



The psychological role of pay systems in choosing to work more hours

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ABSTRACT

Psychological and economic perspectives are blended to model aspects of pay systems that dispose employees to work more hours beyond what would be predicted by economically rational exchange alone. Three pay-system triggers and their respective paths to more work are expounded: 1) pay equated to units of time, 2) pay contingent on subjective performance standards, and 3) pay growth determined by tournament pay structures. The effects are conceived as self-reinforcing due to loss aversion stemming from endowment of income and sunk cost bias. Also considered are implications for human capital, a posed curvilinear relationship that holds practical relevance for organizational sustainability—i.e., maintenance of the firm's human capital over the long term.

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1. Introduction

Many employees work beyond the number of explicitly required work hours in order to attain enhancements to their current or future income, or nonwage benefits such as status or job security (Golden, 2009; Golden & Altman, 2008). Organizations offer these inducements as a way to leverage the value of their existing human resources as opposed to employing more, particularly during economic downturns. Whether the resources offered and sought are tangible or socioemotional, the extra work hours invested represent a deliberate and presumably rational exchange, or what could be described as an exchange relationship of mutual investment (Tsui, Pearce, Porter, & Tripoli, 1997). Research on pay systems and time worked generally focuses on this deliberate exchange. However, a smaller subset of the research has identified pay-system effects for self-imposed work hours that go beyond what may be explained by economically rational exchange alone. The present theoretical treatment integrates and extends findings from this domain to highlight a potentially unrecognized area of strategic consideration for organizations and, in doing so, brings together distinct economic and psychological streams of compensation research, which is deemed by some to be “the most important step for future theorizing in compensation research” (Gerhart & Rynes, 2003:160; and echoed by Larkin, Pierce, & Gino, 2012).

The model and propositions developed herein describe a sequential path. Three specific aspects of pay systems are posed as psychological triggers to working more hours, based on a review and extension of extant literature. Once activated, the triggered effects of working more hours are conceived as self-reinforcing due, ultimately, to loss aversion. An overarching theme to these first two phases is how pay-system effects enhance the subjective value of work hours beyond what objective economic value would suggest, making work more likely to be chosen over other uses of one's time, both initially and in a self-reinforcing way. Finally, in order to augment the model's strategic relevance, the pay-system effects are extended to implications for the organization's human capital. Human capital is considered essential to successful business performance and a critical factor to include in the management of enterprise risk (The Conference Board, 2011).

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The following treatment offers value for both research and practice. Findings and theory from economics, social psychology and the broader management literature are integrated to model pay-system effects and causal mechanisms that are generally overlooked or addressed only in isolation within compensation research. In terms of practical relevance, the model identifies elements of pay systems that can be leveraged to influence the amount of time employees invest in work—providing the organization a potentially greater return on actual pay dollars spent. Perhaps a more strategic contribution for practice, however, is this study's posed implications for the sustainability of human capital. Whereas organizations and researchers generally look to pay systems in relation to readily observable results that are relatively short-term focused by measurement necessity, the construct of human capital emphasizes long-term organizational value.

2. Conceptual background and construct clarification

Before establishing the posited relationships, it is necessary to clarify the constructs of interest and distinguish some foundational conceptual underpinnings.

2.1. A focus on pay systems versus pay amount

The term compensation, broadly applied, encompasses all forms of tangible and intangible remuneration received by employees. The present model focuses on monetary pay due to its dominance in most compensation schemes, and focuses in particular on pay-system attributes rather than the amount of pay per se. Pay amount (organizational pay level relative to the market and absolute amounts for individuals) may of course also influence work hours in that a primary reason for working to begin with is to earn money and, from a hedonic treadmill perspective, some individuals engage in a continuously escalating cycle of income pursuit and consumption (Schor, 1991, 1999). But research has given less consideration to pay systems themselves—*how* pay is earned rather than *how much* pay is earned—in driving more work. Pay systems may also represent a more flexible tool than pay amount for managing employee performance since financial and labor market constraints create a ceiling and floor, respectively, for organizations in setting pay levels (Gerhart & Rynes, 2003). Finally, the theoretical underpinnings and psychological mechanisms that speak to pay amount or level are distinct from the framework posed herein for pay-system effects.

Pay amount and pay systems are inherently conflated to some degree, but it is also possible to isolate pay-system effects that operate independent of or additive to pay amount in stimulating more work hours. For instance, widely dispersed pay structures and pay-for-performance plans are said to indirectly increase employee materialism—the desire for money in general (Kasser, Vansteenkiste, & Deckop, 2006). Similarly, modeled herein are ways in which pay systems generate an exchange of work hours beyond what the objective value of the pay pursued might justify. The specific pay-system attributes included in the model as triggers of more work, while not necessarily an exhaustive list, were chosen based on a review of the empirical literature for those pay-system variables that have a direct influence on the amount of time worked (though room to explore this relation further) and also represent common strategic pay-system choices for organizations. In other words, these variables were chosen because of their empirically suggested importance for self-imposed hours worked and their ubiquitous presence in organizations.

Pay systems can be viewed as two broad components: pay structure, defined as the relative differences in compensation across the hierarchy of jobs within an organization, and pay basis, or the bases on which changes in pay are determined (Gerhart & Rynes, 2003: 5). Degree of pay dispersion, particularly tournament pay structures (representing a form of wide pay dispersion), is the primary focus of existing research on pay structures, and findings show tournament pay structures to be commonly present in organizations (Gerhart & Rynes, 2003). Further, as will be discussed, integration of theory and research suggests a clear tie between pay tournaments and self-imposed hours worked. The extant research on pay bases focuses largely on performance pay (Gerhart & Rynes, 2003), which has a wide array of forms in itself and can even be construed as hourly pay when such is contingently earned (Lazear, 2000). Beyond the overt incentive effects of performance pay (the motivational power of more pay for more performance) a closer inspection of the research suggests two facets of performance pay that psychologically enhance incentive effects for self-imposed work hours: pay equated to units of time and pay contingent on subjective performance standards. These processes will be explained and justified in the subsequent development of propositions.

2.2. Loss aversion and the subjective value of work time

Beyond the initial trigger of more work, the pay-system elements identified are posited to have a dynamic and self-reinforcing relationship with self-imposed work hours through the activation of loss aversion. The specific processes leading to a loss “frame” will be clarified in the subsequent development of propositions. What immediately follows is an overview of loss aversion as the broader conceptual basis for these upcoming propositions.

