When Plans Change:

Examining How People Evaluate Timing Changes in Work Organizations

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ABSTRACT

The successful timing of organizational activities depends not only on effective planning and coordination, but also temporal responsiveness – the ability of organizational actors to adapt the timing of their activities to unanticipated events. In this paper, we examine the individual-level dynamics underlying temporal responsiveness: we examine how organizational actors evaluate timing changes; e.g., changes from existing organizational schedules, routines, expectations, and plans. We review a broad body of psychological, economic, sociological, anthropological and organizational research on time to introduce a reference point model of how people perceive and evaluate time in organizations. We extend these findings to examine the psychology of how changes in timing are valued. Several propositions are presented about personal schedule changes and how individual actors evaluate them.

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Time seems costlier now than ever. As advanced technology has altered the speed at which information can be located, processed and disseminated – the pace of work life has accelerated (Stalk & Hout, 1990; Meyer, 1993; D'Aveni, 1994; Fine, 1998). People report more time stress (Perlow, 1999); and the experience of time famine is growing (Robinson & Godbey, 1997). According to the Wall Street Journal, a full night's sleep has become the executive's "ultimate status symbol" (Jeffrey, April 2, 1999).

While it seems that the value of time is rising – researchers have only begun to understand the complex psychological processes by which individuals value their time. The task is challenging, because time is an unusual resource. It is a perishable, non-replenishable, person-specific asset that can't be borrowed, lent, or saved. Time can be invested toward earning money, but time is not money. Beyond being non-fungible, time is also difficult to track (Fraisse, 1984). Perceiving absolute time is not an innate human capability; it is reliant on external cues and social reference points, such as clocks, calendars, and the sun (Johnson & Hastings, 1986; Block, 1990)

Within the social sciences, a number of disciplines have examined different aspects of how people value time. Consider prescriptive models within economics, where the value of time is modeled through discount rates, reflecting rates of return on investment or economic actors' consumption tendencies regarding scarce resources (e.g., Becker & Mulligan, 1997). Psychologists have studied temporal preferences in personal consumption through research on impulsivity, delay of gratification, self-control, self-regulation, and intertemporal choice (see Loewenstein & Elster, 1992; Rachlin, 1995 for reviews). In sociology and anthropology,

researchers have documented how the individual's temporal experience is shaped by the surrounding social environment (Durkheim, 1915; see Landes, 1983; Flaherty, 1999 for reviews).

In this paper, we integrate and apply these findings to better understand how people evaluate changes in timing in organizations. Specifically, we examine how organizational actors respond when timing changes affect their own personal schedules. At the firm level, organizational research has long emphasized the importance of temporal coordination and planning (e.g., Moore, 1963; Thompson, 1967; Pfeffer & Salancik, 1978). However, we argue that in today's business environment temporal responsiveness is also critical to organizational performance – that is, the ability of organizational actors to adapt their timing in response to unanticipated extra- and intra-organizational events (Fine, 1993). To better understand temporal responsiveness, we study how the individual evaluates personal schedule changes; i.e., what happens when plans change.

> "Time by itself means nothing, no matter how fast it moves, unless we give it something to carry for us; something we value."
>
> - Ama Ata Aidoo, Ghanian playwright[1]

Research Approach

We begin by observing that people experience time through the occurrence of specific valued outcomes or events. For example, an individual may anticipate that a certain meeting will last one hour, and that the meeting report will be due in three days. Thus, we build our analysis around how the individual perceives and evaluates the time interval associated with realizing a specific outcome (or event) in an organizational setting. We use the term perception to denote

how a person becomes conscious of and measures a time interval. We use the term evaluation to denote how a person places a value (or utility) on that perceived segment of time.

In our first section, we review a body of related psychological, sociological, and anthropological research on time to introduce a reference point model of how people perceive and evaluate time intervals. In the second section, we outline the temporal structure of the organization and identify three types of temporal information that emanate from it. We then examine the individual actor's perception and construal of this temporal information – from his or her particular vantage point within the organization. Finally, we review a broad body of psychological research on how changes in timing are valued by individuals. Through this review, we develop several propositions about the factors that affect how individuals perceive and evaluate schedule changes in work settings.

INDIVIDUALS AND TIME

> "When you sit with a nice girl for two hours, you think it's only a minute. But when you sit on a hot stove for a minute, you think its two hours. That's relativity." - Albert Einstein, physicist

Time Perception

Research confirms what Einstein's quote implies: people do not perceive absolute time accurately (Fraisse, 1984). For example, when people are told in advance to track and estimate the length of a time interval, they come up with significantly different values than when they are asked to estimate the length of a time interval that has just occurred. For prospective judgments, the more on-going internal events (i.e., thoughts) and external events (i.e., cues, stimuli) that occur during a time period, the shorter the time period is estimated to be (Hicks, Miller, &

Kinsbourne, 1976). The opposite is true for retrospective judgments. Also, when people are cognitively engaged and isolated from temporal stimuli, time is perceived to move more quickly (Vroon, 1970; Zakay, Nitzan, & Glicksohn, 1983; Zakay & Tsal, 1989). We have all experienced this basic empirical finding: time passes faster when there are more distractions.

Research also finds that some individuals are more aware of the passage of time than others (Macan, 1994; Conte, Landy, & Mathieu, 1995). Heightened time awareness and adherence to schedules, lists, and deadlines are all associated with time-urgency and Type A personality traits (Landy, Rastegary, Thayer, & Colvin, 1991). Highly time-urgent people tend to be more accurate at estimating time (e.g., Burnam, Pennebaker, & Glass, 1975; Yarnold & Grimm, 1982; Francis-Smythe & Robertson, 1999a; Francis-Smythe & Robertson, 1999b).

Reference Points in Temporal Evaluation

Because people are not always accurate in their perception of the passage of time, they rely on external cues – such as clocks, egg timers and the sun – to monitor the passage of time. However, these cues are not what give time its perceived value. To give time value, sociological and anthropological research emphasizes that people rely on social norms and shared cultural understandings (Durkheim, 1915; Landes, 1983; Fraisse, 1984; Gell, 1993; Zerubavel 1981). For example, socially-shared conventions, such as fiscal years, holidays, and established business hours, are conventions that convey temporal meaning to the individual. People then use such conventions to organize and segment their time into meaningful intervals (Lauer, 1982), punctuated by salient temporal markers. These markers (or reference points) include, for example: appointment times, meeting times, project due dates, arrival times, departure times, etc.

"The best things arrive on time."

- Dorothy Gilman, American writer

Cognitive psychological research has shown that reference points are central to how people comprehend many phenomena. This process is perhaps best captured by norm theory (Kahneman & Miller, 1986), which posits that once salient reference points are in-place, people focus their attention on situations that deviate from them. When an event conforms to these reference points, it is experienced as normal, and gets relatively little cognitive attention. When an event does not conform, people engage in deeper cognitive processing, and positive ("goodness") or negative ("badness") judgments are evoked (Kahneman, 1999). The central idea is that people evaluate events in terms of counterfactuals; i.e., what the event could have been or was expected to be (Roese, 1997). Applying norm theory to time, we suggest that time intervals will be most salient when they deviate from existing temporal referents (Loewenstein, 1988). When this happens, more cognitive resources will be devoted to perceiving and evaluating time.

