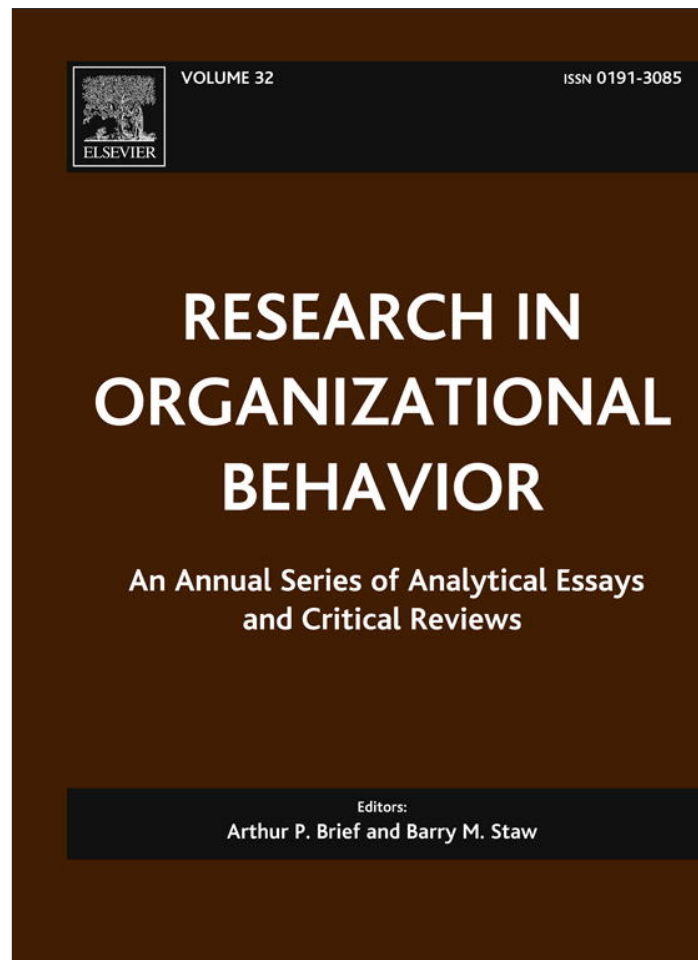


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The economic evaluation of time: Organizational causes and individual consequences[☆]

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Abstract

People acquire ways of thinking about time partly in and from work organizations, where the control and measurement of time use is a prominent feature of modern management—an inevitable consequence of employees selling their time for money. In this paper, we theorize about the role organizational practices play in promoting an economic evaluation of time and time use—where time is thought of primarily in monetary terms and viewed as a scarce resource that should be used as efficiently as possible. While people usually make decisions about time and money differently, we argue that management practices that make the connection between time and money salient can heighten the economic evaluation of time. We consider both the organizational causes of economic evaluation as well as its personal and societal consequences.

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Of the many changes created by the industrial revolution, one of the most important and enduring has been the adoption of organizational practices intended to promote people's focus on the efficient use of time. In [Jacoby's \(2004, p. 10\)](#) historical account of the rise of factory production, he noted that “in the factory workers had less discretion over their work pace and methods” because of greater oversight. Factory work and the accompanying supervision resulted in the more efficient utilization of capital equipment and also more predictability in work output because people's time

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could be managed. Frederick W. Taylor, one of the originators of scientific management and management theory, justified his attention to improving work methods by contrasting the emphasis on preventing the waste of physical resources with the lack of attention to the waste of time: “But our larger wastes of human effort. . .are less visible, less tangible, and are but vaguely appreciated” (1911, p. 5). With the use of “time and motion” studies and efficiency experts, Taylor at once spearheaded and came to symbolize a formal movement to design organizational tasks to be efficient in using time at work as a means of increasing economic productivity.

While some aspects of scientific management have faded, work-study engineers and payment by results live on at least in some factories (e.g., Jones, 2000), and even professionals such as physicians are increasingly subjected to measurements of efficiency, such as the number of patients (or clients, in the case of other professionals) seen per hour. Scientific management and its philosophical and practical descendants remain striking examples of how the conceptualization of time’s economic value continues to be codified and reified through the design of organizational practices and individuals’ exposure to them.

In this paper, we theorize about the role organizational practices play in promoting an economic evaluation of time and time use—a perspective where time is thought of primarily in monetary terms and viewed as a scarce resource that should be used as efficiently as possible. There are, of course, alternative conceptualizations of time other than as a resource to be managed, as Lakoff and Johnson (1999, p. 165) noted: “Cultures in which time is not conceptualized and institutionalized as a resource remind us that time in itself is not inherently resource like. There are people in the world who live their lives without even the idea of budgeting time or worrying if they are wasting it.”

While the economic evaluation of time can be partially traced to the industrial revolution and the fundamental changes it brought in the relationship of people to work, an economic perspective on time is nevertheless a view that is continually reified by the contemporary institutionalization of numerous organizational practices and activated by individuals’ exposure to them. Thus, we propose that differential exposure to organizational practices in modern day society that make the time–money connection salient can help explain a range of contemporary phenomena and also resolve a number of apparent paradoxes highlighted in the literature. Such paradoxes include why “free agents”—independent technical contractors—do not feel free to use their time as they like (Evans, Barley, & Kunda, 2004); why lawyers, who at least in the past enjoyed both reasonably high incomes and occupational prestige, nonetheless often dislike their jobs and their employers and therefore leave their firms and the profession (e.g., Kaveny, 2001); and why even though people’s happiness is decreased by spending more time at work (and commuting to work) and increased by spending time with family and volunteering, individuals do not invariably make choices about time use consistent with increasing their happiness (e.g., Layard, 2005; Mogilner, 2010).

We describe what we see as the conditions under which individuals can come to adopt an economic evaluation of time as well as the consequences this framing can have for the decisions people make about their time use and also their experience of time—their psychological well-being. We review some of the relevant evidence and develop a theoretical statement of some of the prominent causes and consequences of an economic evaluation of time. In this discussion, the role of organizations and management practices, including payment and time accounting practices, loom large.

