

**C E**



**Center for  
Effective  
Organizations**

---

**THE EFFECT OF INDIVIDUAL  
PERCEPTIONS OF DEADLINES ON  
TEAM PERFORMANCE**

**CEO PUBLICATION  
T 02-4 (413)**

**MARY J. WALLER**

**DEPARTMENT OF BUSINESS  
ADMINISTRATION  
UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN**

**JEFFREY M. CONTE**

**DEPARTMENT OF PSYCHOLOGY  
SAN DIEGO STATE UNIVERSITY**

**CRISTINA B. GIBSON**

**CENTER FOR EFFECTIVE ORGANIZATIONS  
MARSHALL SCHOOL OF BUSINESS  
UNIVERSITY OF SOUTHERN CALIFORNIA**

**MASON A. CARPENTER**

**DEPARTMENT OF MANAGEMENT  
UNIVERSITY OF WISCONSIN-MADISON**

**FEBRUARY 2002**

**THE EFFECT OF INDIVIDUAL PERCEPTIONS OF DEADLINES  
ON TEAM PERFORMANCE**

**Mary J. Waller**

Department of Business Administration  
University of Illinois at Urbana-Champaign  
1206 South Sixth Street  
Champaign, IL 61820  
217-244-3762  
mjwaller@uiuc.edu

**Jeffrey M. Conte**

Department of Psychology  
5500 Campanile Drive  
San Diego State University  
San Diego, CA 92182  
619-594-0706  
jconte@sunstroke.sdsu.edu

**Cristina B. Gibson**

Center for Effective Organizations  
Marshall School of Business  
University of Southern California  
Los Angeles, CA 90089  
213-740-9814  
cgibson@marshall.usc.edu

**Mason A. Carpenter**

University of Wisconsin–Madison  
Department of Management  
975 University Ave.  
Madison, WI 53712  
mcarpenter@bus.wisc.edu

(Forthcoming in Academy of Management Review)

We wish to thank our anonymous AMR reviewers for their helpful comments on a previous draft of this paper.

# **THE EFFECT OF INDIVIDUAL PERCEPTIONS OF DEADLINES ON TEAM PERFORMANCE**

## **ABSTRACT**

The focus of this paper concerns perceptions of deadlines among team members, and how these perceptions influence team performance under deadline conditions. Based on a review of existing literature, we propose that two time-oriented individual differences – time urgency and time perspective – influence team members' perceptions of deadlines. We present propositions that describe how time urgency and time perspective affect individuals' deadline perceptions and subsequent deadline-oriented behaviors, and how different deadline perceptions and behaviors among team members affect the ability of teams to meet deadlines. The paper closes with implications for existing theory and future research.

Time has become a critical feature of competitive organizational environments, and many organizations expect teams of employees to achieve high levels of performance under extreme time pressure. Researchers have recently explored aspects of time in teams (cf. Druskat & Wolff, 1999; Gersick, 1988, 1989; Perlow, 1999), and the ability of teams to meet deadlines and to pace activities has been linked to team outcomes (Gersick, 1989; Perlow, 1997; Waller, 1999). In other research, issues concerning differences among team members have been targeted for study (Knight, Pearce, Smith, & Olian, 1999; Larkey, 1996), and several types of team member differences have been associated with team process measures ranging from communication (Neuman & Wright, 1999; Watson, Kumar, & Michaelson, 1993) to efficacy (Gibson, 1999).

Given the influence of team member differences on team processes, what differences among team members might influence the ability of teams working under time pressure to meet deadlines? This paper focuses on differences in perceptions of deadlines among team members as probable predictors of team performance, and suggests that team members' perceptions of deadlines are likely to affect their subsequent choices and actions under deadline conditions. We refer to *time* in this paper not in an existential sense, but as a key resource for teams working in competitive environments, and we refer to *deadline* as "the time by which some task is supposed to be completed" (Locke & Latham, 1990: 7). We use *perception* to refer to an outcome of individuals' information processing or a consequence of individuals' selective attention, selective comprehension, and judgment (Lord, 1985; Waller, Huber, & Glick, 1995). Finally, we focus on understanding how differences among team

members in the way they perceive deadlines may influence team-level outcomes under deadline conditions. Because a complete investigation of the antecedents (i.e., culture, religion, family) of these perceptions is beyond the scope of the paper, we concentrate on two temporal individual difference variables -- time urgency and time perspective -- that have direct and important influences on perceptions of deadlines and subsequent deadline-oriented behaviors in teams. This paper demonstrates that under time pressure, these two temporal individual difference variables, more than any others, have critical influences on how individuals and teams perceive and respond to deadlines.

Two areas of thinking guide our focus on differences among individuals' perceptions of deadlines as a link to understanding team performance under deadline conditions. First, recent research suggests that individuals' perceptions of time in time-constrained situations have direct effects on internal team processes that may influence overall team performance. Work by Perlow (1999) suggests that how individuals perceive and use time can lead to collective perceptions of "time famine" and time crises at work, both of which may influence team performance. Similarly, research by Waller, Giambatista, and Zellmer-Bruhn (1999) indicates that the presence of a highly time-aware (or "time urgent") team member decreases multitasking behavior in teams working on a creative task under deadline conditions. Research also suggests that individuals' attention to time at the midpoint of allotted time helps groups pace themselves while working to meet a deadline (Gersick, 1988, 1989), whereas other work indicates that successful project managers adapt their own "time orientations" to match the varying temporal demands of team tasks and situations they are called upon

to manage (Toms & Pinto, 1999). Based on this evidence, we suggest that, beyond general perceptions of time, individuals' perceptions of deadlines may affect how they behave and act under deadline conditions, and that differences in these perceptions and subsequent behaviors among team members are likely to affect the ability of teams to finish work in the time allotted to them.

Second, the ability of teams to coordinate quickly and to meet deadlines can have pronounced effects on both team and organizational effectiveness. Meeting deadlines is typically regarded as an important measure of project success (Freeman & Beele, 1992). For example, the ability of product development teams to meet project deadlines and time the market entry of new products can have significant effects on product sales (Bayus, Jain, & Rao, 1997; Hultink & Robben, 1999). However, in teams trying to perform tasks under deadlines, individual team members could differ substantially in how they perceive deadlines and remaining time resources. Our focus on teams, rather than work groups, assumes a highly interdependent work context (Saavedra, Early, & Van Dyne, 1993), and differences in deadline perceptions among team members may inhibit the ability of teams to develop a shared understanding of time resources and coordinate activities to finish work on time.