The temporal referent that an actor sets for a specific outcome will be based on his or her temporal preferences and expectations; i.e., when he or she wants or expects an outcome to be realized. In work settings, we propose that three classes of factors will influence an actor's temporal expectations and preferences. The first factor is the individual's own temporal tendencies: how the individual innately tracks and accounts for time, such as the individual's level of time urgency or need for closure (Kruglanski & Webster, 1996; also see individual differences section later in this paper). The second factor is non-work influences, which include a) cultural influences that affect how the individual understands and interprets the meaning of time (see Hall, 1983; Levine, 1997, for reviews) and b) family demands that limit how much time the individual has available for work (see Adams, King & King, 1996; Lobel, 1991; Greenhaus & Beutell, 1985, for reviews). The third factor is the surrounding work context, which we examine in detail later in this paper. Together, all three factors determine how an

individual allocates his or her time and establishes referents regarding when certain work-related outcomes will be realized.

In Figure1a, we depict this framework graphically. Point t_0 represents the moment in time when a person expects and/or desires a specific outcome "x" to occur. If x occurs at that point in time, the individual perceives the timing of the outcome or event as normal. If it does not, the individual perceives a deviation and begins to ask questions, such as, "Why is this change occurring?" In Figure 1b, we depict a situation in which the temporal referent associated with outcome x is a range between t_0 and t_0'. This is included to demonstrate that people do not necessarily select specific points in time; sometimes they select ranges as referents. Take the example of a graphic designer, Jane, who is expecting a client, Joe, to pick up his completed project between 3 and 3:30 p.m. Jane is happy if Joe arrives anytime between 3:00 and 3:30. After 3:30 would be an inconvenience, because Jane is scheduled to leave for an out-of-office appointment. In this case, t_0 would not be a single point, but a range of time from 3 to 3:30.

Whether a temporal referent is a specific point or range in time depends on a myriad of factors. For example, certain types of events allow for high specificity; while others do not. Consider the scheduling of multiple-choice exams for job candidate evaluations, versus the scheduling of exploratory, face-to-face interviews in which job candidates are to answer open-ended questions about ethics in the workplace. In the former case, relatively precise estimates can be made about how long each interaction will take. In the latter case, precise estimates cannot be made, and a looser schedule would be more appropriate.

Also, cultural influences affect whether people tend toward point or range referents in scheduling events. In anthropology and sociology, researchers distinguish between cultures that run on clock versus event time (see Lauer, 1982; Levine, 1997 for detailed discussions). Under

clock time (common to North American and northern European Anglo cultures.), events follow pre-specified schedules, ending and beginning according to scheduled times and dates. Temporal expectations and preferences are closely aligned – people allocate time tightly, and prefer that events occur when they are expected (i.e., at time t_0). In contrast, under event time (common to Latin American, Native American and southern European cultures), events take place relative to other events. Duration expectations are imprecise – events take as long as they take. Schedules are fluid, and timing is managed with the quality of the experience in mind. Thus, in clock time cultures, temporal referents tend to be more specific, while in event time cultures, they tend to be more fluid.

Integration

In closing this section, we emphasize that people naturally create referents regarding when events are expected to occur or outcomes be realized. The cognitive processes by which people select these temporal referents are influenced by a variety of factors, including individual, familial, cultural, and contextual elements. These referents, in turn, influence how time is valued.[2] When an event unfolds in accordance with pre-established temporal referents, research suggests that the individual will experience that event as normal, and relatively few cognitive resources will be devoted to perceiving and evaluating the time associated with it. Instead, time intervals will be most salient when they deviate from existing temporal referents. When this happens, more cognitive resources will be devoted to perceiving and evaluating time. In the second half of this paper, we examine the factors that influence how such changes in timing are valued. However, first, we examine how the organizational context influences the temporal referents that actors select.

TIME IN ORGANIZATIONS

In this section, we examine how the organization generates information that influences the individual's temporal referents. We categorize this information into three types: 1) explicit schedules, sequencing patterns and deadlines; 2) implicit rhythms and cycles of behavior; and 3) organizational cultural norms about time. Together these different temporal elements comprise the temporal structure of the organization. Below we begin by reviewing each of these elements. Then, we examine how this temporal structure is perceived and construed by the individual actor.

> "Time keeps everything from happening all at once."
>
> - anonymous

The Temporal Structure of the Organization

Managers use explicit schedules, sequencing patterns and deadlines to coordinate people's activities within an organization. Going back to Moore (1963) and Thompson (1967), the coordination of people's activities over time has been identified as a critical organizational task. To affect coordination, managers make schedules that allocate temporal resources within and across sub-units, such that the interdependencies among functions, groups and individuals can be directed in a rational manner (Bluedorn & Denhardt, 1988) – thus minimizing conflicts over time (McGrath and Rotchford, 1983). These organizational schedules serve many functions for the individual (see McGrath and Rotchford, 1983 for a detailed discussion). They reduce uncertainty regarding when interdependent activities will be accomplished, when shared resources will be accessed or consumed, and when changes or transitions between activities will occur (Weick, 1979; Hassard, 1991; Brown & Eisenhardt, 1998).

The second element of the temporal structure involves implicit cycles and rhythms of behavior that exist within the organization. These cycles and rhythms are often associated with concepts of entrainment (McGrath & Kelly, 1986; Ancona & Chong, 1996). Borrowing from biology and physics, entrainment describes how actors adjust the phase and/or periodicity of their behavior to align with other entities. Familiar examples include the synchronized chirping of crickets and flashing of fireflies. In organizational settings, multiple authors have observed how groups that interact frequently tend to entrain their cycles of activity (McGrath & Kelly, 1986; Ancona & Chong, 1996). Consider the behavior of two interdependent work groups: the line group and the management group. As they interact over time, the line group may observe recurring patterns of work within the management group, and start structuring the completion of its own work to coincide temporally with these patterns. Over time, the line group entrains with the management group.

In a similar vein, several researchers have examined the concept of pace and rhythm in organizations (e.g., Brown and Eisenhardt, 1998; Schein, 1992). Within organizations, different paces have been identified across different levels of analysis: organizational, functional, and work-group. Research suggests that these paces are influenced by the temporal demands of the surrounding task environment, the temporal nature of the work that is being accomplished, and emergent work group dynamics. For example, successful senior management teams have been found to adopt work paces that match the velocity of the surrounding competitive environment (Eisenhardt, 1989). Different functional sub-groups have been observed to work at different paces (Schein, 1992) – consider the emergent pacing of a research department compared to the more predictable rhythms of an accounting unit. Finally, work groups have also been found to adopt their own unique pace as members interact together and develop shared group temporal

norms and work pace tendencies (e.g., Roy, 1960; Perlow, 1999). Together, all of these factors influence the implicit rhythms of activities within the organization.