Prospect theory maintains that individuals perceive outcomes in relation to a subjective reference point and consequently frame outcomes in terms of losses or gains (Kahneman & Tversky, 1979). Per prospect theory's value function, outcomes below the reference point, or losses, loom larger than objectively equivalent gains. For example, losing \$50 is more painful than a foregone gain of \$50. Thereby, individuals are said to be loss averse and will go to greater lengths to avoid a loss than they will to secure an objectively equivalent gain (Kahneman & Tversky, 1979). Loss aversion has been empirically demonstrated in numerous hypothetical and experimental situations (e.g., De Dreu, Carnevale, Emans, & van de Vliert, 1994; Highhouse & Johnson, 1996; Hodgkinson, Brown, Maule, Glaister, & Pearman, 1999; Sitkin & Weingart, 1995) and organizational contexts (Gooding, Goel, & Wiseman, 1996; Lee, 1997; Merriman & Deckop, 2007; Sanders, 2001; Singh, 1986).

While loss aversion research focuses largely on financial decisions, decisions pertaining to the investment of time and effort are recognized as invoking the same principles (Arkes & Blumer, 1985). One way in which this occurs is the marginal value of an additional unit of time or effort takes on greater value when invested in the context of loss avoidance as compared to the context of gain pursuit. In experimental scenarios testing this premise, subjects demonstrated preferences for greater expenditures of effort (e.g., number of pushups attempted) and time (e.g., number of overtime hours worked) when addressing performance that was below the stated goal reference point versus above (Heath, Larrick, & Wu, 1999). Time investment for the former—the loss context—was about twice that of the gain context, consistent with prior studies examining weighting of losses compared to equivalent gains (Kahneman, Knetsch, & Thaler, 1990; Tversky & Kahneman, 1991). The motivational effect of loss aversion on effort expenditure was also demonstrated in actual work settings (Merriman & Deckop, 2007). In that study, employees that perceived future variable pay as a loss if not received rather than an opportunity to gain were found to have greater levels of present work effort and performance.

Thus, in terms of the present model, work time takes on greater subjective value for employees when it is evaluated in the context of loss avoidance versus gain pursuit. As stated, this basic premise will be subsequently extended to pose that the pay-system attributes identified as initially leading to more work hours also serve to maintain an increased level of work hours through their influence on subjective reference points for loss framing. Thereby the implications for time worked will be construed as self-reinforcing.

2.3. Work hours and human capital

To better understand the strategic relevance of the pay-system effects posed, it is also necessary that the model consider ultimate consequences for organizational effectiveness. Human capital was deemed an important outcome to consider in this regard since it is recognized as a source of competitive advantage for firms, thus something to strategically pursue and sustain (Campbell, Coff, & Kruscynski, 2012). Further, human capital represents the useful skills and knowledge individuals hold to produce economic value—enhancements to the *quality* of human inputs (Schultz, 1961), which complements the model's focus to this point on quantity of human input. Although the relation between hours worked and human capital is undoubtedly moderated by many individual and work-context variables, a review of the economics and management literatures suggests a curvilinear relationship in which the positive effects of working more hours reach a point of diminishing and ultimately negative returns.

For example, the expectation of a greater number of work hours can serve as an incentive to invest in one's own, job-specific human capital since more work hours increases the utilization of this human capital (i.e., the number of hours it will be used) and thus the expected return to oneself on investment (Barzel & Yu, 1984). However, too many working hours can leave individuals with no remaining time or energy to enhance their human capital beyond their immediate job duties (Ehnert, 2009), to the detriment of organizations since firms benefit from both general and firm-specific human capital for sustained competitive advantage (Campbell et al., 2012). Another potential positive for more work hours is an increase in absolute levels of productivity simply due to the greater utilization rate of human capital and possible efficiencies related to employee specialization in job-specific duties (Barzel & Yu, 1984). However, research also demonstrates a negative relationship between marginal productivity and hours worked, such as diminished average hourly productivity with increases in overtime for manufacturing employees (Shepard & Clifton, 2000) and performance gains for business consulting teams when their members were required to take regular time off from their otherwise long work hours (Perlow & Porter, 2009). The commonly reasoned explanation for these latter type relationships is that hours worked can exceed individual regenerative capacity (Ehnert, 2009).

Although the concept of individuals exceeding regenerative capacity, or “overwork,” is sometimes operationalized in objective terms based on the number or distribution of hours worked (e.g., Barnett, 2006), thresholds can naturally vary based on individual work capacity and contextual factors. For instance, thresholds are influenced by the physical and mental demands of the work, and demands faced outside of work hours (Golden & Altman, 2008). For the purpose of setting the foundation for the following model, it is sufficient to merely acknowledge that there is an inflection point at which the positive consequences of more work hours peak and then decline, based on the extant reasoning described above (see Fig. 1). The subsequent conceptual development will extend this premise to model specific conditions stemming from the pay-system triggers that influence whether more work hours will have positive or negative consequences for the collective human capital of an organization (i.e., the organization's accumulation, maintenance, utilization and retention of human capital).

3. The psychological role of pay systems

The following explicates the three aspects of pay systems stated earlier as triggers that influence employees to initially engage in more work hours. Within each of these three subsections the self-reinforcing process involving loss aversion and each trigger's ultimate relationship with organizational human capital are also modeled (see Figs. 2 and 3). Formal, testable propositions are presented for each trigger at each stage of the model, stated within the conceptual development and summarized in Table 1.

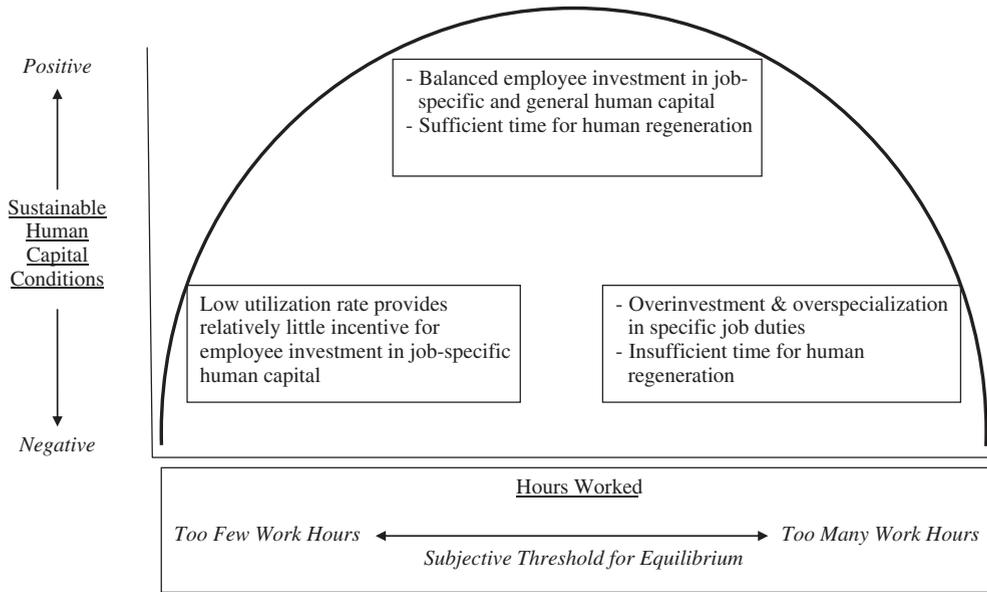


Fig. 1. The curvilinear relation between work hours and human capital.

