to get the data that includes all of PFP, employee job satisfaction, employee performance, collective job satisfaction, organizational performance, autonomy support, competence support, relatedness support, and other important control variables. Thus, I test the conditional effects of PFP on employee-level (i.e., employee job satisfaction and employee performance) and organization-level outcomes (i.e., collective job satisfaction and organizational performance) separately using two different data sets. Study 1 tests the effects of PFP on employee-level outcomes (Hypotheses 1, 3, and 5) and Study 2 tests the effects of PFP on organization-level outcomes (Hypotheses 2, 4, and 6).

STUDY 1 METHODS

Sample and Procedures

To test the conditional effects of PFP on employee job satisfaction and employee performance, I used data from a unique survey from South Korea. The survey was conducted by the Korea Labor Institute (KLI), a government-funded research organization, in September 2012. The data are not publicly available and, to the best of

my knowledge, no academic research using these data has been published. KLI contacted all 675 firms that have their own R&D units. Given that the main purpose of this study is examining the conditional effects of PFP on job satisfaction and performance outcomes, R&D units are an interesting and relevant context for the study. Most importantly, researchers still debate whether PFP enhance or impede job performance that requires creativity and innovation. The literature on creativity has emphasized that intrinsic motivation such as task enjoyment and satisfaction are the main motivator of creative behavior and extrinsic motivation such as PFP can negatively affect creativity and innovation (Amabile, 1982; Amabile, 1996; Amabile, Hennessey, & Grossman, 1986). However, empirical studies on the relationship between PFP and creativity show that PFP may improve creativity under certain conditions and therefore scholars call for more studies to identify its boundary conditions in different contexts (Baer, Oldham, & Cummings, 2003; Byron & Khazanchi, 2012; Ederer & Manso, 2013; Erez & Nouri, 2010; Friedman, 2009).

The data were collected by hired survey professionals over the phone or in-person. 69 HR managers in R&D units voluntarily completed the survey about the HR practices implemented in their unit for R&D workers (response rate = 10.22%). They also provided other unit-level variables. Specifically, HR managers provided the information about PFP, autonomy support, competence support, unit size, unit age, R&D expenditure, proportion of female employees, and selective staffing. No organization had multiple R&D units in this sample. Due to the missing data, a final sample of 49 R&D units remained. The R&D units ranged in size from 5 to 150 researchers (median=35). Given the low response rate and the reduction of sample size due to missing values, I examined the differences

between R&D units that were and were not included in the final sample. Although I had limited information about the original sample, I found that the original and final samples were similar in terms of the unit size ($t = .45$, $df = 279$, *n.s.*).

The hired survey professionals aimed to contact all R&D workers in the R&D units over the phone or in-person. However, many employees refused to participate in the survey and some employees were excluded because they were absent from work and/or did not respond to telephone calls about the survey. While I have no information about how many employees refused to participate and how many employees was not reachable, a total of 283 R&D workers completed employee surveys (response rate = 15.45%). Due to missing values, 3 employee-level observations were dropped and a final sample of 49 units and 280 employees remained. The mean number of respondents per unit was 6. R&D workers' average age was 34, and 20% of them were women. Employees provided the information about their job satisfaction, performance, perceived relatedness support, gender, tenure, and salary level. Comparisons of R&D workers who did and did not participate in the survey suggested that the original and final samples were generally consistent in terms of gender and educational background. For example, the proportion of female R&D workers in the original sample was 21.18% and that in the final sample was 20.36% ($t = .34$, $df = 279$, *n.s.*). Similarly, the proportion of advanced degree holders in the population was 37.81% and that in the final sample was 38.57% ($t = .26$, $df = 279$, *n.s.*). I was not able to compare ages of R&D workers who did and did not participate in the survey because there was no information about the average age of the original sample.

Next, I performed a power analysis for a regression model with an r of .30 and α of .05, and power of .80 required a sample of 34. For an interaction, however, it needs

136 because the sample size required to detect an interaction is four times that needed to detect a main effect (Leon & Heo, 2009). The current sample size of 280 exceeds the required sample size.

Measures

Pay-for-performance. PFP was measured by the proportion of variable pay that is based on organizational or individual performance over total pay. Specifically, HR managers were asked to indicate what proportion of their employee's total annual salary is based on (a) fixed pay and (b) performance-based pay. Respondents were requested to allocate 100 percentages between these two compensation systems. Thus, the PFP variable can range from 0 to 100. The mean of PFP in the sample was 14%.

Employee job satisfaction. Job satisfaction was measured with a three-item scale adopted from Cole (1979). Employees were asked to rate their job satisfaction on a 5-point scale ranging from 1, "strongly disagree," to 5, "strongly agree." The items were "I am satisfied with my job," "I would take the same job again," and "I would recommend this job to a friend." The mean of the responses of the three items was used for job satisfaction. The Cronbach's alpha was .86.

Employee performance. In this survey, employee performance was measured in two ways: self-reported general productivity performance and creativity performance. While employee productivity is of utmost importance in many organizations, all of the respondents in my sample were R&D workers whose main job was producing creative ideas and innovative inventions (West, 1990). Therefore, their job performance measure should reflect a specific facet of performance, which is creativity. Thus, I used creative performance, which refers to the production of ideas that are novel and potentially useful

to the organization (Amabile, 1996; Baer & Oldham, 2006), as the dependent variable¹. Specifically, I measured R&D workers' performance using the four-item scale that captures creative behavior adopted from Farmer, Tierney, & Kung-McIntyre (2003). R&D workers rated their creative performance on a five-point scale ranging from 1, "strongly disagree," to 5, "strongly agree." Sample items were "I generate ground-breaking ideas related to the field" and "I try new ideas or methods first." The coefficient alpha was .90. Although self-reported measures are subject to bias, self-reported creativity has been found to correlate highly (.62) with supervisory ratings of creative performance (Axtell, Holman, & Unsworth, 2000).

Autonomy support. Autonomy support was measured by 5 items regarding employee empowerment on a five-point scale adopted from Bae and Lawler (2000). HR managers were asked to rate the degree to which each of the items described the organization. Sample items were (the organization) "permits enough discretion in doing work" and "provides chances to use personal initiative." The Cronbach's alpha was .79 for the scale.

Competence support. Competence support was measured by 6 items on a five-point Likert scale that captures the extensiveness of training and development practices adopted from Bae and Lawler (2000) and Collins and Smith (2006). HR managers were asked to rate the degree to which each of the items described the organization. The items were "we spend a great amount of money on training," "we provide different kinds of training opportunity," "we provide extensive training for general skills," "we use job rotation to expand the skills of employees," "performance appraisals are used primarily to

¹ As a robustness check, I also used general productivity performance as the dependent variable. The results were reported in Appendix C.

set goals for personal development,” and “we provide multiple career path opportunities for employees to move across multiple functional areas of the company.” The coefficient alpha was .74 for the scale.

Relatedness support. Relatedness support refers to allowing employees to feel that they are cared for when they interact within a work environment. In previous studies, relatedness support was measured in different ways, most commonly by task-related support, friendly/open communication, and attentiveness (Sparks, Dimmock, Whipp, Lonsdale, & Jackson, 2015; Sparks, Dimmock, Lonsdale, & Jackson, 2016). In Study 1, relatedness support was measured by a leader’s task-related support because it allows employees to perceive that they are cared for within the work environment. Given all of the respondents were R&D workers whose main job was producing creative ideas and innovative inventions (West, 1990), relatedness support was measured by 3 items on a five-point Likert scale with employee perceived supervisor support for creativity developed by Madjar, Oldham, and Pratt (2002). Employees were asked to rate the degree to which each of the items described their managers’ task-related support. Items were “my supervisor discusses with me my work-related ideas in order to improve them,” “my supervisor gives me useful feedback about my ideas concerning the workplace,” and “my supervisor is always ready to support me if I introduce an unpopular idea or solution at work.” The coefficient alpha was .85 for the scale. Individual ratings were aggregated to create unit-level relatedness support. The r_{wg} , ICC1, and ICC2 for this variable were .75, .09, and .36, respectively. Although ICC2 was lower than the suggested criteria, ICC2 is sensitive to the average number of members within groups (LeBreton, James, & Lindell, 2005). More importantly, r_{wg} was greater than .70 and ICC1 was within the

typical range between .05 and .20 (Bliese, 2000).

Control variables. In order to rule out alternative explanations, I controlled for organizational characteristics as well as individual differences. At the unit level, I controlled for size, age, R&D expenditure (1 unit = 10 billion KRW), proportion of female employees, and selective staffing. First, unit size was measured using the natural log of a unit's total employees. Total number of employees was transformed using the natural logarithm because the original data had a skewed distribution (skewness = 3.43; kurtosis = 16.69; Shapiro–Francia normality test $p < .01$). Second, unit age was calculated as the difference between the year when a unit was founded and the year the firm was observed in the sample. Third, I controlled for the total research and development expenditure of the firm that may impact R&D workers' creative performance. Fourth, I controlled for the proportion of female workers because non-managerial female employees' job satisfaction is lower than male employees' job satisfaction (Mason, 1995). Fifth, selective staffing was controlled for because selectively hired employees are more likely to yield higher performance outcomes. HR managers were asked to indicate, on a five-point Likert scale, the extent to which they agreed with each of five statements about their staffing practice adopted from Bae and Lawler (2000) and Collins and Smith (2006). Items were “great importance is placed on staffing process,” “we exert great effort to select right person,” “we spend great amount of money on selection,” “our selection systems focuses on the potential of the candidate to learn and grow with the organization, and “we select employees based on an overall fit to the company.” The Cronbach's alpha was .75 for the scale. Lastly, I controlled for industry dummies since industries likely face different market conditions and different types of

required R&D activities. At the individual level, I controlled for gender, tenure, and salary level. Gender was measured with a dummy variable coded 1 for women and 0 for men. Tenure was measured as the number of years the individual was employed by the firm. Consistent with Shaw, Duffy, Jenkins, & Gupta (1999), salary level was assessed by asking respondents which of the nine salary ranges included their average monthly salary.² Variable definitions and measurement items are provided in Appendix A and B respectively.

Analytic Strategy

As the employees are nested within the units, hierarchical linear modeling (HLM) was conducted. To justify the use of HLM, a null model for job satisfaction with no predictor was tested. The results show that there was significant between-unit variance ($ICC1 = .15$, $SE = .06$, $95\% CI = .07$ to $.29$). This result shows that 15 percent of the variance in job satisfaction resides between units. I also tested a null model for creative performance with no predictor. The results indicated that there was significant between-unit variance ($ICC1 = .09$, $SE = .05$, $95\% CI = .03$ to $.27$). The results imply that 9 percent of the variance in creative performance resides between units. These results support the use of HLM to test the hypotheses (Bliese, 2000).