The third element of an organization's temporal structure includes the temporal norms embedded within its culture (Schein, 1992). For example, the degree to which a) deadlines are strictly adhered to, b) punctuality in arriving to work is valued, c) a fast versus slow pace of work is preferred, d) speed versus quality is valued in decision making and e) people are expected to allow work demands to interfere with personal time (Schriber & Gutek, 1987). Organizational cultural norms about time express implicit values regarding how time is to be perceived and evaluated within a particular work environment.

In sum, we propose that each element of an organization's temporal structure – the explicit organizational schedules, sequencing patterns, and deadlines; the implicit cycles and rhythms of behavior; and the organizational cultural norms about time – conveys a different type of socio-temporal information. Each type contributes to how time is perceived and understood by organizational actors. Note that this information can be the result of institutionalized processes; i.e., taken-for-granted assumptions and routines (e.g., Zucker, 1977; March & Olsen, 1989; Zhou, 1993); or adaptive forces reflecting learning and change (e.g., Tushman & Romanelli, 1985; Levitt & March, 1988; Barnett & Carroll, 1995). Regardless of the source, each type of temporal information contributes to how actors establish temporal referents at work.

The Prevailing Temporal Agenda

In this section, we introduce the construct of the prevailing temporal agenda ("PTA"). We define the PTA as the individual actor's perception and construal of the organization's temporal structure from his or her particular vantage point within the firm. It includes how the individual perceives the organizational schedules, norms, rhythms, routines, etc., that affect

when specific outcomes and/or events are anticipated by the actor within his or her immediate setting (i.e., within his or her job, or within his or her work group, which may be embedded within a sub-unit of the larger organization). For each individual, his or her construal of the PTA will influence when he or she anticipates different activities and outcomes to occur; e.g., when meetings are to be held, reports due, activities completed, etc.

We propose that the prevailing temporal agenda perceived by each actor serves four cognitive functions. 1) It gives the actor cues for marking time. 2) It provides information regarding how the actor "should" spend his or her time at work in the form of salient behavioral norms. 3) It provides information that helps the actor to plan his or her time and establish temporal referents. 4) It creates meaning for the actor by linking his or her personal schedule to the broader goals of the organization.

Hence, the PTA provides a template around which the individual organizes activities and plans his or her own time at work. At the task-level, it also facilitates temporal perception and evaluation for specific outcomes and events. With this construct in hand, we now introduce our first lemma (a conceptual, pre-propositional building block) regarding how people account for time in organizations.

Lemma 1: Individual actors will organize their activities around the prevailing temporal agenda, which reflects how the individual perceives and construes the temporal structure of the organization within his or her immediate setting.

The large box at the top of Figure 2 summarizes our framework thus far. The smaller boxes in the left column represent the three types of temporal information emanating from the organization's temporal structure. They convey the temporal context that forms the PTA perceived by the individual actor. The combined influences of the PTA (pictured on the left) and the individual's innate temporal tendencies (e.g., time urgency) and outside temporal demands

(i.e., culture and family - pictured on the right) determine how the individual organizes his or her time at work – his or her individual work schedule and routines. These schedules and routines, in turn, lead the individual to create temporal referents (t_0 points or ranges) regarding when specific outcomes/events are anticipated at work. Thus, the schedules and plans that the individual creates based on his or her perception of the PTA, as well as other non-work temporal influences, lead the individual to produce a variety of temporal referents regarding when particular events and outcomes are anticipated at work.

Insert Figure 2 here

The inevitability of timing changes. Given the complexities associated with interdependence and the evolving nature of organizations and their environments, organizational routines are seldom static. The dynamics of the firm's market environment will naturally trigger shifts in temporal goals (Aldrich, 1979; Pfeffer & Salancik, 1978). Inside the organization, multiple levels of task interdependence and changing power dynamics will also perturb the temporal structure (Hackman, 1969; Weick, 1979; Boden, 1997, Pfeffer, 1992).

Research on the planning fallacy (Kahneman & Tversky, 1979) further suggests that even if external and internal conditions did not change, organizational schedules would be prone to systematic error. This is because, when planning, people often focus on plan-based scenarios rather than on actual past experiences when generating predictions (Buehler, Griffin, Ross, 1994). Thus, people tend to set schedules based upon how much time they think each task should take, rather than drawing from experience regarding how long similar tasks have taken in the past. While the planning fallacy has been identified as a general tendency, Francis-Smythe & Robertson (1999a) also report differences in individual susceptibility. They find that people who

self-report higher on time management skills tend to predict more accurately how long tasks take. Together, these findings suggest that changes to the temporal structure will be inevitable within organizations, and we offer our second lemma.

Lemma 2: To the degree that organizations are reactive to extra- and intra-organizational temporal influences and individual-level estimation error, timing changes will be unavoidable.

The role of localized schedule changes. Logically, not all timing changes will be consequential for every actor in the organization. Timing changes that matter to an individual are those which require unwanted adjustments to his or her personal schedule. Imagine that Jim is scheduled for a 4 p.m. meeting with a new potential client who has a very exciting project. At 3:30 p.m., Jim's manager informs him that their biggest (and oldest) client has just called and wants Jim to come to the client's office immediately for a meeting. Since this meeting could easily take up to two hours, this proposed timing change would be consequential for Jim. Returning to Figure 1, we can interpret consequential timing changes as events that require unwanted deviations from t_0 for a specific outcome or event. Such timing changes lead actors to experience undesired schedule changes.

In Figure 1c, we introduce two possible types of schedule changes that can occur for the individual: hastenings and delays. Again, point t_0 represents the moment in time that a person expects or wants a specific outcome (x) to occur. A change from this referent is represented as a time lag (Δt), either in a positive or negative direction. If event x moves later, it's a delay; if sooner, it's a hastening (also referred to as a speed-up by Loewenstein, 1988). Under a delay, realizing outcome x will take longer than the individual desires – the actor will experience a slowdown. A hastening means that x will be realized sooner than the individual desires – the actor will experience time compression.

Research finds that people often respond negatively to delays and hastenings: both feeling delayed and feeling rushed can be experienced negatively (see Blount & Janicik, forthcoming, for a detailed discussion). Logically, the less negatively that actors value either type of schedule change, the more readily they will adapt their schedules. From an organizational perspective, the more readily that individuals adjust their schedules to timing changes, the more agile and adaptive the organization (Haveman, 1992; Barnett & Carroll, 1995; Sastry, 1997). This observation leads to our third lemma.

Lemma 3: Minimizing individuals' negative evaluations of consequential schedule changes is critical to maximizing organizational responsiveness.