3.1. Pay equated to units of time

3.1.1. Initial trigger

Although most employees recognize that there is some degree of relation between time worked and money earned, research suggests that people are more likely to construe time in economic terms when the hourly basis of one's own pay is emphasized. For example, participants prompted to calculate their own hourly wage subsequently identified themselves as more of an

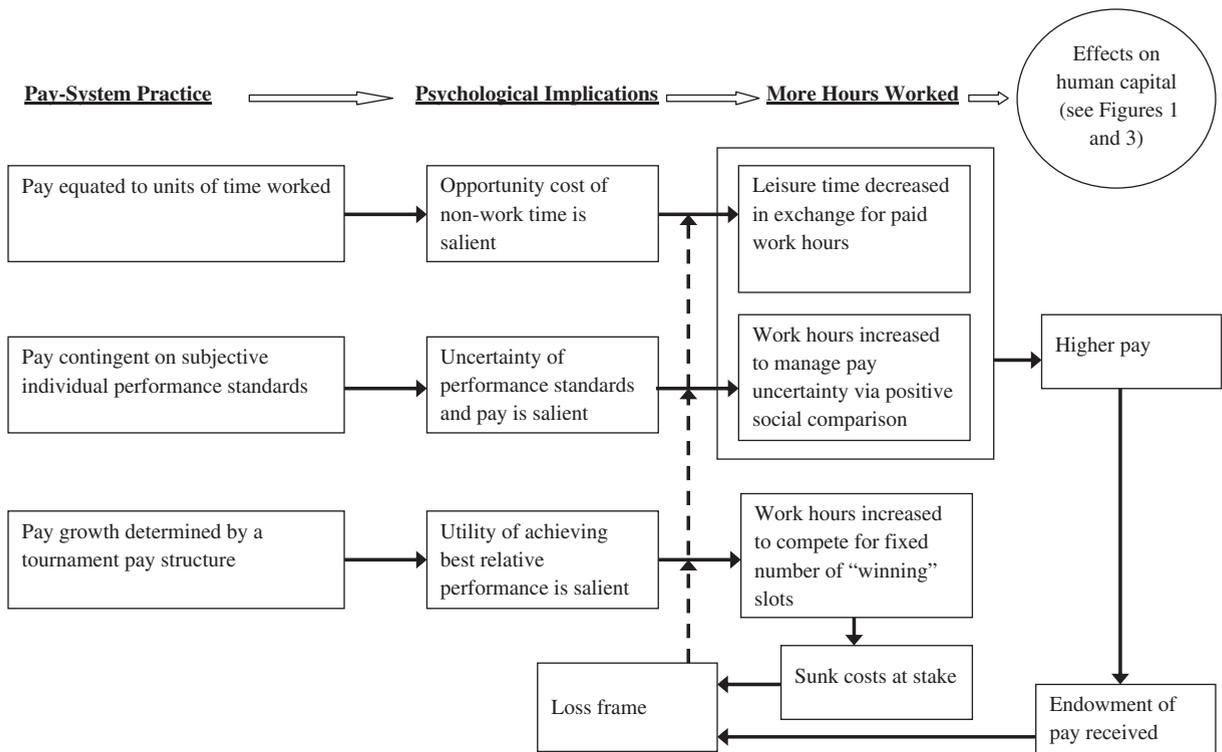


Fig. 2. Psychological role of pay systems in self-imposed work hours.

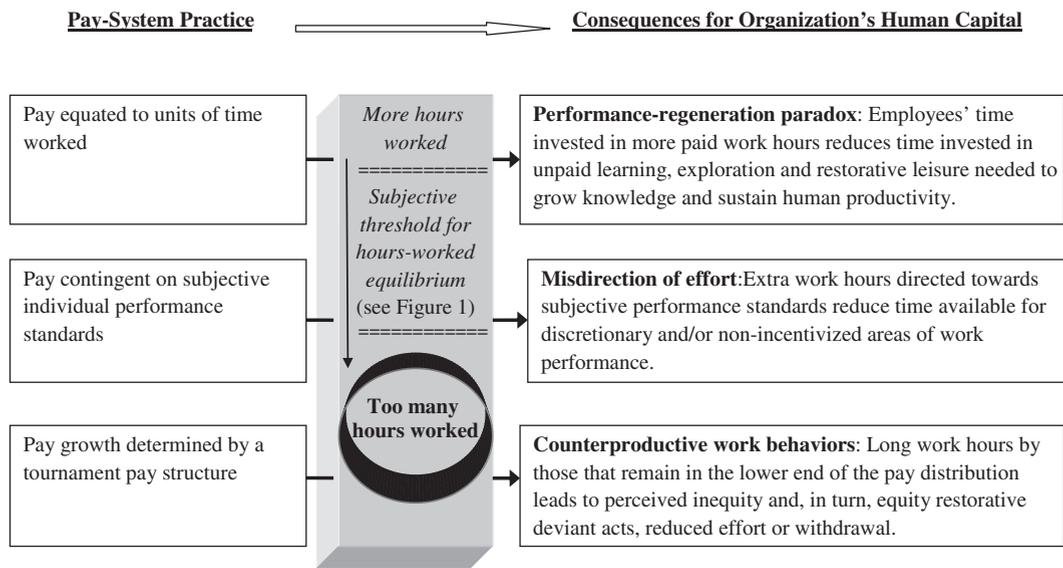


Fig. 3. Pay-system effects for human capital when hours worked exceed equilibrium.

economic evaluator in decision making than did participants calculating a non-personal hourly wage, and this mediated reported willingness to volunteer time for free (Pfeffer & DeVoe, 2009). This priming effect may be explained by an interpretation of self-concept as being comprised of a number of “selves” that rotate in and out of guiding influence in response to self-relevant situational stimuli (e.g., Markus & Kunda, 1986; Wheeler, DeMarree, & Petty, 2007). The economic self has been identified as one dimension of self-concept that may be so activated (Pfeffer & DeVoe, 2009; Skitka, 2003).