The Level-1 (individual-level) model for job satisfaction was:

$$JS_{ij} = \beta_{0j} + \beta_{1j}GEN + \beta_{2j}TEN + \beta_{3j}SAL + r_{ij} ,$$

where JS_{ij} is the job satisfaction of employee i in unit j . β_{0j} is the intercept. β_{1j} , β_{2j} ,

² Although the salary level was measured by a categorical variable, each category has the same interval (i.e., 1 million KRW) and therefore the variable is effectively continuous. Thus, I treated it as a continuous variable and included in the regression models. As a robustness check, I also treated this variable as a series of dummy variables and found that the results were consistent with the results reported here.

and β_{3j} are regression coefficients for gender, tenure, and salary level respectively. r_{ij} is the individual-level error term. In HLM, the parameters in the Level 1 (individual-level) model become the outcome variables in the Level 2 (unit-level) model. The Level-2 model prior to adding the interaction variables was:

$$\begin{aligned}\beta_{0j} = & \gamma_{00} + \gamma_{01}PFP_j + \gamma_{02}AUT_j + \gamma_{03}COM_j + \gamma_{04}REL + \gamma_{05}SIZ_j \\ & + \gamma_{06}AGE_j + \gamma_{07}RND_j + \gamma_{08}SEX_j + \gamma_{09}SEL_j + \gamma_x DUM_j \\ & + U_{0j}\end{aligned}$$

$$\beta_{1j} = \gamma_{10} + U_{1j}$$

$$\beta_{2j} = \gamma_{20} + U_{2j}$$

$$\beta_{3j} = \gamma_{30} + U_{3j}$$

where β_{0j} is the intercept of the individual-level model, which depends on a unit's pay-for-performance (PFP_j), autonomy support (AUT_j), competence support (COM_j), size (SIZ_j), age (AGE_j), research and development investments (RND_j), proportion of female employees (SEX_j), selective staffing (SEL_j), and industry dummies (DUM_j). γ_{10} , γ_{20} , and γ_{30} are the average linear slopes and U_{1j} , U_{2j} , and U_{3j} are the deviations of respondent i 's linear slope from the average slope for GEN , TEN , and SAL respectively.

In order to test the conditional indirect effects (mediated moderation effects), a hierarchical regression analysis was performed following the suggestions of Edwards and Lambert (2007) and Preacher, Rucker, & Hayes (2007). Specifically, I used the bootstrapping-based approach via R program with 20,000 iterations to calculate bias-corrected intervals (CI) to estimate indirect effects (Edwards & Lambert, 2007; Hu &

Liden, 2015; Preacher & Selig, 2012; Shrout & Bolger, 2002). I reported standardized coefficients in order to quantify the relative importance of each variable.

STUDY 1 RESULTS

Insert Table 2, 3, and 4 about here

Hypothesis Tests

Table 2 displays the descriptive statistics and correlations. Hypothesis 1 concerned the direct effect of PFP on employee performance. Table 3 presents the results of hierarchical linear regressions predicting employee creative performance. Pseudo R^2 was estimated using the equation suggested by Hox (2010). Model 1 in Table 3 presents the results of the control variables. Model 2 in Table 3 includes the independent variable. PFP had a positive and significant impact on employee creative performance ($\beta = .09$, $SE = .03$, $p < .01$). Thus, hypothesis 1 is supported.

Table 4 presents the results of hierarchical linear regressions predicting employee job satisfaction. Model 1 presents the results of the control variables. Model 2 includes the independent variable. PFP had non-significant impact on job satisfaction ($\beta = .01$, $SE = .06$, $n.s.$). Model 3 adds all of the moderators. Relatedness support had a positive and significant impact on employee job satisfaction ($\beta = .34$, $SE = .07$, $p < .01$). Model 4 includes the interaction term between PFP and autonomy support, Model 5 includes the interaction term between PFP and training, and Model 6 includes the interaction term between PFP and relatedness support. Model 7 is the fully saturated model that includes all of the independent variables, moderators, and interaction terms.

Hypothesis 3a concerned the moderating effect of autonomy support on the relationship between PFP and job satisfaction. As shown in Model 7, the interaction term

between PFP and autonomy support was significantly related to job satisfaction ($\beta = .13$, $SE = .06$, $p < .05$). Following the procedure suggested by Preacher, Curran, and Bauer (2006), I calculated and plotted two simple slopes of PFP on job satisfaction at high and low levels of autonomy support (i.e., 1 standard deviation around the mean). As shown in Figure 2, higher PFP was associated with higher job satisfaction when autonomy support was high ($\beta = .46$, $SE = .13$, $p < .01$). Although PFP also had a positive impact on job satisfaction when autonomy support was low ($\beta = .20$, $SE = .06$, $p < .01$), the effect size was significantly lower than when autonomy support was high ($difference = .25$, $SE = .12$, $p < .05$). Thus, Hypothesis 3a was partially supported.

Hypothesis 3b concerned the moderating effect of competence support on the relationship between PFP and job satisfaction. As shown in Model 7 in Table 4, the interaction term of PFP and competence support had no significant impact on job satisfaction ($\beta = -.06$, $SE = .10$, $n.s.$). Thus, Hypothesis 3b was not supported.

Hypothesis 3c concerned the moderating effect of relatedness support on the relationship between PFP and job satisfaction. As shown in Model 7 in Table 4, the interaction term between PFP and relatedness support significantly predicted job satisfaction ($\beta = .19$, $SE = .05$, $p < .01$). I further calculated and plotted simple effects of PFP on job satisfaction at the high and low levels of relatedness support. As shown in Figure 2, when relatedness support was high, PFP was positively associated with job satisfaction ($\beta = .52$, $SE = .12$, $p < .01$). When relatedness support was low, PFP also had a positive significant association with job satisfaction. But the coefficient was significantly lower ($\beta = .14$, $SE = .07$, $p < .05$) than when relatedness support was high ($difference = .38$, $SE = .11$, $p < .01$). Thus, Hypothesis 3c was partially supported.

Insert Figure 2 and Table 4 about here

Hypothesis 5a concerned the conditional indirect effects of PFP on creative performance via job satisfaction. The conditional indirect effect (or first-stage moderated mediation) occurs when the mediating process that links an independent variable to an outcome variable varies because the moderating variable accentuates or attenuates the relationship between the independent variable and the mediator (Edwards & Lambert, 2007; Muller, Judd, & Yzerbyt, 2005). First, Model 7 in Table 4 shows that autonomy support ($\beta = .13, SE = .06, p < .05$) and relatedness support ($\beta = .19, SE = .05, p < .01$) moderate the relationship between PFP and job satisfaction. Second, Model 5 in Table 3 shows that job satisfaction was positively associated with creative performance ($\beta = .26, SE = .04, p < .01$). Second, I estimated the paths from the hypothesized first-stage moderated mediation model and estimated the 95% confidence intervals (CIs) for these indirect effects using 20,000 resamples (Preacher & Selig, 2012). The results of these analyses are presented in Table 5. I found that both the indirect effect of PFP on creative performance attributable to job satisfaction ($\beta = .121, SE = .032, p < .01$) and the total effect of PFP on creative performance ($\beta = .132, SE = .064, p < .05$) were positive and statistically significant when autonomy support was high. When autonomy support was low, the total effect of PFP on creative performance was not statistically significant ($\beta = .066, SE = .062, 95\% CI = -.055 \text{ to } .188$) although the indirect effect via job satisfaction was positive and significant ($\beta = .054, SE = .028, 95\% CI = .002 \text{ to } .112$). Thus, Hypothesis 5a was partially supported.

Hypothesis 5b concerned the conditional indirect effects of PFP on creative

performance via job satisfaction under different levels of competence support. As shown in Table 5, the indirect effect of PFP on creative performance via job satisfaction was positive and significant both when competence support was high ($\beta = .071$, $SE = .036$, 95% $CI = .004$ to $.146$) and when competence support was low ($\beta = .103$, $SE = .038$, 95% $CI = .035$ to $.182$). However, the total effects were not statistically significant when competence support was high ($\beta = .083$, $SE = .066$, 95% $CI = -.045$ to $.212$) as well as when competence support was low ($\beta = .115$, $SE = .067$, 95% $CI = -.014$ to $.248$). Therefore, hypothesis 5b was not supported.

Hypothesis 5c concerned the conditional indirect effect of PFP on creative performance via job satisfaction at high and low levels of relatedness support. As shown in Table 5, when relatedness support was high, the indirect effect of PFP on creative performance via job satisfaction was positive and statistically significant ($\beta = .138$, $SE = .033$, 95% $CI = .078$ to $.208$). Yet when relatedness support was low, the indirect effect was insignificant ($\beta = .037$, $SE = .027$, 95% $CI = -.014$ to $.091$). Similarly, the total effect of PFP was positive and significant when relatedness support was high ($\beta = .150$, $SE = .065$, 95% $CI = .024$ to $.277$). But the total effect was not significant when relatedness support was low ($\beta = .048$, $SE = .061$, 95% $CI = -.071$ to $.169$). Therefore, Hypothesis 5c was partially supported.

Study 1 provides partial support for the hypotheses developed. PFP was more likely to be positively associated with employee job satisfaction and creative performance of R&D workers when there were high levels of support for autonomy and relatedness.

STUDY 2 METHODS

In study 2 I sought to constructively replicate and expand the findings from study

1 in several ways. First, I examined organizational-level data to test whether PFP has conditional effects on collective job satisfaction and organizational performance. Second, I distinguished between pay-for-individual performance and pay-for-organizational performance and tested whether both PFIP and PFOP have the same conditional effects on collective job satisfaction and organizational performance. Third, I tested the hypotheses using longitudinal data and panel data regression to boost the robustness of the findings in Study 2. Fourth, I strengthened the generalizability of my theoretical model by testing the hypotheses using a nationally representative data collected from multiple industries.

Sample and Procedures

This study used the Human Capital Corporate Panel (HCCP) survey data provided by the Korea Research Institute for Vocational Education and Training (KRIVET). This survey was designed to study the human resources of firms, to analyze how firms accumulate and utilize their human resources, and to investigate how employees respond to their organization's policies (e.g., Kim & Ployhart, 2014; Shaw, Park, & Kim, 2013). The survey was conducted biennially in 2005, 2007, 2009, 2011, and 2013 in cooperation with the Ministry of Employment and Labor, and the data were officially approved by the Korea National Statistical Office. KRIVET used the corporate annual financial data from the Korean Information Service (KIS) as a sample frame to select 1,899 firms in 2005.

KRIVET contacted HR managers at targeted firms and administered the HCCP survey using on-site interviews. Employee surveys were also conducted simultaneously using on-site interviews. A stratified random sample procedure was employed in selecting

employee-level respondents to be representative by age, gender, and rank. HR managers provided the information about PFP, competence support, firm size, firm age, pay level, benefit level, proportion of female employees, and CEO autonomy. Employees provided the information about their job satisfaction, autonomy support, and relatedness support. Organizational performance and R&D expenditure were drawn from the company's financial statement.

Usable data were received from 454 firms for a response rate of 23.91%.

KRIVET followed up this data collection in 2007, 2009, 2011, and 2013. Although KRIVET made an effort to retain the original panel organizations, on average, 15.45% of the panel organizations dropped out of the panel by the next survey round. To maintain representativeness of the sample, KRIVET added new organizations to the panel each survey year. After excluding missing data, the sample size of the four-wave panel data (HCCP 2007, 2009, 2011, and 2013) was 397 firm-year observations. Given the reduction of sample size due to missing values, I examined the differences between organizations that were and were not included in the final sample and found that there were generally no significant differences except for the industry composition. For example, the average number of employees in the final sample was 951.86 and it was not significantly different from the average number of employees in the original sample which was 965.31 ($t = .15$, $df = 396$, *n.s.*). Also, the average firm age in the final sample (30.40) and the original sample (30.08) were not significantly different each other ($t = .36$, $df = 396$, *n.s.*). However, manufacturing was the predominant industry sector in the final sample (76.83%) and it was overrepresented compared to the original sample (64.59%).

I note that the HCCP data were used by several previous studies because they are

large and publicly available. However, no study has looked at the effect of PFP on either employee or organizational outcomes. For example, Shaw, Park, and Kim (2013) examined curvilinear effects of voluntary turnover rates on firm financial performance through employee productivity. Previous studies also examined the effects of different kinds of HR practices such as selection (Kim & Ployhart, 2018) and training (Kim & Ployhart, 2014) on firm performance outcomes. However, this study focuses on the effects of PFP on collective job satisfaction and organizational performance. To the best of my knowledge, there is no study that looks at the impact of PFP on collective job satisfaction and organizational performance using the data. Consequently, the current study is substantially different from the previous studies in terms of research purposes and study variables.