Thus, consistent with past research (see Clark, 1985 for a review), we acknowledge the central role of the temporal structure (e.g., schedules, routines, rhythms and norms) in organizational management. The temporal structure provides the information that allows actors to schedule and coordinate their work effectively. However, we emphasize that responsiveness is driven by actors' evaluations of timing changes and how readily they adapt their personal schedules to them. As depicted at the bottom of Figure 2, when consequential timing changes are announced by the organization (either formally or informally), an actor will find himself confronting a personal schedule change for a specific outcome and event that feels aversive (+/- Δt from Figure 1c). Our goal in the next section is to develop insight into the factors that affect how negatively such consequential schedule changes are evaluated. To do this, we turn to the psychological literature on how changes in timing are valued by individuals.

THE VALUATION OF LOCALIZED SCHEDULE CHANGES

In this section, we review a broad body of psychological research on the experiential and substantive costs associated with changes in timing. Building on this research, we develop several propositions regarding the factors that affect how unwanted schedules changes are

evaluated by organizational actors. We begin with propositions that emerge from research on delay aversion, hyperbolic time discounting, and time pressure. We then examine the mitigating effects of attributional processing, perceiver effects, and context dependence.

Delay Aversion

We start with the most general finding - people typically don't like delays - especially if they affect desired outcomes (Freud, 1959). The individual tendency toward impatience is well-documented in the literatures on impulsivity (e.g., Barratt & Patton, 1983), frustration (see Lawson, 1965; Berkowitz, 1989; Amsel, 1992, for reviews), delay of gratification (Mischel, 1974), and intertemporal choice (see Loewenstein & Elster, 1992, for a review). However, research on topics such as anticipation (Loewenstein, 1987) and planning (e.g., Berger, 1988; Friedman, Scholnick & Cocking, 1987; Gollwitzer, 1996) demonstrate that this tendency is not always present. It all depends on the nature of the delay; not every waiting situation engenders an impatient response.

Expectations. When delays are undesired, people's evaluations are affected by the attending characteristics, such as whether the event conforms to pre-existing expectations and norms (Kahneman and Miller, 1986) and whether its length is known or not (Ellsberg, 1961; Einhorn & Hogarth, 1985). Typically, expected delays will be preferred to unexpected delays, and delays of known length will be preferred to delays of unknown length. Research in social psychology, sociology and anthropology suggest that temporal expectations will be based on one's own experience, other social information, and socio-cultural norms about how long accomplishing a task or obtaining a particular outcome should take (see McGrath, 1988; Levine, 1988; Gell, 1996, for reviews).

Opportunity costs. As Becker (1965) noted, time and resources are not independent of one other. If time invested in activity A precludes pursuing activities B or C, an opportunity cost is incurred. This opportunity cost represents the value associated with the foregone alternatives. Thus, when unwanted delays create opportunity costs, they will be evaluated more negatively. Research on the needs for control (Taylor & Brown, 1988), closure (see Kruglanski & Webster, 1996 for a review), pseudocertainty (Tversky & Kahneman, 1981) and time pressure in negotiation (see Carnevale & Pruitt, 1992 for a review) provide further evidence that unwanted delays which threaten the certainty or quality of an awaited outcome will be seen as more aversive than less consequential delays.

Waiting conditions. The evaluation of a delay will also be influenced by the waiting conditions. The act of waiting – coping with delay – is often characterized as an exercise in distraction. As research on delayed gratification and repressive coping finds, people tend to cope with aversive stimuli through mental distraction and alternative attention-absorbing tasks. For example, Mischel and colleague's (Mischel & Baker, 1975; Mischel, Shoda, & Rodriguez, 1992; Moore, Mischel & Zeiss, 1976) classic research found that children who were given distracting "fun" thoughts (or provided their own) were able to delay gratification for rewards far longer than children who focused on the rewards. Similarly, the literature on repressive coping finds that people can limit the adverse effects of unpleasant stimuli by using alternative, attention-absorbing stimuli to hold their attention (e.g., Erber and Tesser, 1992). Finally, in the waiting literature, Taylor (1994) finds that, among airline passengers, the amount of anger experienced in response to a delayed flight was influenced by the extent to which the traveler's "time was filled" during the delay. In summary, existing research suggests the following propositions:

Proposition 1: An unwanted schedule delay will be more negatively valued to the extent that a) it is unexpected, b) its length is uncertain, c) there are significant opportunity costs associated with its occurrence, and d) there are no alternative activities available for spending one's time during the delay.

Short-term bias. As with other cognitive tasks, temporal valuation is subject to individual-level biases (see Bazerman, 1997, for a review). Specifically, research finds that people tend to irrationally favor getting desired outcomes sooner rather than later, and they tend to vastly overvalue this preference (e.g., Kirby & Marakovic, 1995; Kirby & Herrnstein, 1995). This tendency is referred to as hyperbolic time discounting (see Loewenstein & Prelec, 1992 for a review), and is typically associated with the realization of positive outcomes. In one well-known study, Ainslie and Haendel (1983) asked employees and patients in a substance abuse clinic to imagine that they had won a $1000 certified check that could be cashed in a week, or a $2000 check that could be cashed after a longer time delay. The participants were then asked to indicate the how long of a delay it would take in receiving the $2000 check before they would just as soon have the $1000 check in a week. The mean answer for patients was 31 days, and the mean answer for employees was 43 days (suggesting annualized interest rates of over 15,000 percent!).

This line of research also finds that short-term delays in receiving desired outcomes are experienced as far more costly than similar-length delays projected months or years into the future. Consider Loewenstein (1989), who showed that a two-week delay in getting a lobster dinner now was far more negatively valued than the difference between getting a lobster dinner in one year versus one year and two weeks. In the one-year scenario, people were generally indifferent about the delay. To summarize these points, Figure 3 depicts a typical hyperbolic time preference function associated with attaining outcome x at various points in the future. Function v(x,t) shows how the valuation of x changes over time. Value declines quite rapidly in

the short-term, begins to slow down in the mid-term, and is virtually flat in the long-term. This graph vividly portrays two important observations. First, it shows the irrationality of the short-term bias; e.g., how $v(t_1)>>v(t_3)$. Second, it shows how the change in value between points t_1 and t_2 is much larger than that between t_3 and t_4, where $(t_4-t_3) = (t_2-t_1)$. These observations lead to our next proposition:

Proposition 2: Holding the outcome constant, an unwanted delay that is anticipated in the long-term will be less negatively valued than an equivalently-long delay proposed in the short-term.

Insert Figure 3 about here

Hastenings and Time Compression

Our review has thus far examined how people evaluate delays. Hastenings, however, are not as well-studied (for one notable exception, see Loewenstein, 1988). Recall that this term applies to what happens when an outcome or event comes too early – i.e., earlier than originally expected or desired. On one hand, the early arrival of a desired outcome should be attractive because waiting times are reduced, and as we have noted, people generally don't like waiting. Furthermore, within an opportunity cost framework, hastenings create value, because they make extra time available for the individual to invest in realizing other outcomes. But unlike the benefits associated with unanticipated monetary gains, not all temporal gains are valued positively.