1. Time in organizations

Although “management in organizations has long had an obsession with time” (Orlikowski & Yates, 2002, p. 664), time remains a fundamental but nonetheless relatively understudied and undertheorized part of organizational analysis (e.g., Ancona, Goodman, Lawrence, & Tushman, 2001; Bluedorn & Denhardt, 1988; Butler, 1995). There has been research on the temporal sequencing of group processes (e.g., Ancona & Chong, 1996), how people enact processes that create the “rhythm” of organizational life (Orlikowski & Yates, 2002), and how and why people develop various time perspectives—for instance, long-term versus short term (e.g., O’Rand & Ellis, 1974). There has also been research on the effect of time horizons on choices (e.g., Kivetz & Tyler, 2007), with particular attention to the causes and effects of a short-term financial focus on company and country competitiveness (e.g., Porter, 1992). Attention has been focused on the pace of life and everyday activity (such as how quickly people walk), a subject that has also engaged students of comparative national cultures (e.g., Levine, 1997; Levine & Norenzayan, 1999). And Perlow (1999) has studied how engineers used their time on the job, finding that although constant interruptions made it difficult to get their work done, rewards and recognition based on “saving” behind-schedule projects precluded adopting practices to make work arrangements more sensible and less stressful.

But perhaps the most fundamental decision about time is how people allocate it because time, unlike money, for instance, is fixed in its amount—there are only 24 h in a day. Of course, modern technology permits more multi-tasking, and also has reduced the separation between work and nonwork domains (Halford, 2006) as people take their work home with them and others do personal tasks at work (Ilgen, Dass, McKellin, & Lee, 1995). These changes represent an interesting reversal of the trend begun more than a hundred years ago when employers took work out of the home and moved it into factories even as they turned independent contractors into employees (Clawson, 1980). The growth of large employers using hired labor necessarily caused modern management to be concerned about people's choices about time use, because what organizations tend to purchase from employees is their time, which employers must then get people to use for the employers' benefit.

Braverman (1974) and others have detailed the historical evolution of the concept of working time through human history. Most people were originally self-employed—even if they were tenants to landowners or contractors to factory managers, they controlled their own working hours, long though those might be. The rise of factories and large scale enterprises brought about the hiring of people as employees, and this change led individuals to experience two important differences in their work arrangements.

First, when individuals were self-employed, they tended to not be governed as much by the clock. Instead, people worked until their necessary tasks were completed or until they had earned as much as they wanted from their work (e.g., Clawson, 1980). However, as employees, individuals worked for wages and not just to complete jobs. This meant that how long they worked became more discretionary, both for them and their employers. Thus, as just one example, employees at airlines have walked out or not shown up for work to protest working conditions (Salpukas, 1999), in the process unilaterally reducing their work hours and throwing company operations into a turmoil. Meanwhile, employers have increased the proportion of people working part-time, not because it does not take as long to complete the work, but instead to reduce the costs of benefits that are typically paid only to people who work a certain number of hours (Kalleberg, 2000).

Second, because organizations paid people for the most part according to the time they spent working, the issue of control over how employees used their time while at work became a central, some would say *the* primary concern of management (and, it should be noted, a very prominent focus of much organizational behavior research). Companies purchased employees' time, but then had to influence how workers spent that time in order for companies to profit from the transaction. As Braverman (1974, p. 54) noted, “what the worker sells, and what the capitalist buys, is *not an agreed amount of labor, but the power to labor an agreed period of time*” (emphasis in original). What companies buy, labor power, is vast in its potential but not nearly so vast in its realization. Braverman's discussion nicely parallels and foreshadows economic treatments of effort aversion (e.g., Baiman & Demski, 1980) and the agency problems (Eisenhardt, 1989) that arise from differences in, among other things, how employers and their employees want time to be spent and the struggle for control over the labor process and time use. The choice of how to pay people—by the hour, by an annual salary, by what they produce or sell, or some combination—in part reflects efforts to realign incentives so that employers' and employees' interests are more compatible.

We argue that the evolving nature of the employment relationship that emerged out of the industrial revolution helped to create a perspective on time that emphasized its economic value, seeing employees' time as an economic resource to be purchased and deployed by employers. This economic, resource-like view of time (e.g., DeSerpa, 1971) is frequently reinforced in present-day work organizations by numerous management practices that make chronically salient the connection between time money, the value of time and its scarcity, and the importance of using time efficiently. Consequently, one important theoretical and empirical task is to elucidate the conditions that make an economic evaluation of time more or less likely.

It is not just decisions about how to spend time while at work that are economically consequential. The fundamental choice between how much time to spend at work and at leisure is another decision about time use that, in the aggregate, affects labor supply and, as a consequence, is one of the principal concerns of labor economics (Lazear, 1998). Because economic output (Gross Domestic Product) is a function of labor productivity per hour and the number of hours worked, the aggregate of individual decisions about how much time to spend working affects national income as well as labor supply. Such decisions are, of course, not made in a vacuum, as many nations regulate working hours and overtime and social norms about the trade-off between work and leisure differ between the U.S. and Europe and even within Europe (Layard, 2005).

And the social effects resulting from decisions about time use also loom large. Hochschild (1997) and others have focused on the amount of time people spent working, in part because the amount of hours worked has physical and

mental health effects (e.g., Tucker & Rutherford, 2005; Yang, Schnall, Jauregui, Su, & Baker, 2006), with studies showing that increasing work hours affects the incidence of high blood pressure as well as accidents. And the focus on work time reflects the fact that, because time is necessarily finite, time spent working can reduce time spent on other responsibilities and activities such as family (e.g., Greenhaus & Beutell, 1985; Higgins, Duxbury, & Lee, 1994) and social and communal activities (e.g., Figart & Golden, 2000; Putnam, 2000). Decisions about time use are, therefore, fundamental for both work organizations and the larger society.

Individual decisions about time use, when aggregated within a society, help to define social norms about appropriate time use and decision logics about allocating time. The normative order, after all, is defined by what most people do, expect, and think. Over time, these social norms and decision logics about time use develop a taken-for-granted quality that influence how people think and for that matter talk about time, although of course such normative orders are subject to change. “Whereas at the turn of the 20th century, the conspicuous consumption of leisure indicated an upper-class social position. . . today it is conspicuous devotion to time-intensive productive activities that signifies high social status” (Mattingly & Sayer, 2006, p. 206). It is empirically possible to assess normative orders by studying language use, much as Barley and Kunda (1992) did with language emphasizing cultural/normative or economic control of behavior. One might assess the frequency with which time and money are mentioned together, “efficiency” is paired with time, and time is described as being scarce as ways of assessing the extent to which an economic evaluation of time prevails in different social units such as countries and also how it varies over time.

Societal norms in turn influence management practices concerning time management—what should daily and weekly work hours be, how much vacation should people receive, and use, and how much down time should people expect. But as managerial practices about time use diffuse widely and particularly if, as we argue below, such practices affect how people see and make decisions about time, such organizational practices in turn come to influence societal values about time in a reflexive process that as of yet has not been empirically analyzed.