In sum, many managers in organizations, especially those facing turbulent environments, place individuals in teams and ask team members to collaboratively perform tasks and meet deadlines. Sometimes, teams do achieve high levels of performance under these conditions, but often they do not. For example, missed lower-level deadlines are blamed for much of the billion-dollar cost overrun for Boston's "Big Dig" construction project, and analysts are doubtful that the original 2004 opening date

will be achieved (Anonymous, 2000). Similarly, Unisource Worldwide, a large paper product distributor, recently announced a \$168 million write-off due to the termination of a large software installation project caused in part by several missed software implementation deadlines (Stein, 1998). Although many factors can affect team success, teams that are unable to manage differences in deadline perceptions may suffer regarding the timeliness of collaborative work (Vinton, 1992). Understanding more about the underlying differences in the way team members perceive deadlines may help explain the equivocal experiences of managers and teams in organizations with respect to team performance under time-constrained conditions.

To address these issues, we first explore existing literatures on time in teams and on time perception. Based on this literature review, we focus on two specific areas of the time perception literature – time urgency and time perspective – and suggest how these two individual differences influence individual perceptions of deadlines. We then introduce propositions that suggest how deadline perceptions among team members may affect the ability of teams to meet deadlines. We close with a discussion of implications for existing theory and future research.

## **LITERATURE REVIEW**

Research on time and timing issues in groups and teams has increased over the past several years. Many of the laboratory studies in this area use deadlines to create conditions of time pressure for teams (cf. Kelly & McGrath, 1985; Gersick, 1989; Karau & Kelly, 1992; Lim & Murnighan, 1994; Parks & Cowlin, 1995; Waller, Giambatista, Zellmer-Bruhn, 1999; Waller, Zellmer-Bruhn, & Giambatista, 1997). For example, Gersick (1989) found that team members performing a collaborative, creative task

under a deadline exhibited increased attention to time at the midpoint of the total time allotted. Gersick suggested that attention to time acted as a catalyst, inducing a “midpoint transition” to push teams forward in their task completion. Similarly, Waller, Zellmer-Bruhn, and Giambatista (1997) studied teams’ adaptive behaviors under conditions of shifting deadlines. In order to understand how teams cope with suddenly shortened or lengthened deadlines, these researchers shifted teams’ deadlines to earlier or later points in time after the teams had begun working on tasks under what the teams assumed were stable deadline conditions. Neither Gersick nor Waller, Zellmer-Bruhn, and Giambatista explored the deadline perceptions of team members; however, without the perception and awareness of the deadline, a midpoint transition in Gersick’s teams and the coping behaviors in Waller, Zellmer-Bruhn, and Giambatista’s teams may not have occurred.

Although the presence of deadlines in these examples was assumed to be a factor in individual and group activity, neither study explored how perceptions of deadlines may have motivated attention to time differently across individual team members, or how differences in team members’ perceptions may have affected team outcomes. As such, these studies are representative of work in this area in which conditions of time pressure in teams are created by imposing deadlines, and in which a uniform perception of deadlines across participants is assumed. Some work in this area suggests that in the presence of deadlines, individuals are likely to notice how much of their allotted time has elapsed at certain points before the deadline arrives (Gersick, 1989; Waller, Zellmer-Bruhn, & Giambatista, 1997), whereas other work suggests that individuals are likely to increase task activity before the deadline arrives in order to



complete tasks and attain the overall deadline goal (Karau & Kelly, 1992; Lim & Murnighan, 1994). Thus, the evidence from these previous studies suggests that deadlines may be perceived by individuals in at least two ways. First, deadlines may be perceived as *measures* of remaining time available to complete a task (e.g., Gersick, 1988, 1989). Second, deadlines may be perceived by individuals as part of the overall *goal* that team members must work toward to achieve (Karau & Kelly, 1992; Locke & Latham, 1990: 7). However, to our knowledge, none of the work in this area specifically examines how individuals in teams perceive deadlines, or how differences in these perceptions affect team outcomes.

A second pertinent area of literature concerns individuals' perceptions of time. Perceptions are the outcomes of information processing, or are the consequences of selective attention, selective comprehension, encoding, storage, retention, information retrieval, and judgment (Waller, Huber, & Glick, 1995). What individuals perceive often affects their subsequent choices and actions (Hambrick & Mason, 1984; Thomas, Clark, & Gioia, 1993). Much of the existing sociological, anthropological, and psychological work on perceptions of time involves theories or studies that concern how people from various cultures differ in their perceptions of and behaviors toward time. For example, Zerubaval's (1981) work concerns the societal changes that took place in various cultures after uniform measures of time were developed. From an anthropological perspective, Hall (1983: 3) notes that Americans and Japanese are nearly mirror-images of each other in the way individuals from these two cultures perceive and think about time. Levine (1997) contrasts the tempo and general pace of life among several cultures, using examples such as the pace of walking and tolerance

for waiting, whereas Hofstede's (1984) work details several stable dimensions across cultures, such as individualism, masculinity, and time use. In general, these works are informative regarding the culture-specific differences in conceptualizations of time and of time-related behaviors, such as the standards for what is considered punctual behavior, but they do not directly examine individual differences in deadline perceptions.

Other research in time perception has identified stable differences in time perceptions across individuals without examining cultural antecedents. Some areas of research in time perception have focused on differences among individuals in their perceptions of the passage of time or of perceptions of time pressure in general. First, concerning the passage of time, many studies focus on the identification of antecedents of individuals' retrospective perceptions or estimates of how much time elapsed during waiting periods (De Long, 1981; Hornik, 1984; Vitulli & Rowe, 1999) or how much time elapsed before a particular event occurred (DeLucia & Meyer, 1999). In a detailed account of hospital life, Zerubavel (1979) describes the simultaneous linearity and cyclical nature of time rhythms attended to by various personnel. Second, concerning individuals' perceptions of time pressure, Zakay (1990) notes that contextual elements, such as the nature of the task itself (i.e., if a task requires individuals to measure elapsed time), may cause individuals to be more aware of time. An additional area of work focuses on cognitive processing under conditions of time stress (e.g., Wickens, 1984). Overall, although these research areas offer insights regarding how individuals perceive the passage of time or regarding the amount of time pressure in a particular

setting, they provide little reasoning regarding the individual differences that may lead to variation across individuals in actual *deadline* perceptions.

More informative in constructing theory about deadline perceptions is research that has identified stable, core individual differences in time perceptions and that has specifically linked these differences to time-oriented or deadline-oriented behaviors. Two disparate areas of literature exist that offer evidence of time-oriented individual differences. First, the literature on *time urgency* is linked to a larger body of work concerning the Type A behavior pattern. Notably, time urgency, or the frequent concern with the passage of time, has been identified as the core component of the Type A behavior pattern, and it has been shown to be a stable individual difference variable in a number of recent studies (e.g., Conte, Landy, & Mathieu, 1995; Landy, Rastegary, Thayer, & Colvin, 1991). Second, recent work on *time perspective* suggests that individuals' temporal frames or orientations toward time – past, present, or future – are also stable individual differences that affect subsequent time-oriented behaviors (Zimbardo & Boyd, 1999). More importantly for the purposes of this paper, and unlike the research evidence reviewed above, both the time urgency and time perspective constructs have been linked by previous research to individuals' perceptions of deadlines or to deadline-oriented behaviors. Both of these areas of literature are reviewed in detail below.