Activation of the economic self through salient time–money linkage is also implicitly evidenced by findings of a tendency to base time use on economic criteria rather than non-monetary factors such as personal satisfaction and relational concerns for workers receiving hourly pay (DeVoe & Pfeffer, 2007a) or those accounting for work time in billable hours (Evans, Kunda, & Barley, 2004; Yakura, 2001). For instance, individuals that were paid by the hour in their work or instructed to calculate their own hourly rate based on annual pay and average time worked, significantly decreased willingness to volunteer time for an unpaid activity and increased willingness to trade more of their leisure time to earn more money (DeVoe & Pfeffer, 2007a, 2007b; Pfeffer & DeVoe, 2009). Notice that changes in individual preferences for paid activities was driven by subjective rather than objective changes in pay. This is consistent with the finding that salience of time as money also causes individuals to place greater weight on income when assessing their own well-being (DeVoe & Pfeffer, 2009).

Thus, presumably through activation of the economic self, the monetary opportunity costs of leisure time are made more salient when pay is explicitly tied to measurable units of work time. The opportunity cost is logically avoided by forgoing time off when that time could otherwise be exchanged for pay, such as the opportunity for overtime pay or extra pay for unused vacation

Table 1
Summary of testable propositions.

Pay-system triggers' predicted relations with self-imposed work hours	Pay-system triggers' predicted relations with self-reinforcement	Pay-system triggers' predicted relations with human capital
Proposition 1a: Self-imposed work hours will be greater when pay is equated to clock time relative to event time, ceteris paribus.	Proposition 1b: Individuals triggered to work more hours when pay is equated to clock time will perceive each subsequent occasion to do so, in order to avoid the “loss” of endowed income, as having greater subjective economic value.	Proposition 1c: Pay that is equated to clock time will have a curvilinear relation with human capital, mediated through this form of pay's escalating reinforcement of long overall work hours.
Proposition 2a: Self-imposed work hours will be greater when pay is contingent on subjectively versus objectively quantified individual performance standards, ceteris paribus.	Proposition 2b: Individuals triggered to work more hours when pay is contingent on subjective individual performance standards will perceive each subsequent occasion to do so, in order to avoid the “loss” of endowed income, as having greater subjective economic value.	Proposition 2c: Pay that is contingent on subjective individual performance standards will have a curvilinear relation with human capital, mediated through this form of pay's escalating reinforcement of long work hours related to the subjective performance dimension.
Proposition 3a: Self-imposed work hours will be greater under a tournament pay structure (wide pay dispersion with a fixed number of “winning” slots at each level) relative to an egalitarian pay structure (narrow pay dispersion with no fixed number of winners), ceteris paribus.	Proposition 3b: Individuals triggered to work more hours by tournament pay structures will perceive the ongoing occasion to do so, in order to avoid the “loss” of sunk effort, as having greater subjective economic value.	Proposition 3c: Tournament pay structures will have a curvilinear relation with human capital, mediated through this pay structure's escalating reinforcement of long work hours invested for anticipated future returns.

days, or refraining from absenteeism when days off are unpaid. For example, Evans et al.'s (2004) ethnographic study of independent contractors in the technology sector—whose services were sold by the hour—found that though these agents were free to set limits on the number of hours they worked, they avoided time off due to a precise and acute recognition of the “lost” compensation associated with their leisure time. “A number of informants reported that equating time and money was so ingrained that they could no longer enjoy leisure” (Evans et al., 2004: 21).

In direct contrast to this clock dominated view of time is the scheduling of work by broad tasks—generally referred to as event time versus clock time (e.g., Avnet & Sellier, 2001). Each can be viewed as anchoring one end of a temporal continuum, with less perceived pressure for efficient use of time towards the event anchored end of the spectrum (Crossan, Cunha, Vera, & Cunha, 2005). For example, the experimental manipulation of annual pay equated to an hourly rate that was described above could be plotted along this temporal continuum, with annual pay relating more closely to event time, or relatively wide blocks of time with flexible boundaries, and hourly rate representing clock time.

Proposition 1a. Individuals will work more self-imposed hours when pay is equated to clock time relative to event time, *ceteris paribus*.

3.1.2. Reinforcing effects of loss aversion via endowment

It may be logical to make the long-term prediction that individuals who choose more work hours for economic gain will eventually reach a point of satisfaction with their accumulated earnings such that their perceived opportunity cost of leisure time would diminish. However, research founded in behavioral economics, particularly pertaining to the endowment effect, suggests income expectations are resistant to downward adjustment. The endowment effect is a cognitive bias in which people demand greater compensation to give up a good than they would be willing to pay for the same good (Thaler, 1980). A series of supporting experiments attributed the endowment effect to loss aversion—a good is evaluated as a loss when it is given up and as a gain when it is acquired, and found evidence that endowment occurred instantly upon possession (Kahneman, Knetsch, & Thaler, 1991; Kahneman et al., 1990). Endowment effects have been found to also occur with intangibles such as time (Hoorens, Remmers, & van de Riet, 1999; Ortona & Scacciati, 1992) and, specific to the present purpose, with current and anticipated pay (Heath et al., 1999; Merriman & Deckop, 2007). It seems that once a level of pay is received or anticipated, it becomes endowed, resetting the subjective reference point by which future income will be evaluated in terms of loss and gain. Further, such reference points are quick to ratchet up, but slow to adjust downward (Gooding et al., 1996; March, 1988).

Economic theory of consumer behavior provides cognitive rationale as to why subjective reference points for income are slow to adjust downwards. Friedman's (1957) permanent income hypothesis observes that current income is a poor indicator of consumer spending. Consumption is instead related to anticipated long-term income, labeled permanent income, which is a function of past and present income levels and anticipated income growth. This implies that pay, once previously received or anticipated, would be incorporated into permanent income and then spending levels adapted to this revised income position. Since consumers spend, take on debt and even deplete savings based on their perception of permanent income, failure to receive it would cause significant harm to their adapted lifestyle. Failure to gain non-permanent income may be disappointing, but would not have the same dire consequences to adapted lifestyle. Permanent income gradually adjusts to changes in actual income over time, but is not immediately influenced by unexpected shifts in the income stream, and spending needs naturally lag decreases in permanent income since debts cannot be reduced as quickly.