Time compression. First, the hastening of an outcome can introduce time compression, the experience of which can lead to responses similar to those associated with time pressure (see Svenson & Maule, 1993; Moore, 2000 for reviews). Under pressure to complete complex tasks quickly, individuals have been found to experience anxious emotional reactions (Hockey, 1986)

and sub-perform cognitively; i.e., they "freeze" on early information and rely on sub-optimal processing heuristics (e.g., de Dreu, Koole, & Oldersma, 1999; Kruglanski & Webster, 1996; Webster, 1993; Kaplan, Wanshula, & Zanna, 1993). Thus, when hastenings produce an experience of time compression, research on time pressure suggests that negative cognitive and emotional costs may be evoked. Consider what happens when a project deadline is moved up or when too many events start happening at once. Alternatively, consider the experience of a person who is promoted "early," and suddenly feels unprepared for the new levels of responsibility associated with that position (Lawrence, 1990). In such situations, the experiential costs of time compression can sometimes outweigh the benefits of gaining extra time.

Quality costs. To the extent that hastenings require actors to complete tasks sooner, noticeable effects in the quality of performance may also be observed. Johnson, Payne and Bettman (1993) note that under time pressure, decision makers have three possible approaches available for coping: acceleration (using the same strategies and information, but at a faster rate), filtration (looking at only the most important subset of information), and strategy change (adopting a whole new processing strategy). In general, Johnson et al. (1993) report that decision makers who adapt to time pressure using one or more of these strategies tend to perform better than those who do not. However, even when adapting, the most appropriate strategy may not always be apparent, nor will adaptation always be sufficient to overcome the fact that there is just not enough time. Thus, to the extent that a hastening leads an actor to perceive a real (or possible) decline in the quality of his or her output, and the actor values the quality of that output, hastenings will be more negatively valued. Thus, our next two propositions[3]:

Proposition 3a: Holding the value of an outcome constant, a hastening will be more negatively valued when the time compression associated with realizing the outcome early is experienced negatively.

Proposition 3b: A hastening will be more negatively valued to the extent that an actor perceives that there may be meaningful quality costs associated with its occurrence.

Attributional Effects

In addition to the attending characteristics of a schedule change, the evaluation of hastenings and delays will be affected by how the individual makes sense of the change. In this regard, attributions will play a role in how schedule changes are evaluated (Blount and Janicik, 1999). Attributional research finds that when facing negative events, people ask why they are happening and who or what is responsible (Heider, 1958; Jones and Davis, 1966; Weiner, 1980). These attributions affect valuation (Weiner, 1980, 1985, 1986). Such attributions can address human factors; such as oneself or another person (people) involved in the situation; and non-human factors, such as the general environment, fate, luck or God (Doherty, 1981a, b; cf. Fincham & Bradbury, 1987).

Causal research finds that when assigning responsibility for a negative event, the tendency to attribute responsibility to non-human factors rather than human agents (i.e., to depersonalize attributions) is associated with less negative valuations (Bradbury and Fincham, 1990; Blount, 1995). Thus, when individuals weight situational forces more heavily than other actors' actions, schedule changes will be less negatively valued. Consider Blount and Janicik (2000a) who surveyed 350 adults waiting for delayed flights at O'Hare Airport and in long lines at a Chicago museum. Controlling for the length of the delay and whether the delay was expected or not, they found that impatient respondents were more likely to blame the delay on other travelers/visitors and the airline/museum. In contrast, respondents expressing patience assigned a greater share of causal responsibility to situational factors, such as the weather, and to depersonalized factors, such as "fate, luck, life, or God."

To the extent that individuals perceive negative events as attributable to other people, an assessment of personal responsibility is made. This assessment is influenced by judgments of a) whether the actor's causal actions could have been controlled, b) the consequences of these actions could have been foreseen, and c) the actor is believed to have acted intentionally (Weiner, 1985). As each of these factors increases, the actor's actions will be perceived as increasingly unjustifiable, and the more likely it is that blame will be assigned. When blame is assigned, the event is evaluated more negatively (Shaver, 1985).

In addition to justifiability, the degree to which a schedule change is evaluated negatively will depend on the personal characteristics associated with the causal actor, particularly his or her status (Lerner & Miller, 1978). Anthropological and sociological research emphasizes that people naturally defer to high status individuals, particularly in hierarchical settings. One symbol of status is the ability to influence the timing of collective activities (Hall, 1983). In social groups, low-status actors naturally adapt to higher status actors' timing needs (Blau, 1986, Levine 1997). In business contexts, high status people evoke less negative reactions when they keep people waiting (Hall, 1983; Blau, 1986; Levine 1997). According to Owens & Sutton (forthcoming), arriving late to meetings can even be a vehicle for asserting one's dominance. Psychological research also suggests that people are held less accountable for their actions to the extent that they evoke empathy, a tendency that is enhanced when the other actor is of high status (see Omdahl, 1995; Davis, 1996). Hence, we offer the following propositions regarding responsibility attributions for timing changes:

Proposition 4a: A schedule change that is attributed to situational or depersonalized factors, such as the organizational environment, will be evaluated less negatively than an equivalent schedule change that is attributed to other interdependent, organizational actors.

Proposition 4b: A schedule change will be more negatively valued if another organizational actor is perceived as responsible for causing it and his/her actions are seen as unjustifiable.

Proposition 4c: A schedule change will be valued less negatively if it is attributed to a high-status actor.

Perceiver Effects

While many people evaluate the waiting and time compression associated with hastenings and delays as aversive, individuals differ in their abilities to tolerate them. Specifically, we suggest that two actors confronting the same timing change may evaluate it differently due, for example, to differences in their personality traits or positions within the firm.

Individual differences. There are several personality traits that have been found to affect one's ability to tolerate delay. Most notably, research on impulsivity (e.g., Eysenck & Eysenck, 1969); impatience and Type A personality characteristics (e.g., Spence, Helmreich & Pred, 1987; Helmreich, Spence & Pred, 1988; Barling & Boswell, 1995); need for closure (see Kruglanski & Webster, 1996, for a review); self-control (see Baumeister & Heatherton, 1996; Rachlin, 1995, for reviews) and delay of gratification (e.g., Funder, Block & Block, 1983; Rodriguez, Mischel & Shoda, 1989), all demonstrate individual differences in the ability to tolerate delay. Thus, we propose:

Proposition 5: Delays will be evaluated more negatively by actors exhibiting higher levels of a) impulsivity, b) need for closure, and c) Type A personality characteristics and d) reduced capacities for delay of gratification.

With respect to hastenings, research has found that highly time urgent individuals handle time compression better than less time urgent people. They also perform better under time pressure (Rastegary & Landy, 1993). This is also true for action-oriented people; i.e., those who actively scan their decision environment and monitor their own decision processes. Action-oriented people adapt to different decision making strategies under time pressure more flexibly

than state-oriented people; i.e., those people who tend to scan less and ruminate more about past events and fantasize about future states (Stiensmeier-Pelster & Schurmann, 1993). Together these observations suggest:

Proposition 6: Hastenings will be evaluated less negatively by actors who a) demonstrate higher time urgency and b) are action-, rather than state-, oriented.