Measures

Pay for performance. PFP intensity was reported by HR managers at the organizational level. In doing so, KRIVET differentiated PFIP and PFOP. PFIP was measured by the proportion of individual performance-related pay over total pay. A representative form of PFIP is individual incentives. Organizational PFP was measured by the proportion of organizational performance-related pay over total pay. Profit-sharing and gainsharing are common examples of organizational PFP. These are the organization-level variables and HR managers provided information on PFP. Given the potential for reverse causality, PFP was measured one year before the focal year.

Job satisfaction. HCCP measured job satisfaction with a four-item scale adopted from Hackman and Oldham (1974) and Witt and Nye (1992). Employees were asked to rate their job satisfaction on a 5-point scale ranging from 1, “strongly disagree

(dissatisfied),” to 5, “strongly agree (satisfied).” Items were “I am satisfied with my work,” “I am satisfied with my pay,” “I am satisfied with the relationship with my co-workers,” and “overall, I am satisfied with my job.” The mean of the responses of the four items was used for job satisfaction. The Cronbach’s alpha was .82. Individual ratings within organization were aggregated to create firm-level measures. The r_{wg} , ICC1, and ICC2 for this variable were .80, .14, and .82, respectively.

Organizational performance. I used return on assets (ROA) to capture the profitability of a firm. Although firm profitability is affected by numerous factors, this study measures organizational performance with ROA over other performance measures (e.g., productivity) because an organization will be interested in whether the use of PFP and other managerial practices enhances firm performance above and beyond the costs associated with it. ROA is one of the most widely used measures of firm profitability in management literature. ROA was calculated as net income over total assets. Given the potential for reverse causality, ROA was measured one year after the focal year.

Autonomy support. Autonomy support was measured with three items on a 5-point Likert scale that asked employees to rate their perceived degree of participative decision making, career opportunity, and autonomy as implemented at the firm level. Employee ratings were aggregated to the firm level. The r_{wg} , ICC1, and ICC2 for this variable were .81, .15, and .84, respectively.

Competence support. Researchers have long understood that training for skills and knowledge plays an important role in developing employee competency (Becker, 1983; Combs, Liu, Hall, & Ketchen, 2006; Crook et al., 2011; Mincer & Polacheck, 1974; Skaggs & Youndt, 2004). For example, on-the-job training (OJT) may provide employees

with firm-specific skills needed for their work, which also influences employees' perceptions of human capital investments (Raffiee & Coff, 2016). In addition, company-financed employee education may enable employees to accumulate general skills for work (Benson, Finegold, & Mohrman, 2004; Riley, Michael, & Mahoney, 2017). Therefore, I measured competence support using the logarithm of average amount of investment in training and development programs for employees (Hatch & Dyer, 2004; Shaw et al., 2013). HR managers provided information on the variable.

Relatedness support. While Study 1 measured relatedness-support using task-related support, HCCP did not have relevant items. Instead, relatedness support was measured by employee ratings of open communication. Open communication is a relevant measure of relatedness support because it allows employees to feel that they are an important part of the organization and managers care about what employees think about. These conditions may lead employees to perceive that they are cared for within a work environment. Using semi-structured focus group interviews, for example, Sparks et al. (2015) identified communication, along with task-related support and attentiveness, as one of the three important elements of relatedness support. Thus, in Study 2, relatedness support was measured with three items of open communication using a 5-point Likert scale. Sample questions were “In our company, employees can freely speak their opinions to their supervisor” and “our company shares organization information with all employees through managers or company-wide communication systems.” Relatedness support was aggregated to the unit level. The r_{wg} , ICC1, and ICC2 for this variable were .83, .15, and .85, respectively.

Control variables. A number of control variables were included that may affect

job attitudes and firm performance. First, I included the logarithm of total number of employees to control for organization size. Total number of employees was transformed using the natural logarithm because the original data had a skewed distribution (skewness = 5.53; kurtosis = 41.81; Shapiro–Francis normality test $p < .01$). Second, I controlled for firm age measured by the difference between the observation year and the firm’s founding year. Third, I controlled for pay and benefit levels that may correlate with job attitudes and firm performance (Brown, Sturman, & Simmering, 2003; Griffeth, Hom, & Gaertner, 2000). HR managers were asked to rate their pay level and benefit level compared to the average industry level on a 5-point scale ranging from 1, “very low,” to 5, “very high.” Fourth, I added year dummies to control for potential year-specific effects. Fifth, to account for employee compositions, the proportions of female employees and advanced degree holders were included. Although I controlled for gender the individual-level, I also controlled for the proportion of female at the unit-level because there may be effects of working in a male-dominant or female-dominant group separate from the effects of one’s own gender. Sixth, industry was controlled for using dummy variables (SIC2- digit level) because the levels of job satisfaction and organizational performance can vary across industries. Seventh, R&D expenditure was included to account for organizational goals. R&D expenditure was measured by natural log of research and development expenditure of the firm. Lastly, I controlled for CEO autonomy because it may positively affect firm performance (Haleblian and Finkelstein, 1993). Also, CEO autonomy is positively related to the CEO’s psychological ownership and stewardship behavior (Henssen, Voordeckers, Lambrechts, & Koiranen, 2014; Ramos, Man, Mustafa, & Ng, 2014), which in turn positively affect employee’s job satisfaction (Sieger,

Bernhard, & Frey, 2011) and firm performance (Peterson, Galvin, & Lange, 2012). CEO autonomy was measured by a one-item measure scored on a five-point scale.

Respondents were asked to indicate the degree to which their CEO has managerial discretion, ranging from 1, “doesn’t exist,” to 5, “completely discretionary.” Variable definitions and measurement items are provided in Appendix D and E respectively.

Analytic Strategy

To test the hypothesized model, I used panel data regressions in order to model the unobserved organizational effects. In the dataset, random-effects models were preferred as the number of unique firms is relatively large while the number of years they were observed is small (Lavie & Rosenkopf, 2006; Sanders & Hambrick, 2007). The validity of the random-effects methods was further supported by a Hausman test (Baltagi, 1995). The results show that explanatory variables were not correlated with the unobserved effects, and therefore, random effect models were preferred. I further examined the fixed effect models and the results were generally consistent with the results of random effect models. To test the conditional indirect effects (moderated mediation), I followed Preacher, Rucker, & Hayes’ (2007) method. Specifically, I used a bootstrapping-based approach via R program with 20,000 iterations to calculate bias-corrected intervals (CIs) to estimate indirect effects (Edwards & Lambert, 2007; Hu & Liden, 2015; Preacher & Selig, 2012; Shrout & Bolger, 2002).

The formulation of the random-effects model for collective job satisfaction was:

$$Y_{it} = a + X_{it}\beta + u_i + \varepsilon_{it} ,$$

where Y_{it} is the collective job satisfaction for unit i in year t . X_{it} is a vector of independent variables for unit i in year t and a is the intercept. The term u_i is a random

disturbance that characterizes the i^{th} unit. Lastly, ε_{it} is a unit-year specific random disturbance.

STUDY 2 RESULTS

Insert Table 6, 7, and 8 about here

Hypothesis Tests

Table 6 presents the means, standard deviations, alphas, and correlations of the study and control variables. Correlations among the study variables are generally consistent with prior research with respect to their direction and magnitude.

Hypothesis 2 concerned the direct effect of PFP on organizational performance. Table 7 presents the results of panel data regressions predicting organizational performance. As shown in Model 2 in Table 7, PFOP had a positive and significant impact on organizational performance ($B = .120, SE = .029, p < .01$). However, PFIP had an insignificant impact on organizational performance ($B = .024, SE = .051, n.s.$). Thus, hypothesis 2 was partially supported. Specifically, only PFOP had a positive impact on organizational performance.

Hypothesis 4a concerned the moderating effect of autonomy support on the relationship between PFP and collective job satisfaction. As shown in Model 2 in Table 8, both PFIP and PFOP had non-significant impacts on collective job satisfaction ($B = .003, SE = .002, n.s.$; $B = .002, SE = .001, n.s.$). I next entered the interaction term between autonomy support and PFIP. As shown in Model 4, the interaction term had a significant impact on collective job satisfaction ($B = .014, SE = .005, p < .01$). The interaction term was also significant when all interaction terms were included in Model 6 ($B = .014, SE = .005, p < .01$). I calculated and plotted simple effects of PFIP on collective job

satisfaction at high and low levels of autonomy support (i.e., 1 standard deviation around the mean). As shown in Figure 3, when autonomy support was high, higher PFIP was associated with higher collective job satisfaction ($B = .007, SE = .003, p < .01$). However, when autonomy support was low, PFIP had a negative but non-significant impact on collective job satisfaction ($B = -.002, SE = .003, n.s.$). Contrary to PFIP, the interaction term between PFOP and autonomy support had no significant effect on job satisfaction ($B = .001, SE = .003, n.s.$) as shown in Model 5 and 6 in Table 8. Thus, Hypothesis 4a was partially supported.

Hypothesis 4b concerned the moderating effect of competence support on the relationship between PFP and collective job satisfaction. As shown in Model 4 in Table 8, the interaction term of PFIP and competence support had no significant impact on collective job satisfaction ($B = .000, SE = .001, n.s.$). The interaction term was also insignificant when all other interaction terms were included in Model 6 ($B = .000, SE = .001, n.s.$). The interaction term of PFOP and competence support was also insignificant as shown in Model 5 ($B = .000, SE = .001, n.s.$) and Model 6 ($B = .000, SE = .001, n.s.$) in Table 8. Thus, Hypothesis 4b was not supported.

Hypothesis 4c concerned the moderating effect of relatedness support on the relationship between PFP and collective job satisfaction. As shown in Model 4 in Table 8, the interaction term between PFIP and relatedness support significantly predicted collective job satisfaction ($B = .008, SE = .004, p < .05$). The interaction term was also statistically significant even when other interaction terms were included in Model 6 ($B = .008, SE = .004, p < .05$). I further calculated and plotted simple effects of PFIP on collective job satisfaction at the high and low levels of relatedness support. As shown in

Figure 3, when relatedness support was high, PFIP was positively associated with collective job satisfaction ($B = .006$, $SE = .003$, $p < .05$). However, when relatedness support was low, PFIP had no significant association with collective job satisfaction ($B = .000$, $SE = .003$, $n.s.$). Contrary to PFIP, the interaction term between PFOP and relatedness support was not statistically significant as shown in Model 5 ($B = .001$, $SE = .003$, $n.s.$) and Model 6 ($B = .001$, $SE = .003$, $n.s.$) in Table 8. Thus, Hypothesis 4c was partially supported.

Insert Figure 3 and Table 9 about here

Hypothesis 6a concerned the conditional indirect effects of PFP on ROA via collective job satisfaction. The conditional indirect effect (or first-stage moderated mediation) occurs when the mediating process that links an independent variable to an outcome variable varies because the moderating variable accentuates or attenuates the relationship between the independent variable and the mediator (Edwards & Lambert, 2007; Muller, Judd, & Yzerbyt, 2005). First, Model 5 in Table 8 shows that collective job satisfaction was positively associated with subsequent ROA ($B = 3.209$, $SE = 1.552$, $p < .05$). Second, I estimated the paths from the hypothesized first-stage moderated mediation model and estimated the 95% confidence intervals (CIs) for these indirect effects using 20,000 resamples (Preacher & Selig, 2012). The results of these analyses are presented in Table 9. I found that the indirect effect of PFIP on ROA attributable to collective job satisfaction was positive and statistically significant ($B = .053$, $SE = .033$, $p < .05$) when autonomy support was high. However, when autonomy support was low, the indirect effect was negative and insignificant ($B = -.036$, $SE = .027$, $n.s.$). On the other

hand, the indirect effects of PFOP on ROA attributable to collective job satisfaction were insignificant both at high ($B = .006, SE = .013, n.s.$) and low ($B = .008, SE = .013, n.s.$) levels of autonomy support. Thus, Hypothesis 6a was partially supported.