In sum, once income is increased through working more hours, it is likely to become endowed and be perceived as a loss if not maintained. This makes the work time required to maintain the endowed level of income subjectively more valuable, as previously described in the earlier overview of loss aversion, and consequently increases the opportunity cost associated with reversion of extra work hours back into leisure time.

Proposition 1b. Individuals triggered to work more hours when pay is equated to clock time will perceive each subsequent occasion to do so, in order to avoid the “loss” of endowed pay, as having greater subjective economic value.

3.1.3. Implications for human capital via performance-regeneration paradox

As outlined in the earlier overview of the curvilinear relation between work hours and human capital, there is a subjective threshold by which the number of hours worked begins to erode rather than enhances human capital. Thus to sustain human resources, resource consumption (e.g., high performance demands) must be balanced or integrated with resource regeneration (maintenance of physical and mental health and viable skills; Ehnert, 2009). A performance-regeneration paradox exists; time and energy employees invest into work processes is time and energy that cannot be invested in regeneration (Ehnert, 2009). All else equal, employees that equate time as money, compared to those that do not, are more likely to forgo time investment in regeneration when faced with this paradoxical choice. This is because, as previously delineated, the opportunity cost of time spent on unpaid activities is more salient and perceptually more significant.

Though long-term individual input of many work hours has well documented negative effects on mental and physical health (e.g., Kivimäki et al., 2011; Virtanen et al., 2011), the implications for maintenance of knowledge and skills are less straightforward. On-the-job learning and job specialization may be enhanced by the number of hours worked (Barzel & Yu, 1984). But a dynamic, changing environment requires ongoing learning beyond immediate job duties. If this type of learning must take place off the clock, the opportunity cost may lead to deferred or overly efficient (i.e., seeking the least that will do) investment in

new knowledge. Some organizations recognize this pitfall in relation to employee innovation and accordingly designate specific paid time for employees to pursue “non-efficient” exploration and new knowledge seeking distinct from their economically efficient work time (e.g., Google and 3M). However, even when learning takes place on the job or is facilitated during work hours, too many work hours may have deleterious effects for absorption or application, as suggested by findings that medical interns training at teaching hospitals made a significantly greater number of serious medical, medication and diagnostic errors when working traditionally long hours versus reduced hours (Landrigan et al., 2004). To address this issue, the accrediting agency for graduate medical education implemented new work-hour restrictions in 2011 for intern residency programs. Though medical interns represent an extreme example, the basic principle—that learning, along with physical and mental health, erodes past some threshold of hours worked—is posed as generalizable. Hence pay systems that lead to an increased level of work hours over the long term will be associated with less human capital when some subjective threshold of hours worked is exceeded. Finally, notice that the predictions here refer to the organization's maintenance and accumulation of human capital.

Proposition 1c. Pay that is equated to clock time will have a curvilinear relation with human capital, mediated through this form of pay's escalating reinforcement of long overall work hours.

3.2. Pay contingent on subjective performance standards

3.2.1. Initial trigger

Companies often intentionally tie some degree of individual pay to subjective as opposed to objectively quantified performance standards (Baker, Gibbons, & Murphy, 1994). For example, as cited by Baker and colleagues, compensation for investment bankers in corporate finance was shown to rely heavily on subjective measures such as quality of the deals made and contributions to customer satisfaction, and a manufacturing firm with objectively determined piece-rate incentives in place also based a significant portion of employees pay on subjective aspects of performance such as cooperation and innovation. There is varying rationale for doing so, such as: not all dimensions of performance are easily, accurately or comprehensively quantified; quantitative measures can induce a short-term focus and may be susceptible to employee manipulation; and subjective measures allow organizational discretion without the need for renegotiating formal pay arrangements (Gibbs, Merchant, Van der Stede, & Vargus, 2004).

However, the benefits associated with subjective performance standards from the employer perspective can translate into undesirable uncertainty for employees pertaining to their evaluation and related pay. Study findings for organizations facing similar conditions of uncertainty provide a basis to predict how employees would respond. The empirical study found that organizations that lack absolute standards by which to target and gauge their performance (a sample of universities) rely on relative assessments of other organizations from their social reference group to guide their own performance in a direction that will compare favorably to the referent organizations, resulting in an upward ratcheting of performance indicators (Schramm, 1975).

Social comparison is consistent with how individuals are theorized to respond to uncertainty (Festinger, 1954). In his original conceptualization of social comparison theory, Festinger posited uncertainty affecting the self as the overriding motivation for social comparison. It is now generally accepted that being in a state of uncertainty promotes a need for social comparison (Stapel & Tesser, 2001). Indeed, most situational factors established by subsequent research as antecedents of social comparison involve inherent self-uncertainty: e.g., situations of change, novelty and competition (see Gibbons & Buunk, 1999). Social comparison has specifically been shown to vary in relation to a lack of adequate external performance measures (Shah, 1998). This logically helps employees reduce uncertainty over what constitutes good performance (e.g., “How do my numbers compare to others in my work group?”).

In sum, even if we conceptually assume the added condition that all good performers are to be rewarded equally—in contrast to the tournament pay competitions discussed subsequently, performing favorably in comparison to referent others reduces uncertainty over whether appropriate performance levels were attained to meet subjective standards. Such uncertainty is absent in the presence of objectively quantified performance standards (Baker et al., 1994).

Proposition 2a. Individuals will work more self-imposed hours when pay is contingent on subjective versus objectively quantified individual performance standards, *ceteris paribus*.

3.2.2. Reinforcing effects of loss aversion via endowment

The reinforcing endowment effects described previously for pay that is equated to units of time are also posed to apply here. Put simply, pay that is contingent on subjective performance measures would have to be continuously re-earned, like most other forms of performance pay other than merit pay. Once initially earned through working more hours, the increase to income is likely to become endowed and be perceived as a loss if not maintained. This makes the work time required to maintain the endowed level of income subjectively more valuable and consequently reinforces individual preference for more work hours.

Proposition 2b. Individuals triggered to work more hours when pay is contingent on subjective individual performance standards will perceive each subsequent occasion to do so, in order to avoid the “loss” of endowed income, as having greater subjective economic value.

3.2.3. Implications for human capital via misdirection of employee effort

As previously described, employees reduce their uncertainty over what constitutes good (i.e., pay-attaining) performance through social comparison, which creates a relative and upward spiraling performance target in relation to the area of work in question. A natural consequence is that an increase in attention and effort for one area of work performance reduces the availability of such for other dimensions of work performance, through shifting of effort between performance dimensions and/or the narrowly focused use of extra work hours that may otherwise be more productively applied to other work outcomes. Either way, the allocation of individual work time is suboptimal from the organization. Note that this is distinct from the increased effort that results when pay is contingent on units of time. The pay contingency then is on broad inputs (hours) rather than more narrow outcomes and therefore effort is not unduly shifted by pay to a particular dimension of performance.