### **Time Urgency**

Researchers have identified *time urgency*, or a frequent concern with the passage of time, as a relatively stable individual difference variable and a subcomponent of Type A behavior pattern (Conte, Landy, & Mathieu, 1995; Conte, Mathieu, & Landy, 1998;

Landy et al., 1991; Rastegary & Landy, 1993). Friedman and Rosenman (1974) suggested that time urgency is the most central element of the Type A behavior pattern, and it is the only behavior evident in all Type A individuals. Time urgency is associated with time-related behaviors including time awareness, task prioritization (or list making), and the scheduling of tasks within the allotted time (Conte, Landy, & Mathieu, 1995). Time urgent individuals tend to constantly check the status of time remaining by attending carefully to the passage of time. They perceive time as their enemy and set themselves in opposition to it (Price, 1982).

Time urgent individuals also tend to schedule more activities than will comfortably fit into the available time (Friedman & Rosenman, 1974). Thus, they are chronically hurried trying to fulfill all of their ambitions and commitments under deadline situations that they have often created. In order to complete all the activities that they have scheduled, time urgent individuals must be quite efficient in the use of their time. Rastegary and Landy (1993) noted that when time urgent individuals schedule too many activities, they often use deadlines as heuristics to prioritize tasks. Other researchers have noted that time urgent individuals appear in general to be preoccupied with deadlines (Glass, Snyder, & Hollis, 1974; Gastorf, 1980), and individual differences in setting deadlines and focusing on deadlines have recently been associated with increased work pace (Conte, Honig, Dew, & Romano, in press).

Time urgent individuals often use deadlines as measures of the time remaining to complete a task. Rastegary and Landy (1993: 218) also noted that “the inward sense of urgency characteristic of time urgent individuals affects both the perception and usage of time as well as reaction to increased time pressure”, and they suggested that

time urgency is an important factor in understanding how individuals make decisions under time pressure. Thus, time urgent individuals (1) are driven to schedule many activities to accomplish in an allotted period of time, (2) often set their own deadlines in addition to deadlines that are externally imposed, and (3) attend to and use deadlines to measure the remaining time resources.

Research indicates that non-time urgent individuals tend to be less attentive regarding remaining time resources and tend to underestimate the passage of time (Burnham, Pennebaker, & Glass, 1975; Yarnold & Grimm, 1982). In circumstances where tight deadlines are the norm, underestimation of the passage of time may prove to be costly because it may lead individuals to ignore or miss important deadlines, or it may indicate a need to intensify one's work pace when a deadline approaches (Rastegary & Landy, 1993). However, adopting an increased pace may prove to be difficult for non-time urgent individuals (Vinton, 1992), particularly because evidence indicates that temporal individual differences are relatively stable over time (Landy et al., 1991; Macan, 1994; Shahani, Weiner, & Streit, 1993). Thus, it may be difficult to train non-time urgent individuals to work faster or to be more focused on deadlines. Alternatively, time urgent individuals who have experience working under time constraints may be able to withstand a higher level of time pressure when the work situation requires it (Freedman & Edwards, 1988).

Although most studies of time urgent behaviors have focused on the individual, it is possible that the actions of time urgent individuals may also influence team behaviors under deadline conditions. Waller, Giambatista, and Zellmer-Bruhn (1999) found that the presence of a time urgent individual in teams was negatively associated with the

simultaneous performance of multiple tasks (or polychronic behavior) in the team. These teams performed a creative task under deadline conditions, and time urgent individuals tended to impose strict, linear schedules on their teams, pushing teams to focus on one primary task at a time, and constantly warning team members about time remaining to complete the task. In sum, time urgent individuals attend to deadlines rigorously and perceive deadlines as measures of the time remaining to complete scheduled activities. These perceptions and uses of deadlines are quite different from the deadline perceptions of non-time urgent team members (Rastegary & Landy, 1993), and these differing perceptions are likely to have an impact on team efforts to accomplish goals under deadline conditions, which we describe below. In addition to evidence concerning time urgency, a second and disparate area of literature on time perspective offers additional insights concerning individuals' perceptions of deadlines.

### **Time Perspective**

Differences in individuals' perceptions of time and deadlines may also result in part from differences in *time perspective*, which refers to a stable individual difference or bias in the temporal frames used by individuals in tasks such as planning and decision making (Zimbardo & Boyd, 1999). Some previous research suggests that individuals' time perspectives focus more on either past, present, or future time (Kluckhohn & Strodtbeck, 1961; Zimbardo & Boyd, 1999), whereas other research conceptualizes time perspective as a single dimension varying from a future orientation to a past-and-present orientation (Hofstede & Bond, 1988). However, due to the planning and execution nature of work in organizations (Bluedorn & Denhardt, 1988), research concerning time perspective in organizations literature has often focused on

the impact of present and future time perspectives on individual decision making and job performance (Bird, 1988, 1992; Das, 1987; West & Meyer, 1998). Here, we follow this emphasis on present and future time perspectives.

Individuals' time perspectives may result from numerous antecedents, including culture, religion, family, education, and work backgrounds (see Hall, 1983; Zimbardo & Boyd, 1999). As stated previously, a full investigation of these antecedents is beyond the scope of this paper. Regardless of how they may develop, time perspectives influence how individuals perceive time and behave regarding time. Individuals' time perspectives act as temporal cognitive frames used to "form expectations, goals, contingencies, and imaginative scenarios" (Zimbardo & Boyd, 1999), which are all important in planning and execution activities. When an individual habitually overuses one temporal frame – in our case, either present or future – a bias in information processing, planning, or decision making occurs.

Individuals with a *present time perspective* tend to believe that behaviors taken today have no more effect on the probability of attaining a future goal than do future behaviors that could be taken as the goal nears. According to Jones (1988: 25), "If putting off today does not materially alter the probability of successful goal attainment, there is little reinforcement for anticipatory goal behavior." As deadlines are themselves points in future time and are often important goals in organizations, having a present time perspective could greatly affect how an individual perceives and reacts toward deadlines. In a compilation of multiple studies, Zimbardo and Boyd (1999) found that individuals holding a present time perspective focus on present pleasure and tend to (1) believe that planning for the future is somewhat futile, (2) take more risks and act

impulsively, and (3) lose track of time significantly more than individuals with other time perspectives. Evidence from other studies supports this general description of present-oriented individuals. Das (1987) found that planners with present orientations tended to make plans with shorter planning horizons, whereas Bird's (1992) and West and Meyer's (1998) work indicates that teams with more present time perspective individuals tend to focus less on future-oriented strategic thinking than other teams. As much work in organizations is formalized around deadlines and milestones, it seems clear that, especially when compared to future time perspective individuals, those people holding more present time perspectives would be far less likely to attend to or be motivated by the passage of time or a future deadline.