Hypothesis 6b concerned the conditional indirect effects of PFP on ROA via collective job satisfaction under high and low levels of competence support. As shown in Table 5, the indirect effect of PFIP on ROA via collective job satisfaction was positive but insignificant ($B = .008, SE = .009, n.s.$) when competence support was high. Also, the indirect effect ($B = .008, SE = .009, n.s.$) was not statistically significant when competence support was low. Similarly, the indirect effect of PFOP on ROA via collective job satisfaction was insignificant when competence support was high ($B = .006, SE = .006, n.s.$) as well as when they were low ($B = .007, SE = .007, n.s.$). Therefore, hypothesis 6b was not supported.

Hypothesis 6c concerned the conditional indirect effect of PFP on ROA via collective job satisfaction at high and low levels of relatedness support. As shown in Table 9, when relatedness support was high, the indirect effect of PFIP on ROA via collective job satisfaction was positive and statistically significant ($B = .035, SE = .023, p < .05$). Yet when relatedness support was low, the indirect effect was negative and insignificant ($B = -.018, SE = .019, n.s.$). On the other hand, the indirect effects of PFOP were insignificant when relatedness support was high ($B = .011, SE = .014, n.s.$) as well as when it was low ($B = .003, SE = .013, n.s.$). Therefore, Hypothesis 6c was partially supported.

Robustness Tests

I examined the robustness of the findings. First, I explored the models by

controlling for prior job satisfaction and prior firm performance in order to address the endogeneity issue. Interestingly, the results remained largely the same even after controlling for prior job satisfaction and prior firm performance. For example, autonomy support ($B = .019, SE = .007, p < .01$) and relatedness support ($B = .013, SE = .005, p < .01$) had significant moderating effects on the relationship between PFIP and collective job satisfaction and collective job satisfaction had a positive and significant impact on organizational performance ($B = 5.340, SE = 2.029, p < .01$). These results indicate the results reported here are robust against endogeneity issues.

Second, I noted that the correlation between firm size and total assets was somewhat high ($\rho = .80$). Thus, I explored the models by eliminating either firm size or total assets. I found that the results show the same patterns and statistical significance of the findings reported in this study. Thus, the results were largely robust against the choice of control variables.

Third, I combined the PFIP and PFOP measures to construct an overall PFP measure that is comparable to the measure of PFP in Study 1. However, I found no significant interaction effects between the overall PFP and autonomy, competence, and relatedness support in predicting collective job satisfaction. These results suggest that only PFIP has conditional effects on collective job satisfaction and organizational performance depending on the organizational context.

Fourth, I controlled for CEO autonomy because CEOs drive strategic changes in firms that have implications for firm performance (Blettner, Chaddad, & Bettis, 2012; Nadkarni & Herrmann, 2010; Peterson, Smith, Martorana, & Owens, 2003) and the extent to which CEOs influence firm performance at least partially depends on CEO

discretion to influence firm policies (Hambrick & Finkelstein, 1987; Lilienfeld-Toal & Ruenzi, 2014). For example, Henssen, Voordeckers, Lambrechts, and Koironen (2014) found that CEO autonomy is positively related to his or her stewardship behavior, which may in turn positively affects employee's attitudes and organizational performance. Similarly, Halebian and Finkelstein (1993) found that CEO dominance was significantly related to firm performance in a high-discretion environment. However, one may argue that CEO autonomy is not an essential control variable for collective job satisfaction and organizational performance. Therefore, I explored the models by eliminating CEO autonomy. I found that the results show the same patterns of the findings reported in this study. Thus, the results were largely robust against the choice of control variables.

DISCUSSION

Nearly 90% of organizations in the U.S. use PFP (WorldatWork, 2016). Accordingly, understanding why, how, and when PFP results in higher job satisfaction and performance outcomes is beneficial for scholars as well as practitioners. The purpose of this dissertation is to investigate why, how, and when PFP contributes to performance outcomes through job satisfaction at both the individual and organizational levels in the workplace. The findings suggest that (a) PFP has conditional effects on job satisfaction, and furthermore (b) PFP has conditional indirect effects on employee and organizational performance through job satisfaction. In addition to the indirect effects, (c) PFP has a direct impact on organizational performance. In addition, PFOP had a stronger, and statistically significant, impact on organizational performance than did PFIP. Consequently, the empirical test of the theoretical model in this study suggests that autonomy support and relatedness support are important organizational contexts that

facilitate the internalization of the value of PFP and thus positively affect job satisfaction and performance outcomes.

Theoretical Implications

This study contributes to a more comprehensive understanding of the effects of PFP on job satisfaction and performance outcomes. First, by integrating economic perspectives on PFP and psychological theory of self-determination, this study provides a more complete understanding of the effects of PFP on employee and organizational performance by decomposing the total effects into their direct and indirect components. While economic perspectives generally argue that PFP should enhance performance outcomes through incentive and sorting effects (Lazear, 2000), the psychological theory of self-determination proposes that PFP may have a negative impact on job attitudes (e.g., job satisfaction, locus of control, task interest, etc.) when organizational support for autonomy, competence, and relatedness is low and unfavorable job attitudes can hamper the motivating effects of PFP (Gagné & Deci, 2005). My findings offer a middle-ground perspective between these two perspectives. Consistent with economic perspectives, PFP generally had a positive direct effect on employee and organizational performance. Likewise, consistent with self-determination theory, the total effect of PFP on performance outcomes was positive only when autonomy and relatedness support were high because of the conditional indirect effect of PFP on performance outcomes via job satisfaction. Thus, this study contributes to the literature by unifying the various theoretical perspectives (Maltarich et al., 2017; Nyberg et al., 2016).

Second, and related to the first implication, it is noteworthy to mention that economists (psychologists) do recognize the importance of psychological (economic)

elements of PFP. For example, motivation crowding-out theory suggests that external interventions such as PFP can crowd out (undermine) people's intrinsic motivation (Frey & Jegen, 2001; Frey & Oberholzer-Gee, 1997). In addition, the theory of residual control and residual returns argues that "tying together residual returns and residual control is the key to the incentive effects" (Milgrom & Roberts, 1992, p. 291). These economic theories are quite consistent with self-determination theory that emphasizes the importance of autonomy support in maximizing the effectiveness of PFP. Likewise, expectancy theory (Vroom, 1964) suggests that tying financial incentives to performance enhances employee effort and performance and the attraction-selection-attrition model. (Schneider, 1987) posits that people are attracted to and selected into organizations based on the fit between their personal preferences and the attributes of the organization. These psychological theories are quite consistent with economic theories that expect PFP enhances performance outcomes through incentive and sorting effects. While researchers have devoted increasing attention to integrating the two disciplines, this study further shows that this is a promising path to pursue in future research and the two disciplines can benefit from each other.

Third, researchers in this field recently have called for more empirical studies on the conditions under which PFP may have stronger or weaker effects (Byron & Khazanchi, 2012; Gerhart & Fang, 2015). Indeed, the vast majority of empirical studies that have applied self-determination theory have focused on the negative effects of extrinsic motivation. In truth, however, self-determination theory makes a clear distinction between extrinsic motivation and controlled motivation and suggests that extrinsic regulations such as monetary rewards can be transformed into personally

endorsed autonomous motivation in the forms of identified and integrated regulation under certain conditions (Deci & Ryan, 2000). Drawing on self-determination theory, I identified autonomy, competence, and relatedness support as important contextual factors that facilitate the internalization of PFP and thus yield positive job attitudes. This study provides some support for the idea.

Fourth, this study contributes to the strategic HR literature by assessing the interaction effects between HR practices not only on organizational performance, but also on employee job satisfaction and employee performance. The strategic HR literature has suggested the concept of internal (or horizontal) fit that argues multiple complementary HR practices implemented in concert are more likely to contribute to the desired employee and organizational performance outcomes than any individual HR practice (Delery & Gupta, 2016; Gerhart, 2007). The AMO perspective further develops this idea by suggesting that there will be synergistic effects between ability (A), motivation (M), and opportunity (O) enhancing HR practices. For example, Delery & Gupta (2016) found some evidence that HRM practices across AMO domains (i.e., staffing, performance-based pay, and participation in decision making) can enhance each other's effectiveness in improving organizational effectiveness. Given that PFP is a motivation enhancing HR practice while autonomy and relatedness supports are closely related with opportunity enhancing HR practices, the results of this study are not only consistent with the internal fit conceptualization in strategic HR, but also contribute to the perspective by showing that HR practices can enhance each other's effectiveness in improving job satisfaction.

Fifth, the results imply that the distinction between PFIP and PFOP is important. Specifically, this study found that only PFIP has a conditional effect on collective job

satisfaction under different levels of autonomy and relatedness support. Although this study did not aim to unpack the different effects of PFIP and PFOP, the results imply that self-determination theory may not work well for PFOP. This may partly due to the unique characteristics of PFOP (Barns, Hollenbeck, Jundt, DeRue, & Harmon, 2011; Conroy & Gupta, 2016). Contrary to PFIP, PFOP aligns financial incentives of employees with organizational performance, which leads to cooperation, knowledge sharing, and extra-role behaviors (Barnes et al., 2011; Kruse et al., 2010). Moreover, Arthur (1992) and Ichniowski et al., (1997) found that organizations tend to use PFOP (e.g., profit sharing, gain sharing, and employee stock ownership) along with other commitment-oriented HR practices (e.g., team-based work, employment security, job rotation, etc.) that enhance employee commitment and satisfaction. Within the cooperative culture and the commitment-oriented HR system, employees will be less likely respond negatively to PFOP. Previous empirical studies that rely on self-determination theory tend to be based on an assumption, often implicit, that PFP most often takes the form of an individual incentive. Given many organizations use PFOP and it is one type of extrinsic rewards, however, self-determination theory should be incorporated into a more comprehensive theoretical framework in order to better answer to the questions about how employees perceive each type of PFP differently.

Sixth, related to the previous point, I found that PFOP had a stronger, and statistically significant, impact on organizational performance than did PFIP in Study 2. This is an interesting result because expectancy theory (Vroom, 1964) suggests that PFIP may provide stronger sorting and incentive effects than PFOP (Bretz et al. 1989, Lazear 1986, Trank et al. 2002, Trevor et al. 1997) because the link between effort and

performance is more direct and clear for PFIP (my effort and my performance) compared to PFOP (my effort and my organization's performance). Furthermore, the effectiveness of PFOP can be weakened because of free-rider problems. As employees gain only $1/N$ th (N = number of organizational members) of the rewards from their efforts under PFOP, there are potential threats of free riders who may exploit such collective efforts and rewarding situations by shirking while others exert effort to improve organizational performance (Kang & Kim, 2018; Kruse et al., 2010). This possibility may reduce the incentive effect of PFOP. However, the results of this study support the idea that PFOP is more effective than PFIP in improving firm performance rather than individual performance. This result might be explained by agency theory. The agency theory involves two parties engaged in a relationship wherein the principals (i.e., owners) delegate work to the agents (i.e., managers and employees) on their behalf. While principals are most interested in firm performance, agents have their own interests and are risk averse. Thus, agents may not behave in a manner consistent with the interest of the principals which results in agency costs. Agency theory has highlighted the role of financial incentives in aligning the objectives of principals with those of agents (Bethel & Liebeskind, 1993; Eisenhardt, 1989). PFOP such as stock ownership and stock options can be effective in addressing such agency problems because principals are ultimately interested in maximizing their profit through improved firm performance. Given that PFOP rewards employees based on organizational performance, employees may exert their effort to improve firm performance. Under PFIP, however, employees will focus on their individual performance which may not always help in improving organizational performance (Bloom, 1999). Moreover, focusing too much on individual performance

may discourage group cohesion, teamwork, and information sharing (Milgrom & Roberts, 1988; Pfeffer, 1998) which are strong predictors of group performance (Evans, & Dion, 1991; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Mesmer-Magnus & DeChurch, 2009). On the other hand, providing PFOP may inform employees that behaviors that contribute to the organization's overall performance are expected and rewarded.