2. Organizational effects on individual decisions about time use

One useful way of conceptualizing decisions about time use is to consider the factors that affect the extent to which an economic logic prevails. We argue that although other influences such as family and societal values clearly matter, people learn how to think about time in their place of employment. Therefore, both employment status (e.g., self-employment) and management practices, through their effects on decision logics, influence people’s decisions about time use and their experience of time.

As institutionalized entities, organizations and what they do tend to enjoy a taken-for-granted legitimacy (Scott, 1995). The fact that organizations are institutions makes their statements and decision logics have immediate credibility and legitimacy. To take just one example, using the autokinetic effect, Zucker (1977) showed that when people thought they were in an organizational context and, even more, when they were given a position title (chief light operator), study participants were more likely to persist in providing larger estimates of how much a stationary point of light seemed to move. Zucker’s study demonstrated not just that there was greater cultural persistence when the concept of “organization” was invoked, but also that thinking they were part of an organization with a job title affected people’s perceptions, in this case about a physical reality.

Organizations not only legitimate decision logics and ways of thinking. Because they measure some dimensions of behavior and performance and not others, organizations make those measured aspects of the work environment more salient. Some measurements—output per unit of time (labor productivity), the time consumed to complete tasks, and other time-oriented measures of performance—implicitly send the message that time is a scarce resource to be used as efficiently as possible. Therefore, we predict that to the extent such time-oriented measures are employed at work, there will be a greater focus on time as a resource and a tendency to adopt an economic evaluation logic in decisions about time use.

Moreover, through the language they use and the deadlines they impose, organizations can create a sense of time urgency and a belief that time is scarce. Research in social psychology clearly demonstrates that activating or priming a concept influences the accessibility and use not only of that concept but also of other, related constructs in directing behavior (e.g., Diksterhuis & Bargh, 2001). For instance, subliminally priming the Apple logo leads to participants obtaining higher scores on a creativity test (Fitzsimmons, Chartrand, & Fitzsimmons, 2008), while priming the idea of “elderly” causes undergraduates to walk more slowly (Bargh, Chen, & Burrows, 1996). Priming time scarcity and the

efficient use of time can cause people to do things more quickly and to feel more time pressure (Zhong & DeVoe, 2010).

Work organizations, through what mindsets and concepts they make salient and the decision logics they employ, can influence how people think about time and its use and these cognitive frames, acquired through exposure on the job, can carry over to other, nonwork domains. Our argument proposes a different, but complementary, perspective on spillover effects from that customarily seen in the research literature. Typically, spillover research has explored either how demands at work affect nonwork domains of life or vice versa (e.g., Bedeian, Burke, & Moffett, 1988; Frone, Russell, & Cooper, 1992; Kossek & Ozeki, 1998), or how affect and mood diffuse between work and nonwork spheres (Williams & Alliger, 1994; Song, Foo, & Uy, 2008). Without for a moment questioning the plausibility and importance of these types of spillover, we propose a third mechanism through which what happens at work affects other domains. People learn on the job what to consider and measure and what decision logics to use in thinking about time. People then use what they have learned and noticed at work in other contexts, in part because they spend so much time at work that it becomes an important learning environment and in part because work organizations and, by extension, their practices have assumed legitimacy.

Although work organizations could, in theory, instill a variety of different decision logics and perspectives on time, in fact the priming and decision criteria people are most likely to experience at work implicate the ideas about the efficient use of scarce resources, including time. That is because organizations are, above all, instruments of intended efficiency and are filled with the language and measurement of performance (Weber, 1978). Ferraro, Pfeffer, and Sutton's (2005) comments about the primacy of economic language would seem to hold particularly true in work organizations, where maximizing shareholder return and efficiently turning inputs into outputs are the name of the game. Therefore, we argue that people are likely to acquire at work a greater propensity to use economic, efficiency-oriented criteria in decisions about everyday life and also to see time as a scarce resource, although the extent to which this occurs depends on the specifics of the management practices people confront.

But seeing time as a scarce economic resource to be used as efficiently as possible will not necessarily produce choices that invariably benefit people or make them happier. Buettner (2012, p. 39), investigating places where people lived longer, visited the Greek island of Ikaria. A physician on the island described it and the difference from another close-by place: "Have you noticed that no one wears a watch here? No clock is working correctly. . . . We simply don't care about the clock here. . . . In Samos they care about money. Here we don't." Buettner's work for National Geographic identifying "blue zones"—locales where people live longer—offers the provocative hypothesis that an economic evaluation of time affects health and life-span. Indeed, giving away time and money are important sources of happiness (Dunn, Aknin, & Norton, 2008; Borgonovi, 2008) and always being in a hurry can detract from people's ability to stop and enjoy their experiences (DeVoe & House, 2012). Because not all work organizations and not all management practices are identical in their implications for fostering an economic perspective on time use, it is important to explore the particular factors in the work environment that would increase or decrease people's thinking about time using an economic frame.

It then becomes theoretically and empirically important to understand *which* management practices, under *what* circumstances, and over *how long* cause people to become economic evaluators of time use. And it also becomes important to understand the implications of this economic thinking about time on other outcomes, such as how people spend their time and with what personal consequences.

Our principal thesis is that there is spillover between work and other domains that occurs through the adoption of decision logics experienced at work. We develop this point by showing (a) that organizational practices affect decision criteria about time use; (b) that such criteria affect people's choices about how to spend time and; and therefore, (c) practices that make salient the equivalence of time and money affect people's happiness and other outcomes of well-being.

3. What activates the economic evaluation of time?

The first question is under what circumstances or what organizational practices cause people to see time as similar to money. Although Benjamin Franklin is quoted as saying, "remember that time is money"¹ and Thomas Haliburton

¹ The quote is taken from <http://www.bartleby.com/100/245.16.html>.

at about the same time said, “we reckon hours and minutes to be dollars and cents,”² for people in general, including employees, decisions about time and money are mostly different and people do not think about spending time and money similarly. Soman (2001, p. 171) noted that there were a number of features that made time different from money: (1) time could not be inventoried or replaced, (2) time was not as readily aggregated as money, and (3) accounting for time was a much less routine and common activity than accounting for money. For these reasons, Soman expected mental accounting decisions to be different for time than for money. He found that people expressed less agreement with mental accounting process statements when these statements referred to accounting for time rather than money (although there was at least some agreement with the statements in both cases), consistent with his prediction that time and money were and would be treated differently. And in an experiment, Soman observed that the typical sunk cost effect—people respond to previous investments by being more willing to make subsequent investments—was not observed for time while it was found for money.³

Other research in decision making has further supported Soman’s hypotheses regarding the differences in how people treat the resources of time and money. For instance, in a study of consumer behavior, LeClerc, Schmitt, and Dube (1995) found that people were more averse to uncertainty with time as contrasted with money. They concluded that because time is less fungible or substitutable than money, planning is more important for decisions about time and because uncertainty makes planning difficult, people are more averse to uncertainty in decisions about the allocation of time.