Thus while the increased work time predicted to result when individual pay is tied to subjective performance standards satisfies employee self-interest for managing pay uncertainty, it represents an economically inefficient use of human capital for organizations. That is, some of the work outcomes that are peripheral to employees' focus undoubtedly hold importance for organizational success. At the same time, the overperformed work outcomes likely hold decreasing marginal utility for organizational success.

To demonstrate, consider the following organizational example. Institutions of higher education evaluate faculty performance on three broad dimensions: research, teaching and service. Performance evaluation criteria for research and teaching are well defined and quantified in comparison to service, for which performance criteria is "nebulous" and subjective (Neumann & Terosky, 2007: 282). The primary performance incentive for mid-career academics (i.e., associate professors) in this context is promotion to full professor, and this incentive is tied to a weighted consideration of all three dimensions of performance. In what can be interpreted as in keeping with the earlier conceived employee behaviors in the face of subjective performance standards, associate professors tend to allocate effort to the service dimension of performance in excess of the institution's stated weighting of this dimension, which at the same time diminishes the effort available for the other two valued dimensions of performance (Misra, Lundquist, Holmes, & Agiomavritis, 2011; Neumann & Terosky, 2007). Thus the organization receives a suboptimal return on their investment in human capital—assuming that the organization's explicitly stated weighting of performance dimensions, rather than the implicitly derived weighting, is indeed an optimal use of human capital. Finally, notice that the predictions here speak to the organization's utilization of human capital.

Proposition 2c. Pay that is contingent on subjective individual performance standards will have a curvilinear relation with human capital, mediated through this form of pay's escalating reinforcement of long work hours devoted to the subjective performance dimension.

3.3. Pay growth determined by tournament pay structures

3.3.1. Initial trigger

Tournament theory (Lazear & Rosen, 1981) points to the economic efficiency of steep wage differentials tied to a relative ranking rather than absolute levels of individual performance. This generally entails rewarding best performers beyond their marginal contribution, or disproportionately more than the next best performer. The economic logic behind such a pay structure relies on sorting effects and incentive effects—it attracts and retains high performers, and motivates greater performance effort as employees compete for the top prize. A common example is a pay structure that attaches disproportionately high rewards to a fixed number of top management positions and theoretically entices greater work effort at the lower ranks with the chance to "win" one of the limited slots.

The fixed-number of "winners" associated with pay tournaments is what distinguishes it from a pay structure derived from performance standards that promote all who meet the target, whereas the difference otherwise can be subtle but important to discern since changes to tournament pay structures require costly restructuring of the organizational hierarchy (Gibbs, 1994). Contrasted with the earlier proposition for subjective performance standards, where employees benchmark relative performance as a way to reduce uncertainty regarding performance standards and its related pay—not to out-earn others, employees under tournaments are explicitly incented (by the net present value of anticipated future pay outs) to exceed relative performance levels so that they may exceed the pay level of the referent others. Motivation to strive for promotion is generally greater when pay disparity is wider and less linear since together this increases the amount that top pay may exceed marginal contribution—very small differences in performance result in very large differences in reward. A winner-take-all approach is the most extreme tournament example, with "losers" paid well below their marginal contribution. Competing employees are thereby likely to work harder and longer than their peers in an effort to exceed relative performance levels. For instance, empirical findings indicate a positive relationship between the number of work hours preferred by aspiring managers and actual hours worked by their coworkers (Brett & Stroh, 2003).

Under tournament pay structures, even when employees win one round, there are typically additional rounds with even greater pay differentials to pursue. Continuous pursuit of long-term relative status through increased work hours imposes a workplace norm that compels longer average hours for all employees (Golden, 2009; Yakura, 2001). In a study involving law firms, where relative ranking determines promotion to partner, the number of hours worked by associate-level employees confirmed a "rat-race" equilibrium with widespread overwork regardless of employee-preferred work hours (Landers, Rebitzer, Taylor, 1996). Hence the stigma of working less than the norm helps assure average work hours remain high for all, even for

relative underperformers that would otherwise rationally opt out of the competition and remain at their given level rather than continuing increased work effort with little chance of additional return—i.e., little chance to win in the tournament.

In direct contrast to tournament pay structures, egalitarian pay structures hold no structurally implicit (i.e., wide pay dispersion) or explicit (i.e., fixed number of winners) emphasis on best relative performance. If the net present value of future income for tournament and egalitarian pay structures were assumed objectively equivalent, the normative pressures described above would still suggest more work hours would occur under tournament pay structures. In addition, the competitive aspect of tournaments have been found to spur work effort beyond what economic rationality would predict (“tournament fever”), much like the overbidding that occurs during auctions (Avrahami, Güth, Kareev, & Uske, 2007; Uske, 2008).

Proposition 3a. Individuals will work more self-imposed hours under a tournament pay structure (wide pay dispersion with a fixed number of “winning” slots at each level) relative to an egalitarian pay structure (narrow pay dispersion with no fixed number of winners), *ceteris paribus*.

3.3.2. Reinforcing effects of loss aversion via sunk cost bias

What keeps all non-winning tournament participants from simply changing their company or job in order to discontinue the unanswered investment of long work hours? Sunk cost effects can explain this and can predict the self-reinforcement of increased work hours under tournament pay structures. There are various types of pay tournaments including single rounds, multiple rounds, winner-takes-all prizes, and more. One thing all types of pay tournaments have in common is the requirement that effort be expended before a winner is known. Effort, once expended, can be construed as a sunk cost invested towards winning the tournament. Sunk costs are costs that have been incurred and are non-recoverable. Although sunk costs are often thought of in financial terms, effort is established as having the same characteristics as currency (e.g., Heath et al., 1999; Zeelenberg & van Dijk, 1997). Employees subject to pay tournaments would be especially likely to view their expended effort in terms of sunk costs since, in keeping with the inherent motivational principle of tournament pay structures, they are paid less than their current contribution while competing. In other words, the full “cost” of their time spent working has not been recovered through their current pay.