Therefore, PFOP encourages productive teamwork, knowledge sharing, and mutual monitoring (Arthur & Kim, 2005; Baker et al., 1988; Han et al., 2010; Kruse et al., 2010; Pearsall et al., 2010) that contribute to the organization's overall performance. The results of this study supported this view.

Seventh, this study did not find evidence that PFP has a negative impact on job satisfaction when autonomy, competence, and relatedness support is low. This is somewhat contradictory to the self-determination theory (Gagné & Deci, 2005) and other empirical studies that have found the negative impact of PFP on job attitudes (Deci et al., 1999). One plausible explanation is that a detrimental effect of PFP on job attitudes would be less likely to be observed in the workplace (Gerhart & Fang, 2015). Indeed, most of the studies included in Deci et al. (1999)'s meta-analysis were experimental studies that used student samples. Moreover, they found that PFP was "more detrimental for children than for college students (Deci et al., 1999, p.656)." This result indicates that PFP will be less detrimental for adults. Indeed, Fang & Gerhart (2012) examined the relationship between PFIP and intrinsic interest in workplace settings and found that PFIP has a positive, rather than negative, impact on task interest. The results of this study are not only consistent with Fang & Gerhart (2012) in that PFP is not detrimental in general, but also provide new evidence that PFP has no detrimental impact on job satisfaction

even under the low level of autonomy, competence, and relatedness support in workplace settings.

Practical Implications

In addition to its theoretical contributions, this study has important practical implications for managers in firms adopting or considering PFP practices. A core implication is that providing PFP is not sufficient for motivating employees and achieving desired performance outcomes. Although most private sector organizations use PFP (Gerhart, 2017) with the expectation that PFP will improve performance outcomes, my results show that the positive total effects of PFP on performance outcomes are not statistically significant when the organization provides a low level of autonomy and relatedness support. This suggests that, when using PFP, organizations should consider providing autonomy and relatedness support for employees. When such supports are absent, employees will feel that their behavior at the workplace is controlled by external contingencies, and consequently be less satisfied with their jobs. Thus, managers may want to think carefully about providing autonomy and relatedness support to maximize the effectiveness of PFP on collective job satisfaction and organizational performance.

In addition, this study provides important practical implications for managers in firms that are providing PFP as well as those in firms that are considering PFP plans by estimating the practical significance of the direct, indirect, and total effects of PFP on performance outcomes through job satisfaction. Specifically, I calculated the impact of a one-standard deviation change in PFP from the mean under high (+1SD from the mean) and low (-1SD from the mean) autonomy, competence, and relatedness support. In firms with high autonomy support, an increase of one standard deviation in PFP was

associated with .36 percentage points increase in ROA from the mean of 3.25% to 3.61%, an increase of 11.08% ($3.61 / 3.25 - 1 = 11.08\%$). Similarly, an increase of one standard deviation in PFIP was associated with .24 percentage points increase in ROA from the mean of 3.25% to 3.49%, an increase of 7.38% ($3.49 / 3.25 - 1 = 7.38\%$) in firms with high relatedness.

Limitations and Future Research

Although this study may provide several implications for the literature on PFP, it also has several limitations. First, this study did not distinguish among different types of PFP besides the distinction between individual and organizational PFP. As I noted earlier, organizations may use multiple PFP practices simultaneously and they can have distinct effects on employee outcomes, especially when they are combined with other HR practices. The present study provided some insights into the distinct effects of different types of PFP (i.e., individual and organizational PFP), but future work may benefit from distinguishing PFP differently. For example, Nyberg et al. (2016) found that bonus pay has a stronger positive impact on employee performance than merit pay. Future researchers could categorize PFP based on reward contingency (Byron & Khazanchi, 2012).

Second, I tested the effects of PFP on employee and organizational outcomes in the Korean context. The key argument of this study regards the conditional effects of PFP on job satisfaction and performance outcomes, which is based on self-determination theory. Cross-cultural tests of self-determination theory have validated the theory and therefore the results from other countries are not likely to be significantly different from the results reported here. However, considering that South Korea scores slightly higher

than average on performance orientation (Rabl, Jayasinghe, Gerhart, & Kuhlmann, 2014), there could be concerns regarding the generalizability of the findings to other institutional and cultural contexts. Although the theoretical framework is derived from non-culturally specific literature, generalizability remains a central concern, and future studies should test whether the conclusions apply universally.

Third, while this study focuses on the organizational context, another area worth exploring is the question of whether PFP and individual characteristics interplay in predicting work-related outcomes. Based on the assumption that individual differences can lead different people to experience the same compensation scheme differently, scholars recently began to suggest that individuals vary in the strength of their reactions to PFP. A compensation-activation theory proposed that there are certain types of individuals who are more likely to be affected by sorting and incentive effects of PFP (Fulmer & Shaw, 2018). For example, Cadsby et al. (2007) found that risk aversion was negatively associated with choice of PFP from their experiment and Dohmen & Falk (2011) found that less productive workers tend to choose fixed pay over variable pay. Similarly, Fehrenbacher, Kaplan & Pedell (2017) found that risk aversion and low skill level were related with choice of fixed pay over incentive pay. Future studies should explore these individual characteristics that might influence how PFP are perceived and internalized.

Fourth, this study did not find a significant interaction effect of competence support in the relationship between PFP and job satisfaction. One possibility is that the organization's intended competence support was not fully transmitted to the employees. Nishii et al. (2008) suggests that "in order for HR practices to exert their desired effect on

employee attitudes and behaviors, they first have to be perceived and interpreted subjectively by employees in ways that engender such attitudinal and behavioral reactions” (Nishii et al., 2008, p. 504). The degree to which the intended competence support is transmitted to perceived competence support can vary depending on the organizational context. Another possibility is associated with the measure of competence support in this study. I measured competence support with extensive training and assumed that extensive training will provide employees with competence with which to perform their job well. However, in some cases, organizations may provide training that is not task relevant. If an organization provides extensive but task-irrelevant training, employees will less likely to have favorable attitudes toward PFP and their jobs because it may not help them to be better rewarded. Future studies, therefore, should more directly measure competence support (e.g., task relevant training) to test the conditional effect of PFP on job attitudes.

Fifth, this study focuses on the conditional effect of PFP on job satisfaction and did not test the effects of PFP on other job attitudes such as task interest, locus of control, and intrinsic motivation. Although self-determination theory suggests that job satisfaction is one of the important outcomes of PFP that is closely related to intrinsic motivation, we still don’t know much about the conditional effects of PFP on other job attitudes such as task interest, locus of control, and intrinsic motivation in workplace settings. Future studies should examine the conditional effects of PFP on these job attitudes as well as job satisfaction.

Sixth, although I distinguished PFIP and PFOP in Study2, this study did not develop hypotheses for the effects of each of PFIP and PFOP on collective job

satisfaction. This is because PFOP is, by definition, an extrinsic reward like PFIP. Interestingly, however, this study found that only PFIP had a conditional effect on collective job satisfaction under different levels of autonomy and relatedness support. These results imply that PFIP can be perceived to be more controlling than PFOP. Indeed, self-determination theory has been focused on PFIP almost exclusively even though many organizations use PFOP such as profit sharing, gain sharing, and employee stock ownership. Future research may want to test the different effects of PFIP and PFOP on job attitudes and develop sound theories on it.

Lastly, due to data unavailability, this study did not control for other HR practices other than selective staffing in Study 1. Indeed, HR literature suggests that HR practices work together as systems. This perspective suggests that individual HR practices can complement or conflict with other practices and therefore researchers should examine the entire HR system or examine an HR practice controlling for other HR practices (Wright and Boswell, 2002). Although three moderators included in this study are closely related to important HR practices (i.e., employee empowerment, extensive training, and open communication), the omission of other HR practices may lead to underestimates or overestimates of the true effects of PFP (Kim and Gong, 2009). Future PFP studies should control for other HR practices.

CONCLUSION

Despite the importance of PFP and their widespread use in organizations, empirical evidence supporting the effectiveness of PFP is at best mixed. Therefore, scholars have recently called for investigations of the boundary conditions for effectiveness of PFP (Byron & Khazanchi, 2012; Maltarich, Nyberg, Reilly, & Martin,

2017; Nyberg, Pieper, & Trevor, 2016). Indeed, the role of organizational context has been relatively absent from PFP research (Gupta & Shaw, 2014; Maltarich et al., 2017; Nyberg et al., 2016), which potentially can explain the mixed research results as well as the differing opinions about the effectiveness of PFP. The primary objective of this study was to gain a more complete understanding of PFP by illuminating boundary conditions on the effectiveness of PFP on job satisfaction and performance outcomes. I specifically expected that PFP may have a positive impact on job satisfaction and performance outcomes if the organization adopts PFP along with autonomy, competence, and relatedness support. Using multi-level data collected from workplace, Study 1 found that autonomy support and relatedness support increase the strength of the relationship between PFP and desired outcomes such as job satisfaction, creative performance, and organizational performance. This means that employees are more likely to be satisfied with their job when the organization provides PFP along with other HR practices that support employee autonomy and relatedness. Using rich panel data, Study 2 further found that the conditional effects of PFP on collective job satisfaction and organizational performance are moderated by autonomy support and relatedness support which is consistent with the results of Study 1. However, PFP had no significant impact on job satisfaction and had generally positive impact on organizational performance regardless the levels of autonomy, competence, and relatedness support. The results indicate that PFP needs to be investigated in the broader context of the organizations and self-determination theory does not work well for PFP.

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TABLE 1
Types of Extrinsic Motivation

	Extrinsic Motivation			
Type of regulation	External regulation	Introjection	Identification	Integration
Description	Behaviors controlled by demands or contingencies external to the person	Act to gain approval from self or others. Do not fully understand purpose	Behaviors become personally important	Behaviors become central to self-identity
Degree of self-regulation	Very low	Moderately low	Moderately high	Very high
Locus of causality	External	Somewhat external	Somewhat internal	Internal
Expected effect on job satisfaction	Negative	Somewhat negative	Somewhat positive	Positive

TABLE 2
Study 1: Descriptive Statistics for Study and Control Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
<i>Organization-level variables</i>										
1. Organization age	19.86	14.68								
2. Organization size	3.44	.91	-.11							
3. % of female employees	.19	.20	-.02	-.12						
4. R&D investments	10.44	59.26	.14	.05	-.04					
5. Selective staffing	3.61	.52	-.02	.11	-.20	.34*				
6. Pay-for-performance	12.14	19.26	-.04	.18	-.22	.04	.00			
7. Autonomy support	3.39	.44	.18	-.25	.10	.20	.01	-.12		
8. Competence support	2.98	.69	.13	.09	.01	.36*	.43*	.01	.26	
9. Relatedness support	3.56	.33	.00	-.24	-.08	-.21	-.03	-.14	-.06	-.04
<i>Individual-level variables</i>										
1. Female	.20	.40								
2. Seniority	5.15	4.68	-.13*							
3. Salary level	2.71	1.20	-.22*	.54*						
4. Job satisfaction	3.22	.75	-.03	-.13*	-.04					
5. Creative performance	3.56	.53	-.11	-.11	.09	.38*				

Note. Individual $n = 280$. Organization $n = 49$.

* $p < .05$.