Nuttin (1985) describes *future time perspective* as an overall attitude toward time that focuses on the future. Future time perspective necessitates the belief that a behavior performed in the present increases the probability that a desired future goal will be attained, and thus leads to a higher valuation of goals having future attainment possibilities (Jones, 1988). Again, as deadlines are future points in time and are often framed as important goals in organizations, individuals with future time perspectives are more likely than those with present time perspectives to work today in order to meet a future deadline. Evidence from other research supports this view. Zimbardo and Boyd (1999) found that individuals with future time perspectives were highly goal-oriented individuals and were more likely than other individuals to consider future consequences, make to-do lists, use a day planner, wear a watch, and have more clearly defined future goals. Similarly, Das (1987) found that planners with future time perspectives adopted longer planning horizons than did other planners. West and Meyer (1998) found that



teams with more future time perspective individuals made more changes in strategic thinking than did teams with more present time perspective members.

Given the fundamental cognitive and behavioral differences between individuals with present versus future time perspectives, it seems likely that these differences could become the source of misunderstandings, conflict, and inconsistent performance for people in teams trying to collectively meet deadlines. Individuals with future time perspectives may perceive the attitudes and behaviors of colleagues with present time perspectives as undisciplined and lazy. Conversely, individuals with present time perspectives may find the attitudes and behaviors of individuals with future time perspectives to be demanding, uptight, and misplaced (Jones, 1988). Time perspective both focuses individual attention on the present or the future and influences individuals' attitudes and behaviors toward deadline attainment. Based on this existing research, it seems reasonable that differences in time perspective may lead to team members perceiving time resources and deadlines, as well as team efforts to coordinate activities under time-constrained conditions, very differently.

Thus, differences in both time urgency and time perspective may combine to shape individuals' perceptions of deadlines, both as measures of time resources remaining and as future goals to be attained. In the following section, we explore how the combination of these temporal influences result in prototypical individual perceptions of deadlines.

### **Time Perspective and Time Urgency Combined**

We suggest two central questions regarding individuals' perceptions of deadlines. First, how do time urgency and time perspective simultaneously influence individuals'

deadline perceptions? Second, how might differences among team members' perceptions of deadlines influence the team's ability to coordinate activities under time pressure and meet those deadlines?

Regarding the first question, based on the existing research reviewed, it seems that individuals may hold either a more present or more future time perspective, and may simultaneously be more or less time urgent. As stated previously, time urgency is an individual difference pertaining to a frequent concern with the passage of time and how to cope with it, whereas time perspective concerns an individual's bias toward framing planning and decision making tasks in present or future time. Although no empirical tests exist, to our knowledge, that compare or correlate time urgency and time perspective, our review of the existing literature suggests that time urgency and time perspective are independent constructs, and that both factors shape individuals' perceptions of deadlines and their subsequent time-oriented behaviors. The combined influences of time urgency and time perspective result in four prototypical individual-level behavior patterns under deadline conditions. Although we recognize that time urgency can range from low to high and time perspective can range from present to future, we focus on the extreme low-high and present-future ends of these dimensions in order to establish more clear descriptions of time urgency – time perspective behavior combinations. The prototypes are depicted in Figure 1.

-----  
**Insert Figure 1 about here**  
-----

Crammers and Organizers. First, consider those individuals with high time urgency. Previous empirical work by Conte, Mathieu, and Landy (1998) indicates that

behaviors associated with time urgency concern the depletion of time resources, and that time urgent individuals can be clustered into two groups based on their time urgent behaviors. The researchers labeled these groups “Crammers” and “Organizers”. Crammers are characterized by the need to exert control over deadlines, competitiveness, achievement strivings, and high impatience and irritability. Organizers are characterized by achievement strivings, high time awareness, and the need to schedule.

To our knowledge, the dimensions of time perspective and time urgency have not been investigated together in previous research. However, based on the behavioral differences between Crammers and Organizers described above, it seems likely that the Crammers identified by Conte, Mathieu, and Landy (1998) are those highly time urgent individuals with a present time perspective (Quadrant 2, Figure 1), and that Organizers are those highly time urgent individuals holding a future time perspective (Quadrant 1, Figure 1). In general, due to their present perspective, Crammers have a day-to-day orientation without a focus on future goals or outcomes, and without regarding deadlines as future goals (see Jones, 1988). Simultaneously, however, Crammers have a high need to control deadlines and tend to behave in highly impatient or irritable ways when they are unable to exert such control (Conte et al., 1998). When focusing on the present, time urgent individuals are likely to attempt to control tasks and deadlines on a day-by-day basis. They are also likely to ignore the fact that tasks could be scheduled over longer periods of time and for the attainment of future goals and deadlines. Crammers, therefore, may contribute to an ongoing “crisis” mentality in their teams, where team members constantly feel they have too much to do and not enough

time to do it (Perlow, 1997). Conversely, if individuals hold a time perspective that is more focused on the future, they believe that the actions they take today will affect future goal and deadline attainment. Time urgent individuals with a future time perspective, or Organizers, are likely to schedule tasks over longer periods of time than are present-oriented time urgent individuals. Overall, the above reasoning leads to the following two propositions:

**P1: Individuals who are time urgent and have a present time perspective (Crammers) will exhibit the need to exert control over deadlines, competitiveness, achievement strivings, and high impatience and irritability.**

**P2: Individuals who are time urgent and have a future time perspective (Organizers) will exhibit achievement strivings, high time awareness, and the need to schedule.**

Relators and Visioners. Research indicates that individuals who are low on time urgency are not likely to pay attention to deadlines or to the passage of time (Glass, Snyder, & Hollis, 1974). They have little need to schedule or control deadlines and often underestimate the passage of time, but may differ regarding their present or future time perspective. Low time urgent individuals with present perspectives are likely to resist any scheduling efforts or deadline impositions. However, due to their present time perspective and lack of time urgent behaviors, they are likely to focus on present moment relations with others (Jones, 1988); thus, we label these individuals Relators (Quadrant 3, Figure 1). Relators' prime focus is on building and maintaining interpersonal relationships (Nuttin, 1985) and on enjoying the present (Zimbardo & Boyd, 1999). Present-oriented individuals are also likely to exhibit impulsive, risk taking behaviors and actually lose all track of time (Zimbardo & Boyd, 1999) – attributes which,

when combined with low time urgency, reduce the likelihood that Relators will set deadlines or adhere to (or even notice) the deadlines imposed by others.