Whereas sunk costs should not influence rational economic decision making, research demonstrates a sunk cost fallacy in which decisions are influenced by past investments rather than future costs alone (Arkes & Blumer, 1985; Friedman, Pommerenke, Lukose, Milam, & Huberman, 2007; Meyer, 1993). As the sunk costs of work effort accrue, dropping out of tournament competition (i.e., reducing work effort to a level commensurate with current pay or leaving one’s job) becomes perceived as a costly option since the extra effort already expended would be lost. Research shows that in response to sunk costs people are more inclined to escalate commitment, even if chances of success are poor, rather than reduce commitment (Whyte, 1986). Further, unless the tournament is an up-or-out contest, the sunk cost of effort expended in competing cumulatively carries to each new tournament. In other words, employees that did not win promotion may keep competing for the next promotion in order to avoid the loss of sunk costs. The more effort invested, the greater the cumulative loss of sunk costs to be avoided.

Proposition 3b. Individuals triggered to work more hours by tournament pay structures will perceive the ongoing occasion to do so, in order to avoid the loss of sunk effort, as having greater subjective economic value.

3.4. Implications for human capital via counterproductive employee behaviors

Tournament pay structures create effort-based career opportunities for employees within their present workplace by creating a robust positive association between relative individual performance and promotion and/or pay growth. As stated, this provides an explicit incentive for employees to work longer or more effortful hours than their present pay may justify in objective economic terms. Even if supplying “unpaid” overtime can be said to be a rational decision for individual employees from the perspective that it improves the probability of higher future earnings, it is not clear that the outcomes and process are efficient for employees as a collective since average work hours are increased for all while only a minority attain actual promotion and/or the higher return on their own human capital (i.e., higher pay; Golden & Altman, 2008).

Despite this potential inequity, the previously delineated sunk costs of effort are likely to keep employees in the “game” throughout one or more rounds of tournament competition, while there is still some chance of winning. Eventually though, inequity perceptions are likely to prevail—since pay dispersion under a tournament pay strategy by definition results in many employees being paid below their actual current contribution and some above—and encourage employee behaviors to restore equity such as reduction of effort, theft, sabotage, or complete withdrawal (Cowherd & Levine, 1992). Equity theory and its rich history of supportive findings lend general support to this notion. Pay dispersion research also provides indirect support. A longitudinal study of major league baseball teams found that while team pay dispersion was positively related to the performance of players relatively higher in the pay distribution, it was negatively related to those players relatively lower in the pay distribution—over and above absolute pay amount and other performance related controls (Bloom, 1999).

Thus it seems the presence of wide, and presumably tournament type, pay differentials in a pay system has a demotivating effect for those least benefited (i.e., the potentially underrewarded). [It is important to stress, however, that pay dispersion that is commensurate with differences in employee inputs should not invoke perceptions of inequity and may instead enhance organizational human capital through attraction and retention of high performers (see Trevor, Reilly, & Gerhart, 2012).] Despite

this conclusion it could be that organizations as a whole would still benefit from the incentive effects of pay tournaments since performance gains from those higher in the pay distribution may exceed the performance declines of those lower in the pay distribution. Further, based on the sorting effects of pay tournaments, relatively poor performers would be predicted to ultimately leave an organization while top performers remain. Empirical findings do not support such net organizational gains though, particularly when the focus of pay dispersion is more horizontal than vertical, which is increasingly seen with the declining prevalence of hierarchical organizational designs. For instance, performance-based pay dispersion, when the performance tie was saliently communicated, was shown to be positively related to the retention of good performers, but not predictive of organizational shedding of lower performers within the trucking industry (Shaw & Gupta, 2007).

In terms of net overall group performance, Bloom (1999) found a negative relationship between baseball team pay dispersion and overall team performance (both on-field performance and financial performance). This was attributed to the encouragement of uncooperative and self-serving behaviors as employees compete for compensation within a performance environment that involves interdependency. Similar results were found in a study of pay dispersion and its relation to research productivity and likelihood for collaboration among academic faculty (Pfeffer & Langton, 1993). In a mixed-sample investigation of these relationships using organizations within the trucking and concrete pipe industries, Shaw, Gupta, and Delery (2002) similarly found work interdependence to moderate the relationship between wide pay dispersion and organizational performance, but these effects appeared attenuated by the presence of individual incentive pay. The researchers attributed this to the use of normatively accepted justification for pay dispersion, though I suggest this may have also provided employees the opportunity to redress pay dispersion through the continuous re-earning of incentive pay. More to the point for the present conceptual treatment, it seems that tournament pay systems may indeed erode the net value of organizational human capital when work interdependence is present—and although not all organizations require employee coordination such as knowledge sharing and collaboration for performance success, a high degree of reciprocal interdependency is found in most modern organizations (Barley & Kunda, 1992). Finally, notice that the predictions here speak to the organization's utilization and retention of human capital.

Proposition 3c. Tournament pay structures will have a curvilinear relation with human capital, mediated through this pay structure's escalating reinforcement of long work hours invested for anticipated future returns.

4. Discussion

The preceding conceptual treatment modeled aspects of pay systems, beyond the amount of pay itself, which psychologically dispose employees to work more hours and, in turn, ultimately hold implications for organizational human capital. Three pay-system “triggers” were conceived based on their empirical connection to self-imposed work hours in the extant literature and their common presence in organizations. These triggers were pay that is equated to units of time, pay that is contingent on subjective performance standards, and pay growth that is determined by tournament pay structures. Each trigger's predicted relationship with self-imposed work hours was built on a complex of reinforcing factors, but the primary causal mechanisms can be summarized as follows. When pay is equated to units of time, individuals choose more work to avoid the now salient opportunity cost of leisure time. When pay is contingent on subjective performance standards, individuals choose more work to reduce the inherent uncertainty of such standards through inference from favorable social comparison. And when organizations base pay growth on promotion within tournament pay structures, putting forth more work hours increases the likelihood of future income growth and, even for those unlikely to win promotion, maintains consistency with the social norms for performance that tournament pay structures engender.

Further, each trigger's relationship with more work was conceived as self-reinforcing due to loss aversion stemming from endowment of income and sunk costs associated with invested effort, implying a long-term and potentially spiraling effect on more work. That is, once contingent income is received or time is invested in pursuit of it, these amounts perceptually shift from being something to gain to something to avoid losing, and thereby become subjectively more valuable to pursue and maintain. Empirical testing of these long-term predictions clearly requires a longitudinal study, however, future research may infer initial support through scenario-based experiments that manipulate the variables of interest—a common approach in decision-making research.