TABLE 3
Study 1: Results of Hierarchical Linear Regression Predicting Creative Performance

	Creative Performance									
	Model 1		Model 2		Model 3		Model 4		Model 5	
(Constant)	3.52**	(.12)	3.57**	(.12)	3.69**	(.12)	3.66**	(.13)	3.77**	(.18)
Organization size	-.07	(.04)	-.08*	(.04)	-.05	(.04)	-.03	(.04)	-.01	(.04)
Organization age	-.05	(.04)	-.04	(.04)	-.08	(.05)	-.08	(.05)	-.08	(.04)
R&D expenditure	.00	(.04)	-.02	(.04)	.02	(.04)	.03*	(.05)	-.02	(.04)
Female employees (%)	.11*	(.04)	.13**	(.04)	.15**	(.05)	.15**	(.05)	.13**	(.05)
Selective staffing	.08	(.06)	.11	(.06)	.10	(.06)	.09	(.07)	.04	(.06)
Female	-.10**	(.03)	-.10**	(.03)	-.09**	(.03)	-.09**	(.03)	-.09**	(.03)
Seniority	-.10*	(.04)	-.10*	(.04)	-.09*	(.04)	-.08*	(.04)	-.06	(.04)
Salary level	.11*	(.05)	.14**	(.05)	.13*	(.05)	.12*	(.05)	.14**	(.05)
Pay-for-performance (PFP)			.09**	(.03)	.11**	(.03)	.10	(.06)	.01	(.06)
Autonomy support					.02	(.04)	.01	(.05)	.04	(.06)
Competence support					.04	(.04)	.02	(.05)	.04	(.04)
Relatedness support					.14**	(.04)	.14**	(.05)	.02	(.05)
PFP × Autonomy							-.01	(.04)	-.04	(.04)
PFP × Competence							-.08	(.07)	-.06	(.07)
PFP × Relatedness							-.01	(.04)	-.06	(.04)
Job satisfaction									.26**	(.04)
Industry dummies	Yes		Yes		Yes		Yes		Yes	
<i>Log likelihood</i>	-197.026		-193.6853		-187.184		-186.44		-165.27	
<i>Wald chi2</i>	50.31**		58.29**		74.37**		76.26**		134.40**	
<i>Pseudo R-squared</i>	.51		.53		.57		.58		.69	

Note. $n = 280$ individuals in 49 teams. PFP refer to pay for performance. Standardized coefficients are reported. Standard errors are in parentheses.

* $p < .05$, ** $p < .01$

TABLE 4
Study 1: Results of Hierarchical Linear Regression Predicting Job Satisfaction

	Job satisfaction													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
(Constant)	3.25**	(.21)	3.26**	(.21)	3.53**	(.19)	3.60**	(.19)	3.52**	(.19)	3.67**	(.18)	3.77**	(.18)
Organization size	-.07	(.07)	-.07	(.07)	-.01	(.06)	-.01	(.06)	.00	(.06)	-.08	(.06)	-.08	(.06)
Organization age	.06	(.08)	.07	(.08)	.00	(.07)	-.02	(.07)	.01	(.07)	.04	(.07)	.03	(.07)
R&D expenditure	.04	(.07)	.04	(.07)	.16*	(.07)	.16*	(.07)	.17*	(.07)	.16**	(.06)	.19**	(.07)
Female employees (%)	-.04	(.08)	-.04	(.09)	-.01	(.08)	.01	(.08)	.00	(.08)	.03	(.07)	.06	(.07)
Selective staffing	-.03	(.10)	-.02	(.10)	.04	(.10)	.05	(.09)	.03	(.10)	.15	(.09)	.17	(.09)
Female	.02	(.05)	.02	(.05)	.02	(.05)	.02	(.05)	.02	(.05)	.00	(.05)	-.01	(.05)
Seniority	-.13*	(.06)	-.13*	(.06)	-.09	(.06)	-.08	(.06)	-.08	(.06)	-.08	(.06)	-.07	(.06)
Salary level	-.03	(.07)	-.03	(.07)	-.05	(.07)	-.06	(.07)	-.06	(.07)	-.04	(.07)	-.05	(.07)
Pay-for-performance (PFP)			.01	(.06)	.08	(.05)	.16*	(.08)	.08	(.05)	.22**	(.06)	.33**	(.08)
Autonomy support					-.03	(.07)	-.02	(.07)	-.04	(.07)	-.09	(.06)	-.09	(.06)
Competence support					-.05	(.07)	-.03	(.07)	-.05	(.07)	-.07	(.06)	-.07	(.07)
Relatedness support					.34**	(.07)	.36**	(.07)	.34**	(.07)	.41**	(.07)	.43	(.07)
PFP × Autonomy							.10	(.07)					.13*	(.06)
PFP × Competence									-.06	(.11)			-.06	(.10)
PFP × Relatedness											.18**	(.05)	.19**	(.05)
Industry dummies	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Log likelihood	-300.92		-300.906		-290.653		-289.46		-290.50		-285.898		-283.51	
Wald chi2	17.98		18.02		47.33**		50.87**		48.01**		71.39**		77.44**	
Pseudo R-squared	.18		.18		.37		.40		.37		.53		.55	

Note. $n = 280$ individuals in 49 teams. PFP refer to pay for performance. Standardized coefficients are reported. Standard errors are in parentheses.

* $p < .05$, ** $p < .01$

TABLE 5
Study 1: Summary of Indirect Effects of PFP on Creative Performance via Job Satisfaction

IV	Moderator	Indirect Effect				Direct Effect				Total Effect			
		B	SE	LL	UL	B	SE	LL	UL	B	SE	LL	UL
PFP	High autonomy	.121**	.032	[.063	.189]	.012	.055	[-.097	.120]	.132*	.064	[.008	.259]
	Low autonomy	.054*	.028	[.002	.112]	.012	.055	[-.097	.120]	.066	.062	[-.055	.188]
	High competence	.071*	.036	[.004	.146]	.012	.055	[-.097	.120]	.083	.066	[-.045	.212]
	Low competence	.103**	.038	[.035	.182]	.012	.055	[-.097	.120]	.115	.067	[-.014	.248]
	High relatedness	.138**	.033	[.078	.208]	.012	.055	[-.097	.120]	.150*	.065	[.024	.277]
	Low relatedness	.037	.027	[-.014	.091]	.012	.055	[-.097	.120]	.048	.061	[-.071	.169]

Note. $n = 280$. All estimates were tested from 20,000 bootstrapping replications. * $p < .05$, ** $p < .01$.

TABLE 6
Study 2: Descriptive Statistics for Study and Control Variables

Variable	<i>M</i>	<i>Between SD</i>	<i>Within SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Firm size	6.15	1.05	.15															
2. Firm age	30.40	17.96	1.49	.19														
3. Total assets	19.13	1.46	.21	.80	.27													
4. R&D expenditure	13.70	2.06	.54	.37	.07	.37												
5. CEO autonomy	2.26	1.07	.40	.34	-.05	.30	.08											
6. Female employees	18.18	16.40	2.64	-.04	-.19	-.19	-.13	-.06										
7. Advanced degree holders	6.94	7.29	1.72	.15	-.07	.04	.25	.15	-.10									
8. Pay level	2.92	.72	.36	.20	.02	.18	.15	.01	.02	.08								
9. Benefit level	3.02	.81	.37	.31	.04	.27	.18	.16	-.07	.19	.61							
10. PFIP	3.47	5.62	3.61	.23	-.08	.21	.10	.19	.14	.02	.12	.20						
11. PFOP	6.53	11.07	6.26	.12	.03	.24	.09	.12	-.09	-.04	.17	.20	-.02					
12. Autonomy support	4.12	.31	.18	.23	.03	.31	.20	.13	-.07	.08	.03	.11	.09	.15				
13. Competence support	5.17	1.67	.49	.42	.06	.44	.29	.39	.02	.29	.17	.30	.21	.18	.32			
14. Relatedness support	3.43	.34	.17	.21	-.01	.27	.19	.19	-.02	.12	.12	.27	.07	.16	.30	.34		
15. Job satisfaction (<i>t+1</i>)	3.60	.29	.14	.36	.12	.41	.25	.21	-.05	.11	.31	.40	.21	.26	.35	.37	.64	
16. ROA (<i>t+2</i>)	3.86	6.56	3.30	.19	-.12	.12	.05	.15	.05	.08	.19	.17	.17	.26	.09	.25	.18	.28

Note. $n = 397$ (firm-year observations). PFIP refers to pay for individual performance. PFOP refers to pay for organizational performance. ROA refers to return on assets. ROA was measured in percentage points. All correlations greater than $|.10|$ are significant at $p < .05$.

TABLE 7
Study 2: Results of Random-Effects Regressions Predicting ROA

	ROA ($t+2$)									
	Model 1		Model 2		Model 3		Model 4		Model 5	
(Constant)	-11.265	(9.134)	-2.129	(9.275)	-4.373	(9.844)	-5.634	(9.941)	-9.749	(10.067)
Firm size	1.101	(.796)	1.495	(.788)	1.583*	(.776)	1.540*	(.778)	1.435	(.775)
Firm age	-.042	(.029)	-.038	(.029)	-.034	(.028)	-.034	(.029)	-.037	(.028)
Total assets	.159	(.649)	-.360	(.651)	-.749	(.654)	-.673	(.657)	-.655	(.653)
R&D expenditure	.096	(.237)	.068	(.234)	-.056	(.234)	-.046	(.235)	-.045	(.233)
CEO autonomy	.762	(.369)	.616	(.364)	.424	(.365)	.350	(.371)	.276	(.370)
Female employees (%)	-.006	(.030)	-.005	(.029)	-.010	(.029)	-.009	(.029)	-.007	(.029)
Advanced degree holders (%)	-.035	(.068)	-.020	(.067)	-.050	(.067)	-.049	(.068)	-.053	(.067)
Pay level	1.071*	(.547)	.855	(.538)	.873	(.534)	.856	(.536)	.721	(.538)
Benefit level	-.091	(.525)	-.239	(.538)	-.345	(.518)	-.400	(.524)	-.549	(.526)
PFIP			.024	(.051)	.018	(.051)	.045	(.060)	.038	(.060)
PFOP			.120**	(.029)	.108**	(.029)	.147**	(.038)	.141**	(.038)
Autonomy support					.867	(1.005)	1.020	(1.016)	.589	(1.032)
Competence support					.747**	(.284)	.650*	(.294)	.650*	(.292)
Relatedness support					.917	(1.029)	.914	(1.052)	-.327	(1.210)
PFIP \times Autonomy							-.033	(.152)	-.077	(.153)
PFIP \times Competence							-.018	(.030)	-.018	(.030)
PFIP \times Relatedness							-.114	(.119)	-.140	(.119)
PFOP \times Autonomy							.019	(.093)	.020	(.093)
PFOP \times Competence							-.026	(.023)	-.026	(.023)
PFOP \times Relatedness							-.080	(.098)	-.083	(.097)
Job satisfaction ($t+1$)									3.209*	(1.552)
Industry fixed effects	Yes		Yes		Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes		Yes		Yes	
R^2 (overall)	.231		.274		.300		.311		.324	
ΔR^2 (overall)			.043**		.026**		.011*		.013*	
F -value	87.37**		108.21**		121.59**		125.75**		131.62**	

Note. $n = 397$ (firm-year observations). PFIP refers to pay for individual performance. PFOP refers to pay for organizational performance. Standard errors are in parentheses.