Finally, low time urgent individuals with future orientations are likely to focus on future goals, but not on present time limits or short-term deadlines. These individuals may feel less constrained by time resources and deadlines than other individuals, and thus may be more able to generate innovative, vision-oriented solutions to longer-range problems. We label these individuals, depicted in Quadrant 4 of Figure 1, as Visioners. Like Organizers, Visioners have low levels of impatience and irritability. Like Relators, they underestimate the passage of time and generally do not attend to deadlines. However, due to their future orientation, when they do attend to deadlines, they will conceptualize them as future goals to be achieved rather than as measures of time elapsed. This reasoning leads to the following propositions:

**P3: Individuals who are not time urgent and have a present time perspective (Relators) will not pay attention to deadlines or the passage of time, but will take risks, act impulsively, and focus on present moment tasks and relations with others.**

**P4: Individuals who are not time urgent and have a future time perspective (Visioners) will not pay attention to deadlines, the passage of time, present time limits, or short-term deadlines, but will take risks, act impulsively, and focus on future goals.**

In summary, by combining evidence from both the time urgency and time perspective literatures, we have identified four individual-level prototypes that help explain different individual perceptions of deadlines. The next section explores how these perceptual differences among team members may affect a team's ability to meet its task deadlines.

## Team Deadline Performance

Regarding our second research question, and given the different levels of attention to deadlines across individuals as proposed by the Visioner, Organizer, Relator, and Crammer prototypes, how do these differences influence teams working under deadline conditions? First, consider teams comprised solely of Visioners and Relators. Because both Visioners and Relators are not time urgent, teams comprised of Visioners and Relators are not likely to accurately estimate or notice the passage of time, nor are they likely to make plans according to deadlines (Burnham, Pennebaker, & Glass, 1975; Rastegary & Landy, 1993; Yarnold & Grimm, 1982). In fact, Rastegary and Landy (1993) suggested that non-time urgent individuals are likely to avoid making decisions in time-pressured situations or even avoid situations with deadlines altogether. Accordingly, teams comprised of such individuals are not likely to successfully meet their deadlines. Thus, we propose that:

**P5: Under deadline conditions, teams comprised of Visioners and Relators will have difficulty meeting deadlines.**

However, deadlines may vary in terms of the length of time from the present to a future point in time that they represent. This length of time has been referred to as *temporal depth*. In a review and integration of the time orientation literature, Bluedorn (1999) recently described far and near points of future time as “deep future” and “shallow future”. Shallow future concerns near-future points in time, whereas deep future concerns far-future points in time. Although the gradations between shallow and deep may be significantly different across teams, all else being equal, we suggest that Visioners and Relators are likely to differ greatly in the relative ease with which they notice and attend to deadlines placed in shallow or deep future points in time. Given

their future time perspective, Visioners would be more likely to attend to and plan for deep future deadlines. However, Visioners are likely to give less attention to shallow future deadlines. Alternatively, Relators, given their present time perspectives, are more likely than Visioners to attend to and work toward shallow future deadlines. Thus, we propose:

**P5a: Under deep future deadlines, teams with more Visioners than Relators will have less difficulty planning for meeting deadlines than will teams with more Relators than Visioners.**

**P5b: Under shallow future deadlines, teams with more Relators than Visioners will have less difficulty meeting deadlines than will teams with more Visioners than Relators.**

Alternatively, some teams may be comprised solely of Organizers and Crammers. Given their time urgency, both Organizers and Crammers are likely to accurately estimate the passage of time, to attend to deadlines, and to strive to meet them (Conte, Mathieu, & Landy, 1998; Rastegary & Landy, 1993). Notably, Freedman and Edwards (1988) found that time urgent individuals performed better than less time urgent individuals in low, moderate, and high time pressured situations. According to Rastegary and Landy (1993), time urgent individuals seek out more tasks and time pressured situations, and, thus, they are better able to handle deadlines when the job requires them to do so. Accordingly, teams comprised of Organizers and Crammers will perform best and be most satisfied in time-pressured conditions (Freedman & Edwards, 1988; Slocombe & Bluedorn, 1999). Therefore, we propose that:

**P6: Under deadline conditions, teams comprised of Organizers and Crammers will be successful in meeting deadlines.**

However, based on the reasoning described above, the temporal depth of deadlines may vary, and Organizers and Crammers faced with such deadlines will be differentially equipped to handle shallow and deep future deadlines. For example, Zimbardo and Boyd (1999) found that individuals who have a future time perspective (e.g., Organizers) utilize strategic thinking and are focused on meeting long-term goals and deadlines. Thus, all else being equal, given their future time perspectives, Organizers would be more likely to notice, attend to, and plan for deep future deadlines, whereas present-oriented Crammers would be more likely than Organizers to notice and work toward shallow future deadlines.

**P6a: Under deep future deadlines, teams with more Organizers than Crammers will be more successful in planning for meeting deadlines than will teams with more Crammers than Organizers.**

**P6b: Under shallow future deadlines, teams with more Crammers than Organizers will be more successful in meeting deadlines than will teams with more Organizers than Crammers.**

The propositions stated above are purposefully constrained in order to examine the question: How do time urgency and time perspective combine in teams to affect team-level ability to meet deadlines? However, we have focused chiefly on one aspect of quality: adherence to deadlines. Nevertheless, many other aspects of quality regarding team outputs exist including creativity, client satisfaction, resource maximization, and profit. We have used configurations, such as Visioner-Relator or Organizer-Crammer, to illustrate differences in team performance only in terms of meeting deadlines. Other configurations may result in varying performance in terms of other outcomes. For example, a team comprised of Crammers, given a complex,



creative task with an ambiguous or long deadline, might simply set a self-imposed deadline and produce an expedient but not necessarily creative solution (Zellmer-Bruhn, Giambatista, & Waller, 2000). Similarly, a team comprised of Relators, given their energetic, high risk behaviors, might produce more innovative new product ideas than differently-configured teams, but might produce such ideas well after a target deadline (Waller, Gibson, & Carpenter, 1999). On a general level, these ideas suggest that the match between the temporal configuration of the team and the characteristics of the task combine to affect the overall performance level of teams. Thus:

**P7: A temporal match between team time urgency/time perspective configuration and task demands will have a positive effect on overall team performance.**