Finally, these conditions were theorized as having implications for the organization's human capital, enhancing human capital to a point but eroding it if the subjective threshold for optimal work hours is exceeded. More specifically, the erosion of human capital was predicted to occur when too little time remains for human regeneration (more likely when pay is equated to units of time), or when work hours are directed too disproportionately to one dimension of work performance at the expense of others (more likely when pay is contingent on subjective performance standards), or when work hours accumulate too disproportionately to maintain equity expectations and thereby encourage counterproductive work behaviors (more likely when pay growth is determined by tournament pay structures). Importantly for future empirical research, this mapping of proposed inflection points for the pay-system effects identified highlights that these elements are not linear in their relation with human capital, whereas the notion of monotonic relationships are thought to be falsely assumed for many predictors in the management literature (Pierce & Aguinis, 2011).

A final contribution for theory and research that should be emphasized is that the specification of paths between pay systems and human capital provides a platform to extend compensation research to the timely topic of organizational sustainability, particularly the “people” or “social” dimension of the triple bottom line embraced by the sustainability movement. It has been

noted that a disproportionate share of the attention paid by organizations, researchers and educators has gone to the other two dimensions of sustainability concerns (environmental and economic), whereas sustainability of the organization's human resources, and the role played by firms' human resource systems, has been incongruously overlooked (Pfeffer, 2010). Pay systems are a particularly relevant organizational practice for sustainability research to consider since they represent policy decisions common to all organizations.

4.1. Future research

There are several points that future research should consider in addition to the theoretical contributions above. Time and effort were closely equated in describing more work for the present model, though this distinction could be more finely parsed going forward. Also, the three pay-system conditions that were modeled are not mutually exclusive. Experimental designs can test each condition in isolation, but future field studies should recognize when these pay conditions coexist and potentially overlap (e.g., pay tournaments that also have subjective performance standards).

Pay amount was implicitly held constant for the present model in that the propositions focused on relative rather than absolute differences in pay, but could be explored in relation to the proposed relationships since, as stated initially pay amount also has potential implications for choice of work hours. However, research on the impact of hierarchical level and job performance (both correlates of pay amount) on hours worked are mixed (Feldman, 2002: 353), suggesting pay amount may interact with—rather than replace variance explained by—the psychological processes outlined here. For example, an empirical study of utility company employees showed a higher rate of unpaid, non-medical absenteeism for employees that ascribed a subjective dollar value to an additional hour worked that was lower than their actual objective hourly pay rate (Dunn & Youngblood, 1986).

In the same vein, there are a host of potential covariates for self-imposed long work hours (e.g., family status and job challenge; see Feldman, 2002) that should be controlled in assessing the unique variance explained by the posed pay-system effects. Similarly, the optimal level of work hours to benefit human capital is a subjective number influenced by factors such as flexibility of work schedule, non-work demands, and more (see Barnett, 2006), which should be held constant or treated as moderators when conducting empirical investigations of the propositions pertaining to pay-system effects on human capital.

4.2. Implications for practice

The model identifies elements of pay systems that can be leveraged to increase the amount of time employees choose to invest in work—providing the organization a potentially greater return on pay dollars spent. However, strategic application must also consider the posed implications for sustainability of human capital. The question for practice then becomes how to leverage these pay-system effects without having employees exceed the optimal level of work hours. One-third of respondents in a survey of the U.S. workforce reported chronic overwork (Families & Work Institute, 2004). National statistics for employees in Japan indicate a similar state of long working hours and social concern over its consequences, including the extreme consequence of death by overwork or *karoshi* (Iwasaki, Takahashi, & Nakata, 2006). The prevalence of these reported feelings of overwork suggests many organizations are missing an optimal balance. Thus recognition by organizations of the positive and insidious negative effects of the modeled pay practices is the first step towards managing these processes.

Next, a direct way to assure pay-system effects remain in the positive domain may be to simply place a limit on the number of hours employees may work over the long-term (assuming that employees devote these non-work hours to regeneration rather than, say, a second job). More work hours, and thus the potential for too many work hours, as presently modeled, derives in part from the greater perceived potential for pay to change in relation to increases in the amount of time worked. With hourly pay, organizations contribute to this circumstance when they pay employees for unused vacation days, sick days and personal days as opposed to a use-it-or-lose-it approach, or when organizations offer excessive paid overtime hours. To stress the wide relevance of this point, it is important to realize that the hourly ranks are not limited to a small segment of low-wage earners. As of 2011, 59.1% of all salary and wage workers in the United States were paid by the hour (Bureau of Labor Statistics U.S. Department of Labor, 2012), and this does not include salaried employees that are not paid hourly but are still beholden to billable hours (e.g., attorneys and accountants), nor independent contractors that may be paid based on time. The simple idea of limiting the maximum paid hours that employees may work or requiring a certain number of vacation days be used each year to safeguard against overwork has been sweepingly embraced by some, but more at the national than organizational level. For instance, several countries require that workers take some degree of leave the year in which it is granted (Denmark, Ireland, Switzerland, and Portugal) and/or have provisions specifically forbidding employers from offering employees additional pay for forfeiting all or a portion of vacation days (Australia, Portugal, Spain, Switzerland and the United Kingdom; Center for Economic & Policy Research, 2007).

Organizations may also steer employees to an optimal level of work hours by managing social norms associated with tournament pay structures, which convey a norm for more work hours such that all employees are compelled to participate or, by relative comparison, be viewed and potentially penalized as underperformers. A counterforce to such a norm, that is also still encouraging of high performance, is recognition lauded on employees that work less hours but produce appreciative value per hour (Haight, 1997). Organizations may also consider enforcing time off for high achieving employees that embrace long work hours, due to the potential unrecognized erosion of human capital (Perlow & Porter, 2009). Although intrinsic enjoyment of one's work appears to mitigate self-report measures of psychological job strain for those that feel driven to work (Graves, Ruderman,

Ohlott, & Weber, 2012), experimental research also suggests individuals are unaware or ignore the deteriorating effects of their own fatigue when competing in pay tournaments (Ryvkin, 2011). Further, employee backlash to perceived inequity related to continuous overinvestment of work time, as predicted earlier, can occur well after the fact. For instance, Novartis Pharmaceuticals Corporation recently encountered a class action lawsuit for unpaid overtime of its sales representatives, resulting in a 99 million dollar settlement agreement in January 2012.

4.3. Conclusion

In sum, pay-system attributes beyond pay amount arguably play a significant, and at times insidious, role in the inducement of more work hours and, in turn, have implications for human capital. The framework developed herein provides the basis for empirical examination and strategic application of these relationships. On a grander scale, it may also represent an important step towards influencing pay conventions since human resource management discourse is thought to be a key influence of values and practices in the workplace (Jacques, 1999).

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