Compensation and tenure. In addition to personality characteristics, the organizational context in which the specific individual is embedded can affect evaluation. For example, actors higher in the organization tend to have longer time horizons than those lower in the organization (Floyd & Lane, 2000). Thus, they may tolerate some delays better than their subordinates do. However, this effect will logically depend on how well hierarchical status correlates with organizational tenure and economic incentives (Hambrick & Mason, 1984**;** Gomez-Mejia, McCann, & Page, 1985; Priem, 1990; Lawrence, 1997). For example, in organizations where senior managers' average tenure is low and/or their compensation is based on short-term performance, hierarchical position may increase impatience. Yet this same short-term temporal orientation may lead to less negative evaluations of hastenings. Together, these observations suggest:

Proposition 7: Delays will be evaluated more negatively, and hastenings will be evaluated more positively, by managers with a) compensation incentives based on comparatively short- versus long-term performance and b) comparatively short- versus long-term organizational tenure.

Context Dependence

It is well-established in the marketing literature that temporal evaluation depends on the nature of the associated outcome or event. For example, Leclerc, Schmitt and Dube (1995) have shown that people value delays more negatively when they are waiting in line to buy a $40 theater ticket than a $15 theater ticket, and people are more willing to spend money to shorten

the length of a 45 minute train trip than they are a 4 hour and 45 minute train trip. Dube-Rioux, Schmitt, and Leclerc (1988) report that in customer service contexts, post-process waits are experienced as more unpleasant than same-length, pre-process waits. (Compare, for example, the experience of waiting 15 minutes for a restaurant table versus 15 minutes to get the check.)

In this sense, we suggest that the evaluation of a schedule change will also vary with the product and functional context within which the change is embedded. Organizational time frames for outcomes and events vary widely (Lawrence & Lorsch, 1967; Ancona and Chong, 1995; Schein, 1992; and Zaheer, Albert and Zaheer, 1999). We can imagine, for example, how the same-length delay or hastening might elicit very different responses across different product contexts. As Ancona and Chong write, "If your product cycles are eight years, then three months [late] is on time. If your cycle is nine months then three months [late] is very late (p. 268)." Similarly, moving a project with a nine-month time frame up three months will be perceived far more negatively than moving a project with an eight-year time frame up three months.

Within organizations, time frames also vary functionally (Jacques, 1982). Some temporal cycles are annual (e.g., fiscal budgeting), others are quarterly or monthly (e.g., sales quotas), even daily or hourly (e.g., production runs). Further, the tasks embedded within these functions have different temporal characteristics. For example, Schein (1992) distinguishes between planning time which values "closure" and development time which values "process." He notes that some organizational tasks (such as finance and accounting) run on planning time and others (such as development and customer service) run on development time. As Schein notes, process tasks often "simply can't be rushed." Thus, we posit that people doing planning (closure-oriented) tasks will be better able to cope with acceleration, and thus evaluate hastenings less negatively, than people performing development (process-oriented) tasks. We also suggest that

people doing planning tasks will be more likely to select temporal referents based on clock time preferences, which weight precise temporal expectations heavily, while people performing development tasks will be more likely to select more flexible temporal referents. As such, actors performing planning tasks will evaluate delays more negatively than actors performing development tasks. Putting these concepts together, we offer our final propositions:

Proposition 8: Holding the magnitude and direction of a schedule change constant, the degree to which that change is perceived as consequential will vary proportionally with the (a) cycle time or (b) normative waiting time associated with the focal outcome or event.

Proposition 9: Delays will be evaluated more negatively, and hastenings will be evaluated more positively, by actors performing planning tasks than by actors performing development tasks.

SUMMARY

In summary, we have developed several propositions about how consequential schedule changes will be evaluated by organizational actors. These propositions are listed in Table 1. They are categorized into five factors, which include a) substantive outcome costs resulting from the schedule change; b) experiential costs associated with experiencing the change; c) attributions of responsibility for causing the change; d) perceiver effects due to the personality traits and position of the actor whose schedule is affected; and e) context effects due to the features of the focal outcome or event that is being hastened or delayed.

Combining several of these propositions together, we can begin to make some very specific predictions about how timing changes will be evaluated by organization actors. For example, we can imagine Manager 1; who (a) is high on Type A personality traits, (b) has short-term performance compensation incentives and (c) is doing a planning task in a division within a company where (d) product life cycles are comparatively short (i.e., under a year long). We would predict that Manager 1 will be particularly sensitive to delays, especially if (e) they are

unexpected. In contrast, we can imagine Manager 2; who (a') is comparatively low on Type A traits, (b') has comparatively longer-term performance compensation incentives, and (c') is doing a development task in a division where (d') product life cycles are several years long. Manager 2 will value the same-length delay less negatively than Manager 1 – (e') particularly if he is warned to expect it well in advance. Thus, combining across propositions, we can see how the same-length delay (or hastening) will be evaluated quite differently across different organizational contexts, by different managerial types, for different kinds of outcomes and events.

Managerial Implications

While many of the factors listed in Table 1 are difficult for the organization to affect (such as individual differences), our propositions do suggest several avenues available to managers who seek to influence how schedule changes are evaluated. Our first observation is that timing matters – how early people learn about timing changes affects their evaluation. Proposition 2 emphasizes that people like more, rather than less, advance notice about schedule changes. Thus, whenever possible, actors should be kept up-to-date on timing information for upcoming events.

Yet, equilibrium models of organizational change show that changing people's expectations too frequently can lead to unstable performance (e.g., Sastry, 1997). If timing changes occur too frequently, it may be more effective for managers to aggregate several of them together when making timing announcements. This approach has two benefits. In aggregation, some delays and hastenings may cancel each other out, causing minimal or very few schedule changes. Alternatively, behavioral decision theory tells us that one large negative outcome will be less negatively evaluated than several smaller losses which add up to the same magnitude

(Kahneman & Tversky, 1982). Thus, we suggest that announcing one large schedule change may, in some cases, be less negatively valued than announcing several equivalent, smaller ones. Furthermore, drawing from Proposition 8, determining the appropriate amount of advance notice and whether changes are occurring too frequently or not will vary depending on the time frame (e.g. cycle time) of the focal outcome or event.

Propositions 7, 8 and 9 on context dependence emphasize that the organization's temporal structure, like its culture, will vary horizontally and vertically within the firm (Schein, 1992). Further, Propositions 5 and 6 on individual differences suggest that an actor's innate personality may influence how he or she interprets and responds to the local temporal context. Consequently, structurally equivalent actors could evaluate the same timing change quite differently depending upon their own personal characteristics (Lawrence, 1996). In this regard, we posit that employees may be more effective in work environments in which their own personality-based temporal tendencies match those embedded within the surrounding organizational culture (O'Reilly, Chatman & Caldwell, 1991; Chatman, 1991). Initial support for this implication comes from Slocombe and Bluedorn (1999) who report that the degree of temporal alignment that an individual perceives with respect to his/her work unit is highly correlated with the individual's organizational commitment and his/her supervisor's assessment of performance.