In a similar vein, Okada and Hoch (2004) reported that there were systematic differences in how people spend time versus money, and that these differences could be explained by the greater ambiguity in the value of time, which permitted more accommodation and rationalization. In a series of seven experiments exploring intertemporal choice situations, Zauberman and Lynch (2005, p. 25) have shown that people “exhibit steeper discounting and more present-biased preferences for future investments of time than of money.” That is because perceived slack now and in the future is perceived to be more similar for money than for time, because people overestimate the amount of slack time (but not money) they will have in the future, as well as because money is more fungible than time. Thus the research literature has found that people do not experience a direct equivalence between time and money nor do they treat the two resources similarly.

Soman (2001) hypothesized that one reason that decisions about time were different from decisions about money was that it was more difficult to account for time and its value. Therefore, “any[thing] . . . that facilitates the mental accounting of time should cause sunk-cost effects to strengthen and reappear. . . These manipulations are (a) the provision of a wage rate which facilitated the conversion of time into a monetary equivalent, (b) education about the economic approach to time. . . and (c) highlighting the opportunity cost of the invested time” (Soman, 2001, p. 177). Another way of understanding these treatments is that each makes the connection between time and money more salient, and this salience changes how people see and make decisions about time.

For the vast majority of people and particularly those who work for others, a number of organizational practices make the connection between time and money salient and therefore should affect people’s decisions about time use. Time and money are particularly well-connected in people’s minds when they are paid by the hour because their income is then a direct function of the number of hours they work multiplied by their rate of pay (e.g., Soman, 2001). This insight led DeVoe and Pfeffer (2007a) to demonstrate that working people paid by the hour showed more similarity in their mental accounting for time and money than those not paid by the hour. And their research also illustrated a second insight: that although not everyone is paid by the hour, everyone has an implicit hourly wage—namely, the person’s total income divided by the number of hours the individual worked (Becker, 1965). DeVoe and Pfeffer (2007a) were able to experimentally make the time–money connection salient regardless of a person’s hourly pay status by having people calculate their (implicit) hourly wage. Those study participants not paid by the hour but who calculated their hourly wage showed the same degree of being willing to trade time for money as people paid by the hour, and they were different from non-hourly paid individuals who did not calculate their hourly wage but merely

² The quote is taken from <http://www.bartleby.com/100/390.3.html>.

³ Rubin and Brockner (1975) observed entrapment effects when subjects could wait for a dictionary (that they never received) which would help them solve a cross-word puzzle, the solving of which would permit them to win a jackpot that decreased in size the longer it took them to complete the task. While Rubin and Brockner’s study did find an entrapment or escalation effect for time, it is important to note that a) the study did not compare the escalation effect sizes for time compared to money and b) even more importantly, time was linked to money explicitly in their study design—the longer it took people to solve the puzzle, the less money they would receive.

answered questions about how much money they had earned, how many weeks they had worked, and on average how many hours per week they worked. Demonstrating the importance of economic evaluation in the decision to trade time for money, DeVoe and Pfeffer (2007a) found that it was the salience of economic criteria in decision making that mediated their experimental results.

These findings are consistent with an ethnographic study of technical contractors working in the Silicon Valley. Evans et al. (2004) reported that because the contractors they studied, without exception, billed their time and were paid by the hour, the contractors were always thinking of the opportunity costs of their time if they chose not to work. Moreover, only a small minority of those studied evaluated how they used their time using a broader set of criteria such as personal satisfaction or fulfilling social obligations. Consequently, the contractors wound up working more than they had expected to because they were “acutely aware that every hour they failed to work was lost compensation” (Evans et al., 2004, p. 21). As a consequence, the contractors both felt and exhibited less apparent freedom in their decisions about their work schedules than might be expected given that they ostensibly worked for themselves and did not have to obtain permission from a boss to allocate their time as they saw fit. Thus, the extent to which the link between time and money is salient helps account for the paradox of independent contractors not feeling truly “independent” in their decisions about time use.

It is not just the organizational practice of hourly pay that can make the connection between time and money salient. Accounting for one's time on a time sheet—billing time—also creates a cognitive connection between time and money. Yakura (2001), studying information technology consultants who had to bill their time to specific projects, observed that this routine billing practice created a taken-for-granted correspondence between time and money. Billing time was also a focus for Kaveny (2001), who argued that the requirement to bill time in short increments caused lawyers to have the opportunity costs of their time chronically salient, even if their salaries were not strictly a function of how much time they billed. As a consequence, Kaveny argued that lawyers developed a commoditized view of their time that left them unhappy and also unable to spend time on other activities, such as their families, without thinking about their lost income. DeVoe and Pfeffer (2010) found that experimentally having participants account for their time on a time sheet affected the extent to which they saw a time–money connection and were, therefore, less willing to volunteer their time.

Billing time, which fosters a cognitive connection between time and money, creates an economic orientation toward spending time that can change how people use their time and also the psychological enjoyment of their time. As such, billing time and its effect on the time–money relationship can help account for the paradox of highly paid and socially esteemed professionals who, because they account for the time spent working on a time sheet, wind up not enjoying their work, feeling pressed for time, and becoming so chronically unhappy that they are prone to leave both their employers and even their chosen profession.

Our economic evaluation of time argument provides a complementary, but different, explanation for people's decisions from the literature on extrinsic and intrinsic motivation (e.g., Lepper & Henderlong, 2000). That literature essentially postulated a “crowding out” argument in which, following cognitive dissonance and self-perception logic, extrinsic rewards could provide an explanation for why people engaged in some activity, thereby undermining their need to see the activity as intrinsically interesting (cf. Benabou & Tirole, 2003). We and the studies we reviewed argue that actually receiving rewards for some task is not necessary to have the connection between time and money become salient, and the psychological mechanism accounting for the observed effects comes from seeing time as similar to money, not from having intrinsic motivation undermined.