Under what specific circumstances or situations will time urgency and time perspective play a role in team performance under deadline conditions? We suggest that one important circumstance that will have an impact on team performance under deadline conditions is the familiarity of the situation. Price (1982) noted that one consequence of time urgency is that one's actions become stereotypical because acting and thinking in a stereotypical or routinized way saves time -- at least in the short run. Time urgent individuals who do not think they have the time to give a considered solution to a problem will rely on whatever has worked in the past. However, it is easy to overlook the important details of an unusual situation or nonroutine event that requires different responses than one has previously utilized (Price, 1982). Thus, despite its benefits in terms of efficiency, time urgency can have adverse consequences for individual decision-makers as well as for the teams in which they are members. An additional example of the importance of temporal match is illustrated by

the work of Waller, Giambatista, and Zellmer-Bruhn (1999), who found that individuals who are highly time urgent may persuade other team members to perform key tasks in a sequential manner, rather than in a more time-expedient, simultaneous fashion. Waller et al. (1999) also noted that the time urgent individuals in their study attempted to exert control over the team task performance process and were highly time aware, suggesting that these individuals also held a more present time perspective, which would place them in the Crammers quadrant of Figure 1. In many instances, however, it may be more efficient for teams working under deadline conditions to form subgroups and perform some tasks simultaneously (Waller, 1997). Thus, it seems likely that a temporal mismatch between a Crammer and the remainder of his or her team would have a negative effect on the team's ability to meet deadlines.

Further, many researchers have recently suggested that team performance under dynamic conditions can be understood in terms of the mental models of the task and environment held by team members (Cannon-Bowers, Salas, & Converse, 1993; Huey & Wickens, 1993). According to much of the work in this area, teams are more effective when their cognitive representations of problems and systems overlap to a significant degree (Rouse, Cannon-Bowers, & Salas, 1992). The temporal match among team members may play a significant part in the ability of teams to build such shared cognitive representations, as part of addressing a problem is understanding time constraints and deadlines associated with that problem. Thus, a good temporal match among team members may have significant team-level performance implications. For example, in a recent study of airline flight crews, Waller (1999) found that the timing of adaptive behaviors in crews, not the overall frequency of adaptive behaviors, was

associated with higher or lower performance during a time-constrained, high workload flight simulation. Because these adaptive behaviors were generally team-level activities and not individual actions, crew members needed to reach consensus regarding when to engage in these behaviors before they could coordinate their adaptation to nonroutine problems. It is possible that crews comprised of members holding very different perceptions of time took longer to reach this agreement, and thus delayed engaging in adaptive behaviors in a timely manner.

In other contexts, slow adaptation to and resolution of nonroutine events or problems could easily lead to missed deadlines. Thus, it is likely that a temporal mismatch among team members will have an overall negative effect on a team's ability to meet deadlines. Other circumstances, such as the complexity of the task, may also have an influence on team performance, but consideration of such issues is beyond the scope of the current paper.

In summary, when considering the likelihood of teams meeting their deadlines, time urgency and time perspective variables should be taken into consideration. Such consideration should include differences in time urgency and perspective among team members as well as the familiarity of the team task. Appreciating the combinations of these variables will help researchers and practitioners to understand the temporal dynamics of the team and the team's likelihood of finishing work on time.

## **DISCUSSION**

Organizations today exist in environments steeped in speed. The speed of product development, response to customers, and problem solving can all have dramatic effects on both organization and team performance levels. Many key

functions in flattened organizational hierarchies exist in teams of individuals, and team members, particularly those dispersed geographically, must seamlessly coordinate their activities over time in order to deliver their work when it is needed. However, the perception and importance of what “on time” means and how to achieve such delivery may differ dramatically among team members. Perhaps earlier in the development of theories about team dynamics under time pressure, when the flow of information did not demand near-instantaneous response times from organizations, the examination of how different perceptions of deadlines influence team on-time performance might have seemed superfluous. Today, when entire multi-million dollar organizations can be founded, survive, and die in a matter of months (Perlow, 2000), this examination seems quite necessary.

This paper illustrates the importance of examining our assumptions about how individuals think about deadlines in team settings. Previous research on team behaviors and performance under deadline conditions has focused chiefly on how teams as a whole perform under time constraints, and recent work (Pelled, Eisenhardt, & Xin, 1999) has called for more examinations of team processes that reach beyond the traditional Input-Process-Output model of many previous research designs. We suggest here that (1) individuals may notice and think about deadlines differently, and that these differences emanate from individual differences in time urgency and time perspective; (2) the “black box” of team process under time constraints may include a significant individual-level deadline perception component; and (3) the differences among perceptions of deadlines held by team members may influence team

performance. Specifically, we suggest that two key factors – time urgency and time perspective – combine to influence individuals' perceptions of deadlines.

This view has two important implications. First, similar to existing work that focuses on the impact of individual time-oriented behaviors on team pacing (Gersick, 1989; Waller, Giambatista, Zellmer-Bruhn, 1999), we suggest that team processes may be infused with unnoticed differences in individuals' perceptions of deadlines, and that these differences may affect the ability of teams to meet a given deadline. Second, similar to previous work on the congruence of individual, team, task, and environmental characteristics (Hewitt, O'Brien, & Hornik, 1974; Waller, Huber, & Ammeter, 1995), this view takes into account the combination of deadline perceptions across individuals in teams, and suggests that different patterns of deadline perception differences in teams may or may not lead to finishing work on time. Using this perspective, we hope to motivate additional consideration of time-oriented processes in teams that lead to differences in team performance under time constraints.

Second, this paper questions the accuracy of prior assumptions regarding deadline perceptions for some previous team dynamics research. If, as we have suggested, individuals perceive deadlines either as goals or as measures of time resources, it seems quite possible that the variability created by these perceptual differences may impact research findings in a systematic manner. Most, if not all, research on team behaviors under deadline conditions contains the embedded assumption that research participants perceive the given deadline similarly. If future empirical research indicates support for our propositions, then unless the teams used in previous research were serendipitously randomized based on the time urgency and

time perspectives of participants, how individual participants perceived deadlines differently may have affected prior results. For example, some teams that exhibited very different levels of time awareness but were uniformly unable to meet shallow future deadlines in previous research may have been teams comprised mostly of Visioners or Organizers. We do not suggest that all previous research concerning team performance under deadline conditions is in error; however, we do suggest that examining and understanding differences in deadline perception could sharpen our existing knowledge of team dynamics under these conditions.