Our next observation is that construal affects how actors evaluate schedule changes. Proposition 4a on attributions suggests that if significant timing changes are attributed to external factors (e.g., the "market," "our competitors," "our suppliers"), rather than other organizational actors, they will be less negatively evaluated and lead to more cooperative responses. Proposition 4b also suggests that when schedule changes are seen as inevitable – a normal aspect of doing

business – they will be less negatively valued, than if an organizational member is held accountable and blamed. Here, an organization's cultural norms can affect how actors interpret timing changes, and may be a key factor in an organization's ability to change, innovate, and improve (Schriber & Gutek, 1987; Tushman & O'Reilly, 1997).

Finally, from Proposition 4c, we observe that status is critical to managing time in organizations. Anthropological and sociological research emphasizes that when perceiving and evaluating time in social contexts, people naturally defer to high status individuals. Thus, when significant adjustments to the temporal structure are required, high-status actors should communicate those changes. In this way, when subordinates experience consequential schedule changes, they will be less likely to assign blame, and more cooperative responses will be evoked. Status issues also suggest that when employees are managing upward, where status differences may put them in a vulnerable position, they should be particularly attentive to communicating timing changes quickly and offering credible external causes to justify the changes.

Contextual Limitations and Ethical Concerns

Our last two observations highlight the emergent nature of temporal evaluation. Attributional construals are malleable – they are affected by face-to-face interaction and by information and interpretations generated by other organizational actors (Gioia & Sims, 1986). Managers can seek to affect other actors' construals through a) the timing of organizational announcements, b) the choice of actor(s) used to communicate those announcements, and c) the attributions used to explain why timing changes are happening. However, managers cannot directly affect the subsequent informal processing, examination and reinterpretation of information in which their subordinates, peers and superiors engage (Walsh & Ungson, 1991; Burrell & Morgan, 1979). In this sense, construal is a component of organizational sensemaking

(Weick , 1995), which includes the *internal sensemaking* that the individual engages in, the *interactional sensemaking* that occurs between actors, the *structural sensemaking* that occurs within social networks, and the *symbolic sensemaking* that occurs institutionally (Wiley, 1988; Barley, 1986). Temporal evaluations will be influenced by all of these sensemaking processes. The manager's ability to control how timing changes are interpreted will, thus, be bounded by the strength of these competing construal processes.

We should note, however, that when managers seek to influence the construal process, they tread on moral ground. As Werhane (1985) and others warn, when managers seek to influence other actors' thoughts and actions, they are potentially infringing on these actors' moral rights – particularly if intervention involves partially or wholly misrepresenting facts. When intervening in construal, managers should consider the degree to which they are misrepresenting key facts, what their goals are in doing so, and whether these ends can ethically justify their means (Badarraco, 1997).

Future Directions

While our review highlights many important temporal themes for organizational researchers and practitioners, it also exposes two important questions. First, our review highlights that more basic research is needed about how temporal hastenings are evaluated. As the pace of civilized life continues to accelerate, hastenings have become pervasive. Yet, little psychological research directly examines how they are valued. Second, our review draws primarily from research conducted in the United States and Europe on Anglo populations. Amid increasing globalization, more cross-cultural research is needed to determine which time valuation tendencies are universal and which are culture-specific. A broad body of anthropological research finds that time is perceived differently across cultures (see Hall, 1983,

Gell, 1996 for reviews), but psychological research is needed which systematically examines these differences.

Final Comments

As we noted at the beginning of this paper, the successful timing of organizational activities depends not only on effective planning and coordination. It also depends on temporal responsiveness – the ability of organizational actors to adapt the timing of their activities to unanticipated events. Here, we have examined the individual-level dynamics underlying temporal responsiveness, namely how organizational actors respond to timing changes; e.g., changes from existing organizational schedules, routines, expectations, and plans. We introduced a reference point model of how people perceive and evaluate time and timing changes in organizations. We then reviewed a broad body of cross-disciplinary research to better understand how consequential changes to an actor's schedule are evaluated –- i.e., what happens when plans change. Our analysis shows that the evaluation of a schedule change is quite complex. It can depend on who's tracking the change, what referents they use, why they are tracking it, what else there is to do while tracking, what they wish they could be doing, and so on.

We close by noting that while social trends in temporal evaluation have been observed, such as the increasing perception of time famine – the relevance of those trends to the individual's experience of time is somewhat ephemeral. In the end, the value of a particular moment in time – and whether it is lost or saved – is quite malleable. It is intimately shaped by the psychological, social, temporal, material, organizational and cultural context within which it is embedded.

FOOTNOTES

1. All of the quotes in boxes included the text, with the exception of one, were found in Maggio (1996). The Albert Einstein quote was found in Fitzhenry (1993).
2. For the sake of brevity, in the remainder of this paper, we will use t_0 to represent an actor's temporal referent associated with a specific outcome or event – thus, t_0 can be either a point or range temporal referent.
3. As we have discussed in the preceding paragraphs, time compression occurs when an outcome or event occurs early (i.e., prior to t_0). However, Propositions 3a and 3b can also apply to situations in which the time interval associated with an event stays fixed, but is experienced as compressed due to overall increases in the demand for one's time. This can happen, for example, when new tasks are assigned, or when existing tasks require more time than originally planned. This expansion of work effectively reduces the amount of time available for completing the actor's commitments.

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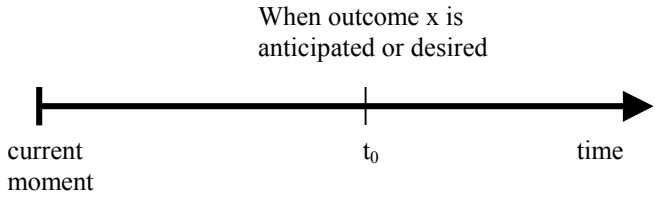

FIGURE 1a

Example of temporal referent (t_0) which represents the point in time when outcome (or event) x is expected or desired.

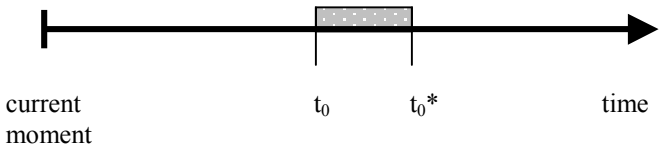

FIGURE 1b

Example of temporal referent (t_0- t_0*) which represents time range within which outcome (or event) x is expected or desired.

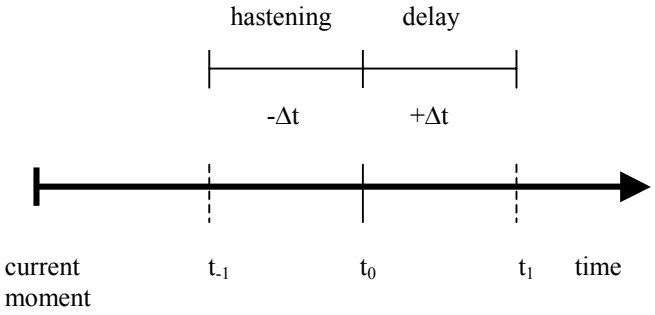

FIGURE 1c

Example of personal schedule changes (Δt) regarding the timing of x. If event or outcome x is to occur earlier than t_0, that causes a hastening ($-\Delta t$). If it is to occur later, that causes a delay ($+\Delta t$).