Although past research has focused on billing time and hourly pay, any organizational practice that makes the connection between time and money more salient should induce people to become economic evaluators of time. Such practices might include measurements that are time-dependent such as output per unit of time and other forms of time-based activity reporting. It is important to explore the extent to which non-time based measurements of work output, such as piece rate incentives which reward output but not on the basis of time, would make the time–money connection somewhat less focal and therefore possibly decrease the extent to which individuals become economic evaluators of time use, particularly compared to time-based measurements and reward practices.

That making the time–money connection salient would induce individuals to become economic evaluators of their time is a reasonably straightforward prediction. But perhaps more surprising is that the underlying mindsets associated with thinking about time in terms of money can also be readily activated by environmental cues, often through unconscious, automatic processes. Liu and Aaker (2008) theorized that simply activating the concept of money focused an individual on economic value-maximizing goals. Mogilner (2010) primed time versus money (versus a

control condition) by having people use relevant words to make sentences, and reported that implicitly activating the idea of time caused people to spend more time with friends while activating the idea of money caused people to work more and socialize less. The various studies by Vohs and her colleagues (e.g., Vohs, Mead, & Goode, 2006; Vohs, Mead, & Goode, 2008) nicely illustrated the potency of money primes in affecting behavior. Individuals primed with the concept of money both asked for and gave less help and sat farther away from others (Vohs et al., 2006). Pfeffer and DeVoe (2009) found that priming people with either money or economic terms resulted in the same reduced willingness to volunteer that had been observed for hourly-paid individuals or those who were randomly assigned to compute their hourly wage (DeVoe & Pfeffer, 2007b).

All of these results suggest that to the extent work organizations make the connection between time and money salient or prime the concept of money and monetary rewards through language and actions, there would be a greater tendency for people to think of time in terms of money and to therefore make decisions about time and money in a similar fashion.

Money is not the only concept that organizations activate that can induce people to become economic evaluators of their time. The emphasis work organizations often place on time efficiency can induce an economic evaluation of time because the concern with efficiency is an idea and metaphor quite consistent with the idea of money as a resource (Lakoff & Johnson, 1999). The idea of efficiency, speed, and not wasting time has permeated not just work but the general culture as well. There are many symbols of being, moving, or working “fast” and not wasting time in people’s everyday lives, including but not limited to fast food establishments, which make the activity of buying and consuming food quick and easy.

The idea of fast food focuses on the efficiency of eating—to order, get your meal, and eat it as quickly as possible so that people can move on to other, presumably more important, activities. Although burgers and fries are the prototypical fast foods, the essence of the fast food experience is less about *what* you eat and more about *how* and *how long* you eat. From the selection of ingredients to the preparation to consuming the end product, everything about fast food is designed to save time (Schlosser, 2001). The cultural value of speed and efficiency embodied in fast food has spread beyond meals. In *The McDonaldisation of Society*, Ritzer (2011) discussed the widespread influence fast food has had on restructuring our organizations and social activities. The efficiency principle embodied in the fast food industry—to deliver services or products as quickly as possible—is consistent with the effort observed in many domains such as manufacturing and customer service to reduce production and service time.

Fast food has come to be associated with time efficiency not just for employees working in the industry but also for consumers. In a series of studies, Zhong and DeVoe (2010) found that being primed unconsciously with the concept of fast food (by supraliminally showing people fast food logos) caused people to read more quickly, to prefer time-saving products, and to require a higher implicit interest rate in order to delay receiving a payment.

Short deadlines, the use of organizational language containing terms such as “fast, time urgent, time-based competition, deadlines,” and so forth would be predicted to have effects similar to the exposure to fast food logos—causing individuals to move more quickly, complete tasks quicker, and to experience a greater sense of time pressure than those not as exposed to such words and visual reminders. And, because of the connection to the idea of efficiency and the link between efficiency and economic evaluation, we would expect cues priming the idea of “speed” should also cause people to be more likely to view time as similar to money and to be economic evaluators with respect to decisions about time use.

While both money and efficiency are important components of the “time as a resource” conceptualization of time, possibly the most fundamental idea related to the economic evaluation of time is the notion that time (like other resources) is scarce. There is a long-recognized heuristic association between scarcity and value, such that not only are scarce things more valuable (Lynn, 1992), more valuable things are perceived to be scarcer (Dai, Wertenbroch, & Brendl, 2007; King, Hicks, & Abdelkhalik, 2009). Subjective levels of felt time pressure have increased substantially over the past several decades, even though studies of time diaries offer no explanations, such as longer working hours, that can account completely for this phenomenon (Robinson & Godbey, 1997). Because felt time pressure is stressful, it is important to understand what causes this perceived time pressure and what might be done about it.

Applying the heuristic association between scarcity and value to time, DeVoe and Pfeffer (2011) argued that to the extent people earned higher incomes or perceived that they were richer, the more valuable they would perceive their time to be—and therefore would feel that time was scarce and experience more time pressure (because valuable things are always presumed to be scarce). In a series of studies DeVoe and Pfeffer (2011) found that the higher someone’s income or the wealthier they felt, the more they experienced time stress—a feeling that they lacked enough time. In a

similar vein, Piff, Stancato, Côté, Mendoza-Denton, and Keltner (2012) reported that upper-class drivers whose monetary value of time was high were more likely to cut off other vehicles at a busy, four-way intersection with stop signs on all sides than were lower-class drivers. And they found that upper-class drivers were more likely to cut off pedestrians at a cross-walk, which again demonstrated that wealthier individuals behaved as if time were scarcer. And Hamermesh and Lee (2007) reported that in four different countries, adults living in households with higher incomes reported more time stress for the same amount of time spent working, results consistent with the effect of higher income—and therefore higher opportunity costs of time—operating to make time seem scarcer.

We have argued that organizational practices such as being paid by the hour affect the evaluation of time by making the connection between time and money more salient. This implies that people paid by the hour should show a larger relationship between income and felt time pressure. In fact, DeVoe and Pfeffer (2011) found that when people calculated their hourly wage (in the case of working adults) or the hourly wage they expected to earn (in the case of students), the effects of income on experienced time pressure were larger than when their hourly wage was not as salient.