There are, however, limitations to the work presented here. First, the relationships we describe here are meant as a first step in thinking about the combined influences of time urgency and time perspective on individuals' perceptions of deadlines. The four time urgent – time perspective profiles we suggest focus on the ends of two dimensions. In reality, the combination of influence from time urgency and time perspectives may be much more complex. Future research should work toward specifying the functional form of this combination, and should investigate possible areas of overlap between these two individual difference constructs. Second, although we used previous work in the organizational literature to justify our focus on present and future time perspectives, it is possible that past time perspective may also influence individual perceptions of deadlines. Future work should expand this focus beyond the boundaries in our and others' work, as individuals with past time perspectives may be particularly reticent to take risks (Zimbardo & Boyd, 1999) and may influence certain characteristics of team decisions, such as the novelty of knowledge created (Waller, Gibson, & Carpenter, 1999). Similarly, future work should investigate more closely the

impact of time urgent – time perspective profiles on outcomes other than deadline adherence. Although we do provide propositions concerning the match between team profile configurations and team tasks, we do not specifically address relationships between these configurations and team outcomes such as creativity. Finally, in this paper, we do not address all of the contextual factors that may moderate the proposed relationships. For example, the influences of ethnic, national, and organizational temporal orientations may affect individuals' perceptions of deadlines. Although researchers have speculated that, among other influences, ethnicity (Jones, 1988) and national origin (Hall, 1983) may have some effects on temporal perceptions, more empirical work in these areas would certainly provide avenues for additional research in the context of deadline perceptions. Similarly, certain organizational cultures may place higher value on those behaviors associated with Visioners, for example, as opposed to Relators, and these emphases may affect the relationships suggested in our propositions.

Future research is particularly needed on differences in deadline perception in team environments in which schedules cannot be carefully planned and monitored and in which speed is of utmost concern. In these environments, deadlines may constantly shift (Waller, Zellmer-Bruhn, & Giambatista, 1997) or may be ambiguous (Zellmer-Bruhn, Giambatista, & Waller, 2000), making it necessary for teams to constantly monitor and adapt to changing time resources. For example, in television news work, the need for speed is critical. Television news crews need to respond quickly to broadcast news on many events. In this environment, quick responses and rapid decision making are needed to handle fast-breaking news such as fires and accidents.

Teams with temporal mismatches working in this environment may not respond quickly to change and thus are unlikely to handle such time pressures. Other teams in which an understanding of the effects of differences in time perspective and urgency is critical include aviation crews, nuclear power control room crews, surgical teams, and software product development teams. More research focusing on differences in perceptions of deadlines among these team members is necessary in developing a more complete understanding of team processes under dynamic conditions. Recent work on the development of reliable and valid measures of time urgency (e.g., Landy et al., 1991) and time perspective (Zimbardo & Boyd, 1999) can be used as a starting point for testing these ideas.

In summary, finishing work on time is critical to the success of teams in many organizational settings, and deadlines are a fact of life for most organizational participants. Understanding the individual and team behaviors that lead to higher or lower performance in teams working under deadlines has been the goal of much team-level research, and this research has contributed a great deal to our understanding of team processes and outcomes under these conditions. This understanding can be sharpened and extended by future research that examines deadline perception as an embedded antecedent to many time-oriented behaviors at both the individual and team levels of analysis.



## REFERENCES

- Anonymous. 2000. United States: Big grump about the Big Dig. Economist, 35 354: 35.
- Bayus, B.L., Jain, S., & Rao, A.G. 1997. Too little, too early: Introduction timing and new product performance in the personal digital assistant industry. Journal of Marketing Research, 34: 50-63.
- Bird, B.J. 1992. The operation of intentions of time: The emergence of the new venture. Entrepreneurship Theory and Practice, Fall, 1992: 11-20.
- Bird, B.J. 1988. Implementing entrepreneurial ideas: The case for intention. Academy of Management Review, 13: 442-453.
- Bluedorn, A. C., & Denhardt, R. B. 1988. Time and organizations, Journal of Management, 14: 299-320.
- Bluedorn, A.C. 1999. Time and organizational culture. In N. Ashkanasy, C. Wilderom, & M. Peterson (eds.), Handbook of Organizational Culture and Climate. Thousand Oaks, CA: Sage Publications.
- Burnham, M. A., Pennebaker, J. W., & Glass, D. C. 1975. Time consciousness, achievement striving, and the Type A coronary-prone pattern. Journal of Abnormal Psychology, 84: 76-79.
- Cannon-Bowers, J. A., Salas, E., & Converse, S. 1993. Shared mental models in expert team decision making. Castellan, N. John Jr. (Ed). Individual and group decision making: Current issues. (pp. 221-246). Hillsdale, NJ, USA: Lawrence Erlbaum Associates, Inc.

- Conte, J. M., Honig, H. A., Dew, A. F., & Romano, D. M. In press. The incremental validity of time urgency and other type A subcomponents in predicting behavioral and health criteria. Journal of Applied Social Psychology.
- Conte, J. M., Landy, F. J., & Mathieu, J. E. 1995. Time urgency: Conceptual and construct development. Journal of Applied Psychology, 80: 178-185.
- Conte, J. M., Mathieu, J. E., & Landy, F. J. 1998. The nomological and predictive validity of time urgency. Journal of Organizational Behavior, 18: 1-13.
- Das, T. K. 1987. Strategic planning and individual temporal orientation. Strategic Management Journal, 8: 203-209.
- De Long, A. 1981. Phenomenological space-time: Toward an experimental relativity. Science, 213, August 7.
- DeLucia, P.R., & Meyer, L.E. 1999. Judgments about the time to contact between two objects during simulated self-motion. Journal of Experimental Psychology: Human Perception & Performance, 25: 1813-1833.
- Druskat, V.U., & Wolff, S.B. 1999. Effects and timing of developmental peer appraisals in self-managing work groups. Journal of Applied Psychology, 84: 58-74.
- Freeman, M., & Beele, P. 1992. Measuring project success. Project Management Journal, 23: 8-17.
- Freedman, J. L., & Edwards, D. R. 1988. Time pressure, task performance, and enjoyment. In J. E. McGrath (Ed.), The social psychology of time, pp. 113-133. Newbury Park, CA: Sage.
- Friedman, M., & Rosenman, R. 1974. Type A behavior and your heart. New York: Knopf.

- Gastorf, J. W. 1980. Time urgency of the Type A behavior pattern. Journal of Consulting and Clinical Psychology, 48: 299.
- Gersick, C.J.G. 1988. Time and transition in work teams: Toward a new model of group development. Academy of Management Journal, 31: 9-41.
- Gersick, C.J.G. 1989. Marking time: Predictable transition in task groups. Academy of Management Journal, 32, 274-309.
- Gibson, C.B. 1999. Do they do what they believe they can? Group efficacy and effectiveness across tasks and culture. Academy of Management Journal, 42: 1-15.
- Glass, D.C., Snyder, M.L., & Hollis, J.F. 1974. Time urgency and the Type A behavior pattern. Journal of Applied Social Psychology, 4: 125-140.
- Hall, E.T. 1983. The dance of life: The other dimension of time. Garden City, NY: Anchor Press.
- Hambrick, D. C; Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. Academy of Management Review, 9: 193-206.
- Hewitt, T.T., O'Brien, G.E., & Hornik, J. 1974. The effects of work organization, leadership style, and member compatibility on the productivity of small groups working on a manipulative task. Organizational Behavior and Human Performance, 11: 283-301.
- Hofstede, G. 1984. Culture's consequences: International differences in work-related values. Newbury Park, CA; SAGE Publications.
- Hornik, J. 1984. Subjective vs. objective time measures: A note on the perception of time in consumer behavior. Journal of Consumer Research, 11: 615-618.