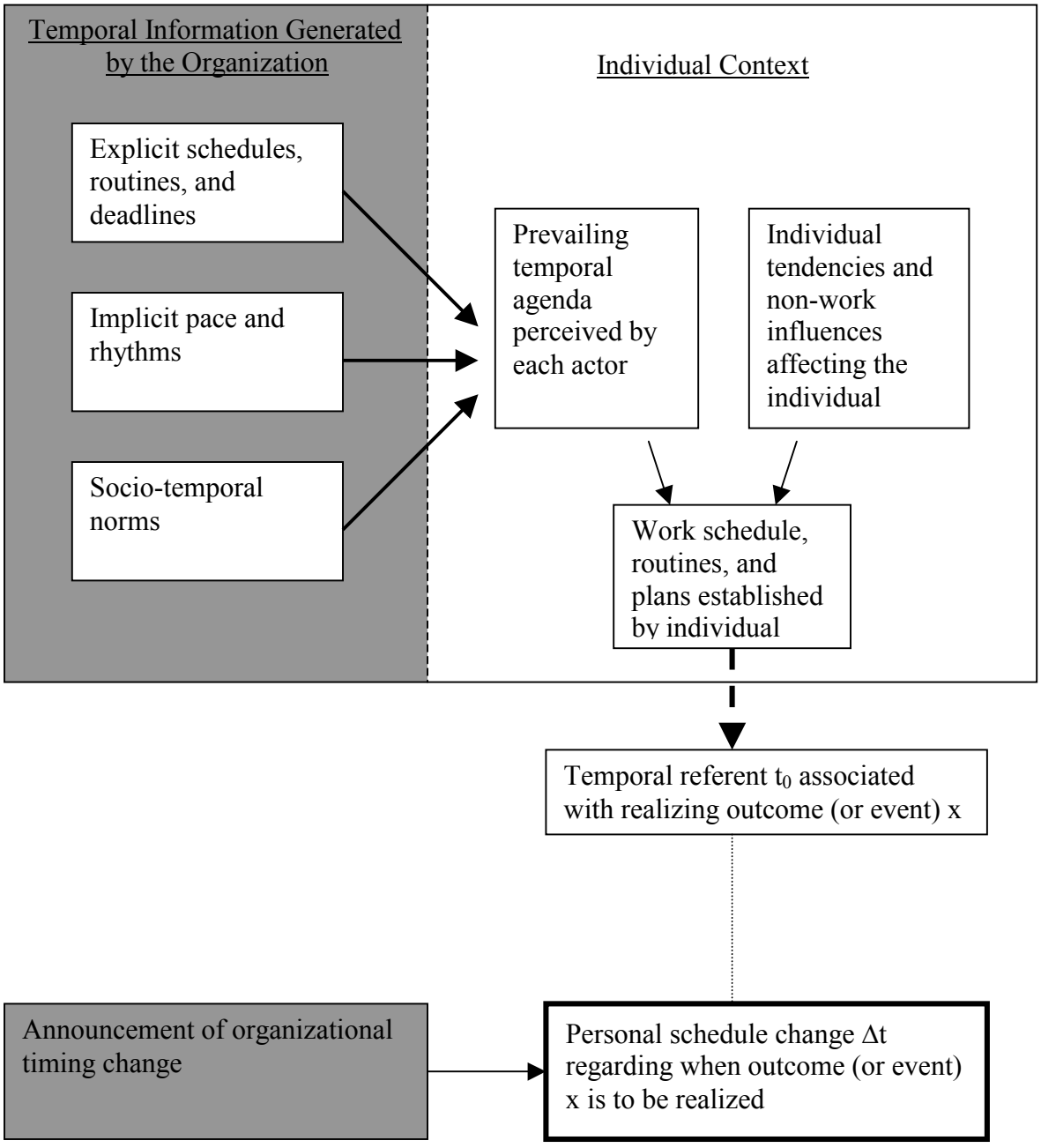

FIGURE 2

Temporal information generated by the organization and other non-work influences determine the individual's personal schedule and the temporal referents that the individual selects at work. Externally and intra-organizationally imposed timing changes lead to schedule changes (changes away from existing referents).

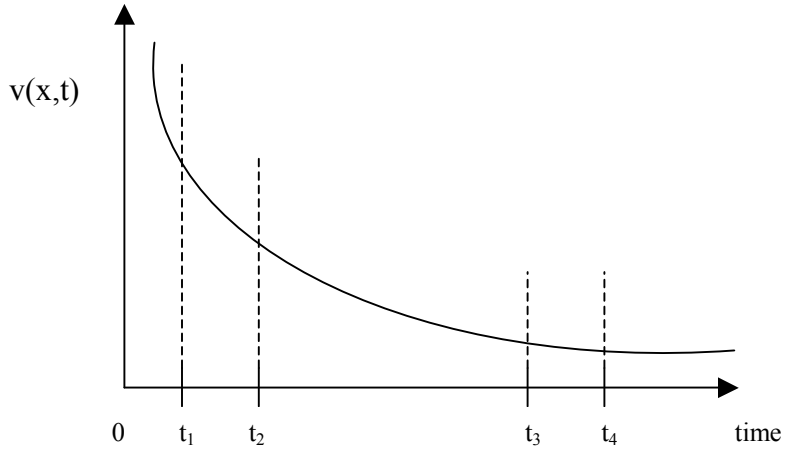

FIGURE 3

Example of hyperbolic time discounting function. The perceived value of outcome x diminishes dramatically the longer in time that it is delayed.

Table 1

Summary of Propositions

Factors Affecting How Actors Evaluate Personal Schedule Changes (Δt)

Factor	Hastening	Delay
Outcome effects	Quality costs (Proposition 3b)	Opportunity costs (Proposition 1c)
Experiential effects	Time compression (Proposition 3a)	Waiting (Proposition 1b, d)
		Timing of timing change announcement (Propositions 1a, 2)
Attributional effects	Causal construal (Propositions 4a,b)	Causal construal (Propositions 4a,b)
	Causal actor's status and attractiveness (Proposition 4c)	Causal actor's status and attractiveness (Proposition 4c)
Perceiver effects	Tendencies toward: - Time urgency - Action orientation (Proposition 5)	Tendencies toward: - Type A characteristics - Impulsivity/self-control - Need for closure (Propositions 6)
	Focal actor's location in firm, tenure and performance incentives (Propositions 7, 8, 9)	Focal actor's location in firm, tenure and performance incentives (Propositions 7, 8, 9)
Context effects	Outcome/event features (Propositions 8, 9)	Outcome/event features (Proposition 8, 9)