The scarcity-value heuristic could also be used to reduce felt time pressure, for instance by having people give away their time. Giving anything, including time, away should have two effects. First, if you give something away, it would feel and be perceived less like a scarce resource. And second, giving something away might also decrease its perceived value—the reverse of the endowment effect (Kahneman, Knetsch, & Thaler, 1990)—thereby also making whatever you give away seem less scarce. These two mechanisms can help explain the experimental findings of Mogilner, Chance, and Norton (2012), who observed that when people spent time on other people (gave their time away), their feelings of time affluence (having enough time) increased compared to people who wasted time, spent time on themselves, or even experienced a sudden windfall of free or unexpected time.

Our argument, then, is that language, measurement and other management practices that increase the salience of time as a scarce resource (and by implication, should be used as efficiently as possible) should increase the likelihood that people will be economic evaluators of time and see time as more similar to money.

Prior literature suggests that the change from self-employment to working for others, especially for time-based compensation, was in large part responsible for an efficiency-oriented, resource-focused view of time. If this line of reasoning is correct, then the employment relationship may be a key factor in understanding the psychology of time. The self-employed should be less likely to see time like money than others doing the same things, but in the role of an employee. That is because there is no one other than the self-employed person who can profit from using time more efficiently. In contrast, employees confront a situation of potential arbitrage, in which their employer can profit by paying them at one rate but having them work at a rate that produces a profit from their efforts. Therefore, one can think of a continuum of management practices that vary in the extent to which they make the connection between time and money salient, with hourly pay and accounting for time use on a time sheet to one's employer on one end, and self-employment at some entrepreneurial activity on the other. Unfortunately, we know of no direct evidence on this prediction. However, there is some indirect evidence that is consistent with our line of argument.

Benz and Frey (2008), examining data from 23 countries, found that the self-employed were more satisfied with their work, even though the self-employed often did not enjoy higher incomes. They further noted that it was the more interesting work of the self-employed and their greater autonomy, not pay, job security, or opportunities for advancement, that were largely responsible for the differences in job satisfaction between the self-employed and those working for others. Autonomy, in their study assessed by one question that measured the extent to which people can work independently, logically incorporates discretion over what one does and also when and how long one does it. Importantly, as noted by Kaveny (2001) and consistent with self-determination theory (Deci & Ryan, 1985), the degree to which work is interesting is likely to be a function not only of the specific content of the work but also how that work is paid and measured—something that self-employment undoubtedly affects.

Binder and Coad (2012), using data from the British Household Panel survey, found that individuals who moved from regular employment to self-employment experienced greater life satisfaction. And a methodologically sophisticated analysis of self-employment in Sweden that statistically controlled for selection effects as well as demographic variables, reported that both job satisfaction and life satisfaction were greater among the self-employed (Andersson, 2008). Those who are self-employed may be less prone to the economic evaluation of time relative to other employment categories, especially compared to individuals who are paid by the hour or bill their time, and as a consequence, have a less commodified view of time and therefore experience more pleasure from their work.

4. Consequences of the economic evaluation of time use

An economic evaluation of time is of interest because of its potential consequences for individual choices about spending time and because those individual choices, when aggregated, have societal-level implications. Whether these consequences are harmful or beneficial depends, we theorize, on whether the domain in question is characterized primarily by hedonic (utility is derived primarily from whether or not someone enjoys the time spent experiencing an activity) or utilitarian concerns (utility is primarily derived from what time on an activity is or is not instrumental in obtaining). Although utilitarian and hedonic are not necessarily two end-points of a one-dimensional scale (Voss, Spangerberg, & Grohmann, 2003), following Okada (2005), we use these two concepts to predict where an economic evaluation of time use is likely to have more positive or adverse consequences. Specifically, we argue that an economic evaluation of time is likely to lead to more positive attitudes and decisions and actions consistent with well-being in domains where time use is primarily utilitarian. However, an economic evaluation of time use will produce less psychological well-being and worse decisions in domains where time use is primarily hedonic.

The intuition behind this prediction comes from Kaveny (2001) and Evans et al. (2004). Kaveny asked the fundamental question of why lawyers, who for the most part enjoy high levels of both income and occupational prestige, display low levels of satisfaction with their careers and, in fact, leave their profession in relatively high numbers. Her answer was that, having learned to see time as a commodity because of the practice of billing time, lawyers were unable to lose this framing in other contexts where the view of time as a resource was both less appropriate and less helpful, such as when they were coaching their children's soccer games or going out for dinner. Evans et al. (2004), in their study of technical contractors, sought to understand how people who were ostensibly free to do what they want behaved as if they were tightly controlled and seemingly were less able to take vacations or enjoy time off than employed individuals. Their answer was similar to Kaveny's—namely, that because contractors were paid by the hour, they developed an accountant's understanding of time and were always thinking of the money they could be earning when they were not working. As a consequence, an economic evaluation of time use leads to a tendency to work too much and to not enjoy time off—because of always thinking about the foregone income. Not only can this perspective result in less life satisfaction, it disrupts interpersonal relationships and potentially produces higher divorce rates and other family and relationship issues.

Our argument is that when making decisions in utilitarian domains where an economic evaluation frame is helpful, decisions will be better as will resulting attitudes. For instance, commuting is an activity that individuals tend to experience as the least enjoyable during their day, even more so than work itself (Kahneman, Krueger, Schkade, Schwartz, & Stone, 2004). Indeed, Stutzer and Frey (2008) observed that commuting time was inversely related to psychological well-being and was not sufficiently offset by greater compensation. But at least in the U.S., people commute a lot and commuting times have tended to increase over time. That leads to the question of why people are doing things like spending time commuting that make them unhappy. Economic necessity is one obvious possible explanation, as would be changes in urban design and company location decisions that moved work farther from where people live. However, another possibility is that the costs of commuting, including the economic costs of direct expenses such as gasoline, insurance, and automobile wear and tear and less direct costs such as the loss of valuable time that could be spent in other, more enjoyable ways, are insufficiently salient to encourage better decisions. We suggest that, other things being equal, people for whom the economic value of their time is more salient—for instance, because they are paid by the hour or account for their time on time sheets—would (a) have their happiness and mood more adversely affected by the time spent commuting and (b) as a consequence, would be expected to spend less time commuting.