* $p < .05$, ** $p < .01$

TABLE 8
Study 2: Results of Random-Effects Regressions Predicting Job Satisfaction

	Job satisfaction ($t+1$)											
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
(Constant)	2.099**	(.386)	2.334**	(.394)	1.172**	(.338)	1.288**	(.336)	1.172**	(.339)	1.288**	(.338)
Firm size	-.006	(.034)	.005	(.033)	.034	(.026)	.033	(.026)	.035	(.027)	.033	(.026)
Firm age	.000	(.001)	.000	(.001)	.001	(.001)	.001	(.001)	.001	(.001)	.001	(.001)
Total assets	.053	(.027)	.039	(.028)	-.004	(.022)	-.007	(.022)	-.005	(.023)	-.007	(.022)
R&D expenditure	.016	(.010)	.014	(.010)	-.001	(.008)	.000	(.008)	-.001	(.008)	.000	(.008)
CEO autonomy	.018	(.015)	.015	(.015)	.014	(.013)	.019	(.013)	.014	(.013)	.020	(.013)
Female employees (%)	.021	(.126)	.005	(.124)	-.064	(.098)	-.056	(.097)	-.059	(.099)	-.053	(.098)
Advanced degree holders (%)	.030	(.286)	.078	(.283)	.098	(.229)	.173	(.229)	.100	(.231)	.170	(.230)
Pay level	.032	(.023)	.029	(.023)	.047*	(.019)	.046*	(.018)	.047*	(.019)	.046*	(.019)
Benefit level	.083**	(.022)	.078**	(.022)	.041*	(.018)	.043*	(.018)	.041*	(.018)	.044*	(.018)
PFIP			.003	(.002)	.004*	(.002)	.003	(.002)	.004*	(.002)	.003	(.002)
PFOP			.002	(.001)	.002	(.001)	.002*	(.001)	.002	(.001)	.002	(.001)
Autonomy support					.135**	(.035)	.129**	(.035)	.136**	(.036)	.128**	(.035)
Competence support					.000	(.010)	.000	(.010)	-.001	(.010)	.000	(.010)
Relatedness support					.410**	(.036)	.397**	(.036)	.412**	(.037)	.398**	(.037)
PFIP \times Autonomy							.014**	(.005)			.014**	(.005)
PFIP \times Competence							.000	(.001)			.000	(.001)
PFIP \times Relatedness							.008*	(.004)			.008*	(.004)
PFOP \times Autonomy									.001	(.003)	.000	(.003)
PFOP \times Competence									.000	(.001)	.000	(.001)
PFOP \times Relatedness									.001	(.003)	.001	(.003)
Industry fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
R^2 (overall)	.352		.371		.606		.618		.607		.619	
ΔR^2 (overall)			.019**		.235**		.012** ^a		.001 ^a		.013** ^a	
F -value	139.04**		147.45**		402.77**		423.59**		400.09**		420.54**	

Note. $n = 397$ (firm-year observations). PFIP refers to pay for individual performance. PFOP refers to pay for organizational performance. Standard errors are in parentheses. a. Comparison to Model 3.

* $p < .05$, ** $p < .01$

TABLE 9
Study 2: Summary of Indirect Effects of PFP on Subsequent ROA via Collective Job Satisfaction

IV	Moderator	Indirect Effect				Direct Effect				Total Effect			
		B	SE	LL	UL	B	SE	LL	UL	B	SE	LL	UL
PFIP	High autonomy	.053*	.033	[.001	.128]	.038	.060	[-.081	.156]	.092*	.048	[.005	.179]
	Low autonomy	-.036	.027	[-.099	.003]	.038	.060	[-.081	.156]	.003	.044	[-.076	.083]
	High competence	.008	.009	[-.006	.030]	.038	.060	[-.081	.156]	.047	.033	[-.013	.108]
	Low competence	.008	.009	[-.007	.030]	.038	.060	[-.081	.156]	.047	.033	[-.013	.108]
	High relatedness	.035*	.023	[.000	.089]	.038	.060	[-.081	.156]	.074*	.040	[.001	.148]
	Low relatedness	-.018	.019	[-.064	.012]	.038	.060	[-.081	.156]	.020	.038	[-.049	.090]
PFOP	High autonomy	.006	.013	[-.019	.035]	.141**	.038	[.066	.215]	.148**	.041	[.073	.224]
	Low autonomy	.008	.013	[-.015	.039]	.141**	.038	[.066	.215]	.150**	.041	[.075	.226]
	High competence	.006	.006	[-.003	.021]	.141**	.038	[.066	.215]	.146**	.041	[.071	.222]
	Low competence	.007	.007	[-.002	.023]	.141**	.038	[.066	.215]	.151**	.041	[.077	.229]
	High relatedness	.011	.014	[-.013	.044]	.141**	.038	[.066	.215]	.152**	.031	[.098	.212]
	Low relatedness	.003	.013	[-.023	.032]	.141**	.038	[.066	.215]	.145**	.031	[.090	.203]

Note. $n = 397$. All estimates were tested from 20,000 bootstrapping replications. PFIP refers to pay for individual performance. PFOP refers to pay for organizational performance. * $p < .05$, ** $p < .01$.