However, in hedonic domains where considerations of time efficiency and thinking of time like money are not as appropriate, economic evaluation will result in decisions that do not provide as much satisfaction and can lead to less helpful and even inappropriate choices. Although there is not a great deal of relevant empirical research on this point, some existing data do support this line of reasoning. DeVoe and House (2012) argued that interventions that increased the salience of the connection between time and money would increase impatience, particularly on activities that did not generate income, and therefore decrease people's experiencing pleasure from leisure-like activities. In one study, the authors forced participants to spend ten minutes doing whatever they wanted on the Internet. People in the control condition reported increased happiness following the 10-min free time on the Internet, while those who calculated their expected hourly wage experienced no increase in happiness, with a significant difference in happiness between people in the two conditions. People who thought about their time in terms of money failed to gain increased happiness

from “forced” leisure. In a second study, people who calculated their hourly wage reported significantly less happiness after listening to music than those who had not made that calculation, with impatience completely mediating this effect. Using the same experimental paradigm, DeVoe, House, and Zhong (2012) showed that individuals primed to think of time in terms of efficiency were less able to enjoy listening to music than those not so primed. They found that the subjective feeling that listening to music was a waste of time mediated this effect of priming time efficiency on enjoyment.

Quoidbach, Dunn, Petrides, and Mikolajczak (2010) found that in a sample of working adults, wealthier individuals reported less ability to savor everyday positive emotions and experiences. Experimentally causing people to feel wealthier had the same effect on self-reported savoring. Finally, they reported that when participants were reminded of money, they spent less time savoring a piece of chocolate and exhibited reduced enjoyment compared to study participants not exposed to the money treatment. Although this study did not directly manipulate or measure the economic evaluation of time, the results are consistent with those of DeVoe and House (2012) in that money priming reduced the ability to enjoy non-pecuniary experiences. And Mogilner (2010), using both laboratory and field experiments, observed that individuals primed to think about time were motivated to spend more time with friends and family and less time working, choices that have been shown to produce more happiness. In contrast, priming individuals to think about money caused people to work more and to socialize less, decisions that have been generally found to produce less happiness.

4.1. Behavioral effects

Fundamentally, an economic evaluation of time use highlights economic concepts such as opportunity costs and the most efficient use of time. Economic evaluation and money are naturally tightly linked as ideas. As a consequence, an economic evaluation of time privileges, other things being equal, earning money over either leisure or volunteer activities. Therefore, organizational practices that create an economic evaluation of time would, other things being equal, lead to decisions that would favor work over leisure, paid over unpaid (volunteer) labor, and donating money rather than the less fungible resource of time.

There is some evidence consistent with this argument about how economic evaluation affects decisions about time use, although much additional research remains to be done. DeVoe and Pfeffer (2007a) found, using a nationally representative survey, that people paid by the hour were more willing to trade time for money (to work more hours for more money), even after controlling for other factors that might affect the preference to trade time for money such as their income, number of hours worked, gender, marital status, and number of children. Moreover, when in an experimental setting some people calculated their hourly wage and thus had the opportunity costs of their time made more salient, those individuals expressed more willingness to trade time for money than those who did not calculate their hourly wage. DeVoe, Lee, and Pfeffer (2010), using longitudinal field data from the British Household Panel survey, found that both current and recent prior experience with hourly payment increased individuals' willingness to trade time for money. As expected, when people were no longer paid by the hour, their interest in trading time for money declined in a geometric decay function. Because the study used longitudinal data, DeVoe et al. were able to control for unmeasured individual differences using a fixed-effects model, providing further support for the causal connection between hourly payment and individual's willingness to trade time for money.

Commentators have noted the striking societal-level differences in the extent to which increasing wealth is used to purchase goods and services on the one hand or more leisure—time off—on the other. This difference becomes manifest in data that show that people in some countries are willing to work more hours than in others, thereby earning more income, while in other places people prefer to enjoy more leisure time as they get wealthier. Mogilner (2010), for instance, noted that in the United States, increasing societal wealth has been accompanied by *longer* working hours and, as a consequence of the greater time spent working, the increase in wealth has not led to greater levels of happiness, while in Europe increasing social wealth has been used to *reduce* work hours with consequent increases in happiness. Economist Robert Gordon (cited in *The Economist*, 2003) argued that the difference in the tradeoff between work and leisure is one reason that GDP per capita in Europe is only about 77% of the U.S. level, even though productivity and productivity growth are almost the same between Europe and the U.S.

If hourly pay affects people's choices between work and leisure, then one place to look for explanations of country-level differences in work hours and the effects of work hours on other outcomes such as stress, happiness, and health

would be the proportion of people working in hourly-paid jobs. In the United States, the proportion of the workforce paid by the hour has consistently increased over the last three decades (Hamermesh, 2002). In other industrialized countries, the proportion of the workforce paid by the hour is lower and in some places hourly pay is virtually nonexistent. Obviously many factors other than organizational pay and time-keeping practices influence choices about work and leisure; nonetheless, such factors can be part of an explanation for why the number of working hours differs across countries and, for that matter, within a country over time.

In addition to choices between work and leisure activities, an economic evaluation perspective on time should negatively affect people's willingness to volunteer their time. That is because volunteering is, by definition, doing work without pay. Because of the increased salience of the connection between time and money, an economic evaluation of time use would reduce people's propensity to volunteer.

There is some research evidence consistent with this prediction. DeVoe and Pfeffer (2007b), using data from the American Time Use Survey, found that hourly paid people were less likely to participate in volunteer activities and volunteered less time than those paid by salary, with hourly-paid individuals spending, on average, 36% less time on volunteering. The effect of hourly status on volunteering was evident even when numerous other demographic factors that might affect volunteering, such as number of children, marital status, gender, earnings, and education, were statistically controlled. And in an experiment using a national sample, people who were not paid by the hour in their job, but were instructed to calculate their hourly wage, expressed less willingness to volunteer their time than those who did not do such a calculation.

DeVoe and Pfeffer (2010) also examined the effects of accounting for one's time on a time sheet, another practice that makes the time–money connection salient, on people's willingness to volunteer and their actual volunteering behavior. In one study, they measured law students' attitudes toward volunteering in the spring as they were preparing to graduate, and then again in the fall, once they had started their first jobs after law school. Even after holding constant people's initial willingness to volunteer, those respondents who were in jobs in which they billed their time were significantly less interested in volunteering their time than those in positions where they did not bill their time. Moreover, the lawyers who billed their time were more interested in donating money, rather than time, to charity. In three experiments, respondents who worked on a consulting task where they billed their time were less willing to volunteer their time during a free-time session that was part of the experiment compared to participants who had engaged in the same task but had not allocated their time on a time sheet. Overall, DeVoe and Pfeffer (2010) found that the billing of time made an economic evaluation of time more salient and diminished people's willingness to volunteer their time. It is important to note that volunteering time is an economically significant activity—Menchik and Weisbrod (1987) noted that volunteer labor constituted the equivalent of about 5% of all economic activity. And as already noted, volunteering time is an activity that has been consistently shown to increase people's happiness (Dunn et al., 2008; Son & Wilson, 2012; Wilson & Musick, 1999).

Anything that primes people to be economic evaluators and to see choices in economic terms would have similar effects on choices about time use that have an inherently economic component. But to have this effect, the priming must be self-relevant. Thus, Pfeffer and DeVoe (2009) observed that people primed to think about *their* time in terms of money, by calculating their hourly wage, demonstrated a diminished willingness to volunteer, while people who calculated an hourly wage for some average person in the general population did *not* show the same effect. That study also demonstrated that it was people's thinking of themselves as economic evaluators that mediated the observed effect. And priming people with either money or economic terms had a similar effect on diminishing willingness to volunteer compared to those not so primed.

Much as in the case of working hours, cross-country variation in management practices that make the connection between time and money salient can help explain national differences in both the amount of time people spend volunteering and also the preponderance of donating time or money. Empirically exploring such societal-level differences in volunteering and the relationship to management practices is currently difficult because of an absence of relevant survey data. Although there is some measurement of exposure to hourly pay practices on a few general surveys, there is little to no systematic assessment of people's exposure to other relevant practices such as accounting for their time on a time sheet. One implication of our argument and the empirical results we have summarized is that we need better and different survey data to understand variations in individual and societal level values and their causes. In such an effort, there needs to be more attention to measuring people's exposure to work practices that create an economic evaluation of time and also the behavioral and attitudinal consequences of this time–money connection.

4.2. Effects on happiness and other attitudes

Management practices that prime an economic evaluation of time would be expected to have a number of effects on people's attitudes. First and most directly, we would expect that factors that prime an economic evaluation mindset would cause individuals to use economic criteria more in evaluating their well-being, such that there would be a stronger relationship between income and measures of happiness and life satisfaction.

In one study exploring this effect, [DeVoe and Pfeffer \(2009\)](#), using data from the General Social Survey, found that there was a larger correlation between income and happiness for people paid by the hour compared to those who were not. In a multiple regression controlling for gender, age, education, marital status, number of children in the household, and occupation, there was no main effect of either income or hourly status on happiness but there was a statistically significant interaction showing that income had a greater effect on happiness for employees who were paid by the hour. Two other analyses using different national surveys including longitudinal data from the United Kingdom also observed a stronger relationship between income and happiness for people paid by the hour, with similar control variables in the analyses including controls for stable individual differences. And experimentally [DeVoe and Pfeffer \(2009\)](#) found that when they had people calculate their hourly wage, there was a stronger relationship between income and various measures of subjective well-being for individuals not already paid by the hour in their jobs compared to people who did not do the hourly wage calculation.

These results suggest the possibility of a reflexive process. Management practices that induce an economic evaluation mindset would tie happiness and psychological well-being more tightly to income and, for that matter, wealth. But that stronger effect of income on happiness would, in turn, encourage people to work more hours so as to earn more income and thereby increase their sense of well-being. And working more hours could, in turn, create more of a sense of time stress, which would then act to *reduce* psychological well-being. Thus, it is not just the case that as [Quoidbach et al. \(2010\)](#) argued, money reduces people's ability to savor pleasurable experiences. It is also the case that an economic framing of time could cause people to spend their time in ways that reduce their access to pleasurable experiences in the first place, which also would reduce their happiness.

There would also be two other effects of economic evaluation on happiness. Because an economic frame on time changes decisions about time use to cause individuals to work more and to volunteer less, and working more and not spending time volunteering both tend to decrease happiness, we would expect an effect on happiness through the decisions that people make about spending time. Therefore, time use decisions would be expected to mediate the effect of economic evaluation and the management practices that produce it on psychological well-being. Second, an economic frame on time use and the associated characterization of time as a resource to be used efficiently and as something that is scarce would inhibit people from enjoying pleasurable activities, such as listening to music, eating, surfing the internet, or reading because it would seem as if they were wasting time. This latter effect is precisely that demonstrated in one context by [DeVoe and House \(2012\)](#) and [Quoidbach et al. \(2010\)](#).

5. Conclusion

Work organizations can inadvertently teach their employees how to think about time and money, as they make certain aspects of decisions more or less salient through what they measure and the language they use. In this way, management practices help constitute and create the social values and norms that affect people's lives both in and outside of work even as such management practices reflect and also influence broader social norms. The modern employment relationship generally increases the connection between time and money with important implications for people's choices about how to use their time, including how much to work and how much to volunteer their time in unpaid activities. Although it may not have been consciously done, modern management seems to have created a hedonic treadmill in which people want to trade time for money and because of thinking of time like money cannot enjoy leisure activities as much.

This theorizing has several implications. The first and most direct is that studies of time use and systematic surveys designed to understand variation in time use and psychological well-being need to incorporate measures that assess the salience of the time–money connection people experience in the workplace. The paucity of data that measures hourly pay, accounting for time on a time sheet, and other practices that make the time–money connection salient hinders our ability to study how an economic framing of time affects people, organizations, and society.

A second implication is that this line of reasoning can help us understand a number of paradoxes of modern life. Such paradoxes include why people do not invariably make decisions—working less even if they can afford to do so, volunteering time—that research shows would increase their psychological well-being. One possible answer to this paradox is that people exposed to organizational practices that make time seem like money adopt an economic evaluation of time that causes them to make decisions about time use that favor economic uses of time over more pleasurable choices. Another such paradox is why perceived time stress is so high—Hamermesh and Lee (2007) reported that more than 50% of respondents in the U.S. said they were always or often under time pressure—even though income levels have risen and there is not much evidence that people are actually working more hours (Aguiar & Hurst, 2007; Robinson & Godbey, 1997). An economic evaluation of time would make time, as a resource, seem more scarce and increase pressures to use time efficiently, even as increasing income would make time appear more valuable and also, as a consequence, more scarce. And as already noted, the social status of leisure versus work has changed over time so that working is now a status symbol, signaling people's importance to their organizations—a change that itself may derive in part from how we view time.

Time and its use are fundamentally important to people, organizations and society. Therefore, understanding the decision logics that undergird choices about how to spend time, where such logics originate, and their consequences, are important research tasks. The theoretical framework offered in this paper concerning the causes and outcomes of the psychological connection between time and money, and the role of management practices in promoting this connection, would seem to be an important starting point for understanding decisions about time use and their consequences.

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