FIGURE 1
Research Model

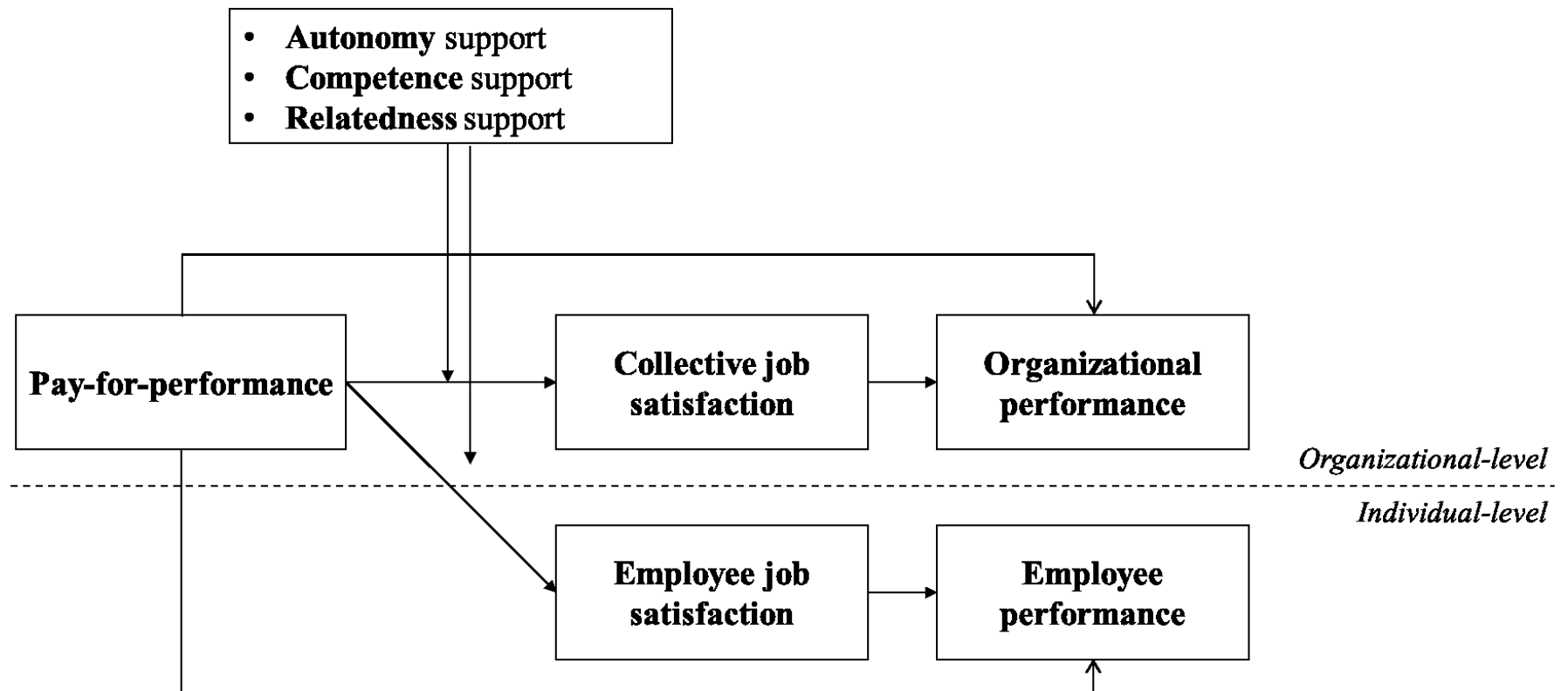


FIGURE 2
Study 1: Interaction Effects

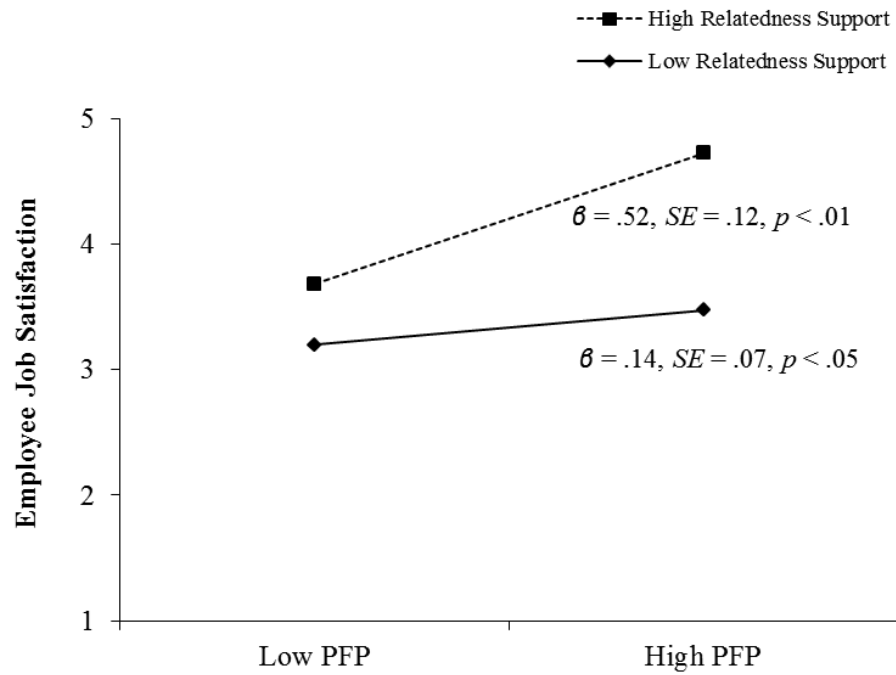
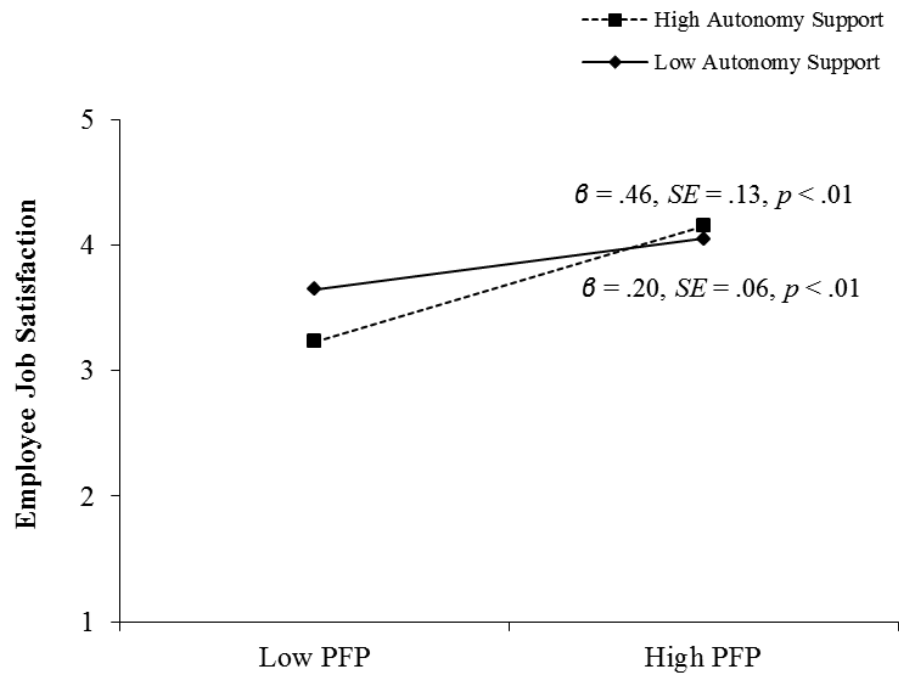
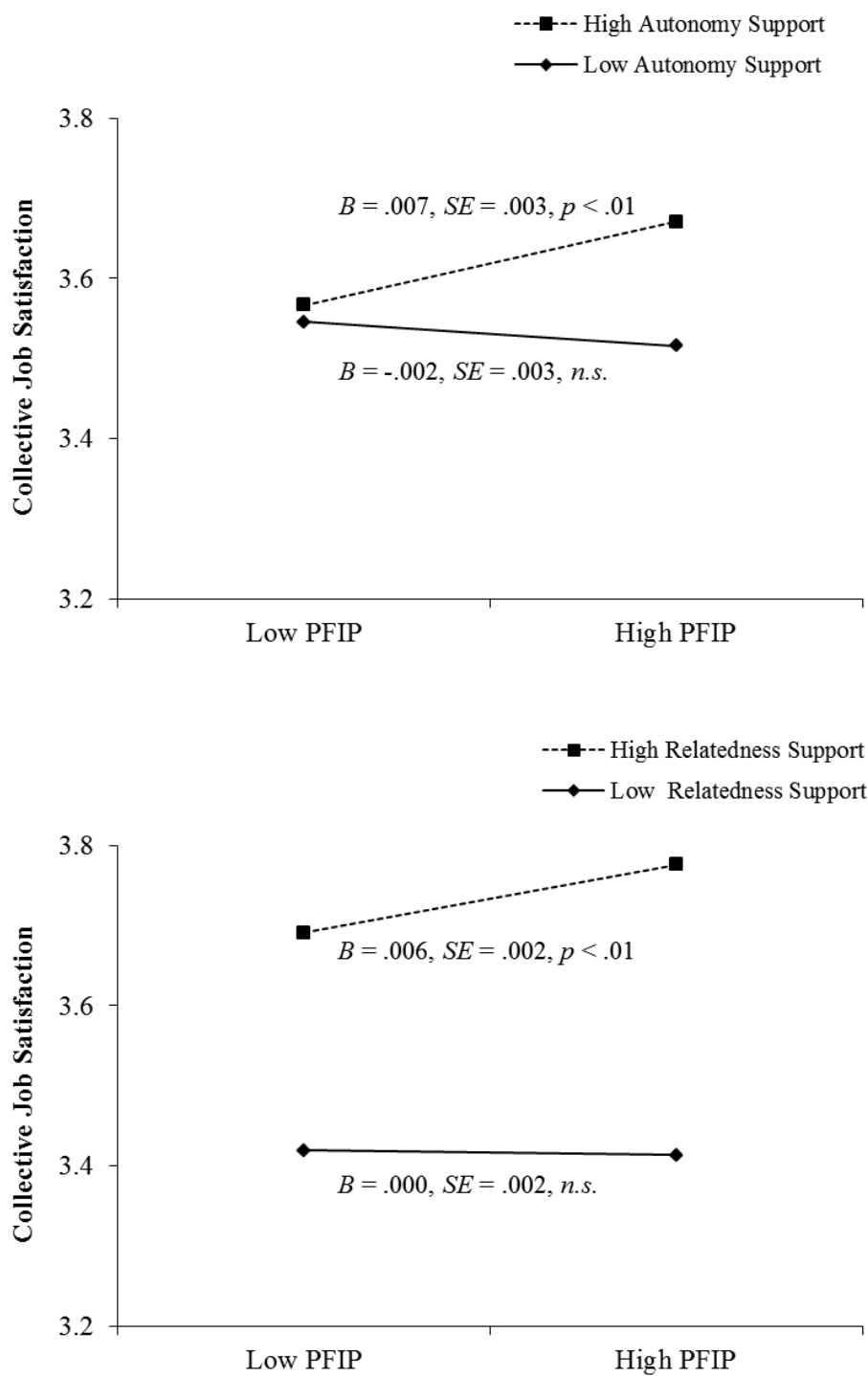


FIGURE 3
Study 2: Interaction Effects



APPENDIX
Appendix A. Description of Measurement Operationalization for Study 1

Variable Name	Operationalization	Source
Pay-for-performance	Proportion of variable pay that is based on organizational or individual performance over total pay	HR manager
Employee job satisfaction	Three items adopted from Cole (1979). Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is “I am satisfied with my job”	Employees
Employee creative performance	Four items adopted from Farmer, Tierney, & Kung-McIntyre (2003). Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is “I try new ideas or methods first.”	Employees
Autonomy support	Five items adopted from Bae & Lawler (2000). Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is (the organization) “permits enough discretion in doing work”	HR manager
Competence support	Six items adopted from Bae & Lawler (2000) and Collins & Smith (2006). Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is “we spend a great amount of money on training”	HR manager
Relatedness support	Three items adopted from Madjar, Oldham, and Pratt (2002). Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is “my supervisor is always ready to support me if I introduce an unpopular idea or solution at work.”	Employees
Unit size	Natural log of a unit’s total employees.	HR manager
Unit age	Different between the year when a unit was founded and the year the unit was observed in the sample.	HR manager
R&D expenditure	Total expenditure on research and development. 1 = 10 billion Korean Won (KRW).	HR manager
Female employees	Proportion of female employees in the unit.	HR manager
Selective staffing	Five items adopted from Bae & Lawler (2000) and Collins & Smith (2006). Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is “great importance is placed on staffing process.”	HR manager
Gender	Dummy variable. 1 = Female; 0 = Male.	Employees
Tenure	Number of years a respondent has been in his or her current organization.	Employees
Salary level	Average monthly salary. 1 = less than 2 million KRW. 2 = 2 ~ 3 million KRW. 3 = 3 ~ 4 million KRW. 4 = 4 ~ 5 million KRW. 5 = 5 ~ 6 million KRW. 6 = 6 ~ 7 million KRW. 7 = 7 ~ 8 million KRW. 8 = 8 ~ 9 million KRW. 9 = 9 million KRW or over.	Employees

Appendix B. Measurement Items for Study 1

Employee job satisfaction (1, “strongly disagree,” to 5, “strongly agree”)

1. I would take the same job again
2. I would recommend this job to a friend
3. I am satisfied with my job

Employee creative performance (1, “strongly disagree,” to 5, “strongly agree”)

1. I try new ideas or methods first
2. I seek new ideas and ways to solve problems
3. I generate ground-breaking ideas related to the field
4. I am a good role model for creativity

Autonomy support (1, “strongly disagree,” to 5, “strongly agree”)

1. Engagement in problem-solving and decisions
2. Extensive transference of tasks and responsibilities
3. Providing changes to use personal initiative
4. Permitting enough discretion in doing work
5. Participation in very wide range of issues

Competence support (1, “strongly disagree,” to 5, “strongly agree”)

1. We spend a great amount of money on training
2. We provide different kinds of training opportunity
3. We provide extensive training for general skills
4. We use job rotation to expand the skills of employees
5. Performance appraisals are used primarily to set goals for personal development
6. We provide multiple career path opportunities for employees to move across multiple functional areas of the company

Relatedness support (1, “strongly disagree,” to 5, “strongly agree”)

1. My supervisor discusses with me my work-related ideas in order to improve them
2. My supervisor gives me useful feedback about my ideas concerning the workplace
3. My supervisor is always ready to support me if I introduce an unpopular idea or solution at work

Selective staffing (1, “strongly disagree,” to 5, “strongly agree”)

1. Great importance is placed on staffing process
2. We exert great effort to select right person
3. We spend a great amount of money on selection
4. Our selection system focuses on the potential of the candidate to learn and grow with the organization
5. We select employees based on an overall fit to the company

Appendix C. Robustness Check for Study 1

In Study 1, employee performance was measured by creativity performance because all of the respondents in the sample were R&D workers whose main job was producing creative ideas and innovative inventions. As a robustness check, I also used self-reported general productivity performance as the dependent variable and ran the same models used for the main analyses. A self-reported general productivity was measured by three items on a five-point Likert scale ranging from 1, “strongly disagree,” to 5, “strongly agree.” Items were “I adequately complete assigned duties on time,” “My performance always meets my leaders’ expectations,” and “I am the best employee in the team.” The Cronbach alpha was .76. First, to justify the use of HLM, a null model for general productivity with no predictor was performed and there was significant between-unit variance ($ICC1 = .13$, $SE = .06$, $95\% CI = .05$ to $.29$). This result implies that 13 percent of the variance in general productivity resides between units. Second, I tested Hypothesis 1 that predicted the direct effect of PFP on employee performance. PFP had a positive and significant impact on employee general productivity ($\beta = .09$, $SE = .03$, $p < .01$). Thus, hypothesis 1 was supported. Third, I tested Hypothesis 5 that concerned the conditional indirect effects of PFP on employee performance via job performance. Job satisfaction was positively related to employee general productivity ($\beta = .23$, $SE = .04$, $p < .01$) and the indirect effect of PFP on employee general productivity attributable to job satisfaction was positive and significant only when autonomy support was high ($\beta = .11$, $SE = .03$, $95\% CI = .06$ to $.17$) and relatedness support was high ($\beta = .12$, $SE = .03$, $95\% CI = .07$ to $.18$). These results are almost identical with the main results that use employee creative performance as a dependent variable.

Appendix D. Description of Measurement Operationalization for Study 2

Variable Name	Operationalization	Source
Pay-for-individual-performance	Proportion of individual performance-related pay over total pay	HR manager
Pay-for-organizational-performance	Proportion of organizational performance-related pay over total pay	HR manager
Employee job satisfaction	Four items adopted from Hackman & Oldham (1974) and Witt & Nye (1992). Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is “I am satisfied with my job”	Employees
Organizational performance	Net income over total assets	Financial statement
Autonomy support	Three items regarding perceived degree of participative decision making, career opportunity, and autonomy as implemented at the firm level. Ranges from 1, “strongly disagree,” to 5, “strongly agree.”	Employees
Competence support	Natural log of average amount of investment in training and development programs for an employee.	HR manager
Relatedness support	Three items regarding perceived open communication. Ranges from 1, “strongly disagree,” to 5, “strongly agree.” A sample item is “organizational members have direct communication with their managers.”	Employees
Firm size	Natural log of a firm’s total employees.	HR manager
Firm age	Different between the year when a firm was founded and the year the firm was observed in the sample.	HR manager
Pay level	Pay level compared to the average industry level. Ranges from 1, “very low,” to 5, “very high.”	HR manager
Benefit level	Benefit level compared to the average industry level. Ranges from 1, “very low,” to 5, “very high.”	HR manager
Female employees	Proportion of female employees in the firm	HR manager
R&D expenditure	Natural log of research and development expenditure of firm.	Financial statement
CEO autonomy	CEO’s managerial discretion. Ranges from 1, “doesn’t exist,” to 5, “completely discretionary.”	HR manager

Appendix E. Measurement Items for Study 2

Employee job satisfaction (1, “strongly disagree [dissatisfied],” to 5, “strongly agree [satisfied]”)

1. I am satisfied with my work
2. I am satisfied with my pay
3. I am satisfied with the relationship with my co-workers
4. Overall, I am satisfied with my job

Autonomy support (1, “strongly disagree,” to 5, “strongly agree”)

1. Employees actively engage in problem-solving and decision making
2. Employees are exposed to diverse tasks and responsibilities that offer a wider variety of experience
3. Employees are provided sufficient autonomy that permits enough discretion in doing work

Relatedness support (1, “strongly disagree,” to 5, “strongly agree”)

1. Our company shares organization information with all employees through managers or company-wide communication systems
2. In our company, employees can freely speak their opinions to their supervisor
3. The communication among different departments or units goes well