- Hultink, E., Jan, J., & Robben, S. 1999. Launch strategy and new product performance: An empirical examination in The Netherlands. Journal of Product Innovation Management, 16: 545-556.
- Huey, B.M., & Wickens, C.D. 1993. Workload transition. Washington, D.C.: National Academy Press.
- Jones, J.M. 1988. Cultural differences in temporal perspectives. In J.E. McGrath (Ed.) The social psychology of time: New perspectives. Beverly Hills, CA: Sage.
- Kluckhohn, F. R., & Strodtbeck, F. L. 1961. Variations in value orientations. Evanston, IL: Row, Peterson.
- Knight, D., Pearce, C.L., Smith, K.G., & Olian, J.D. 1999. Top management team diversity, group process, and strategic consensus. Strategic Management Journal, 20: 445-465.
- Landy, F. J., Rastegary, H., Thayer, J., & Colvin, C. 1991. Time urgency: The construct and its measurement. Journal of Applied Psychology, 76: 644-657.
- Larkey, L. K. 1996. Toward a theory of communicative interactions in culturally diverse workgroups. Academy of Management Review, 21: 463-491.
- Levine, R.V. 1997. A geography of time. NY: Basic Books.
- Lim, S.G., & Murnighan, J.K. 1994. Phases, deadlines, and the bargaining process. Organizational Behavior and Human Decision Processes, 58: 153-171.
- Locke, E.A., & Latham, G.P. 1990. A theory of goal setting and task performance. New Jersey: Prentice-Hall.

- Lord, R.G. 1985. An information processing approach to social perceptions. In L.L. Cummings & B.M. Staw (Eds.), Research in organizational behavior, vol. 7: 87-128. Greenwich, CT: JAI Press.
- Macan, T.H. 1994. Time management: Test of a process model. Journal of Applied Psychology, 79: 381-391.
- Neuman, G.A., & Wright, J. 1999. Team effectiveness: Beyond skills and cognitive ability. Journal of Applied Psychology, 84: 376-389.
- Nuttin, J. 1985. Future time perspective and motivation. Hillsdale, NJ: Lawrence Erlbaum & Associates.
- Parks, C.D., & Cowlin, R. 1995. Group discussion as affected by number of alternatives and by a time limit. Organizational Behavior and Human Decision Processes, 62: 276-275.
- Pelled, L.H., Eisenhardt, K.M., & Xin, K.R. 1999. Exploring the black box: An analysis of work group diversity, conflict, and performance. Administrative Science Quarterly, 44: 1-28.
- Perlow, L.A. 1997. Finding time: How corporations, individuals, and families can benefit from new work practices. Ithaca, NY: ILR Press.
- Perlow, L.A. 1999. The time famine: Toward a sociology of work time. Administrative Science Quarterly, 44: 57-81.
- Perlow, L.A. 2000. Working on Internet time: An ethnographic account. Paper presented at the Academy of Management meeting, Toronto, ON.
- Price, V.A. 1982. Type A behavior pattern: A model for research and practice. New York: Academic Press.

- Rastegary, H., & Landy, F. J. 1993. The interactions among time urgency, uncertainty, and time pressure. In O. Svenson & A. J. Maule (Eds.), Time pressure and stress in human judgment and decision making (p. 217-239). New York: Plenum Press.
- Rouse, W. B., Cannon-Bowers, J. A., & Salas, E. 1992. The role of mental models in team performance in complex systems. IEEE Transactions on Systems, Man & Cybernetics, 22: 1296-1308.
- Saavedra, R., Earley, P.C., & Van Dyne, L. 1993. Complex interdependence in task-performing groups. Journal of Applied Psychology, 78: 61-72.
- Shahani, C., Weiner, R., & Streit, M. K. 1993. An investigation of the dispositional nature of the time management construct. Anxiety, Stress, and Coping, 6: 231-243.
- Slocombe, T. E., & Bluedorn, A. C. 1999. Organizational behavior implications of the congruence between preferred polychronicity and experienced work-unit polychronicity. Journal of Organizational Behavior, 20: 75-99.
- Stein, T. 1998. SAP installation scuttled. Information Week, n. 666: 34 (Jan. 26, 1998).
- Thomas, J. B., Clark, S. M., & Gioia, D. A. 1993. Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes. Academy of Management Journal, 36: 239-270.
- Toms, P., & Pinto, J.K. 1999. Project leadership: A question of timing. Project Management Journal, 30: 19-26.

- Vinton, D. E. 1992. A new look at time, speed, and the manager. Academy of Management Executive, 6: 7-16.
- Vitulli, W.F., & Rowe, J.L. 1999. Perception of time: Delay of estimation under auditory and visual tasks with Type-A measures. Perceptual & Motor Skills, 89: 1209-1210.
- Waller, M.J. 1999. The timing of adaptive group responses to nonroutine events. Academy of Management Journal, 42: 127-137.
- Waller, M.J. 1997. Keeping the pins in the air: How groups juggle multiple tasks. In Beyerlein, Johnson, & Beyerlein (Eds.), Advances in Interdisciplinary Studies of Work Teams, 4: 217-247. Greenwich: JAI Press.
- Waller, M.J., Giambatista, R.C., & Zellmer-Bruhn, M. 1999. The effects of individual time urgency on group polychronicity. Journal of Managerial Psychology, 13: 244-256.
- Waller, M. J., Gibson, C. B., & Carpenter, M. A. 1999. The impact of time perspective on knowledge creation in teams. Paper presented at the Academy of Management Meetings, Chicago, IL.
- Waller, M.J., Huber, G.P., & Ammeter, T. 1995. Team configuration and performance. Paper presented at the Academy of Management meeting, Dallas, TX.
- Waller, M.J., Huber, G.P. & Glick, W.H. 1995. Functional background as a determinant of executives' selective perception. Academy of Management Journal, 38: 943-974.

- Waller, M.J., Zellmer-Bruhn, M., & Giambatista, R.C. 1997. The effects of shifting deadlines on pacing in groups. Paper presented at the Academy of Management meeting, Boston, MA.
- Watson, W.E., Kumar, K. & Michaelson, L.K. 1993. Cultural diversity impact on interaction process and performance: Comparing homogeneous and diverse task groups. Academy of Management Journal, 36: 590-606.
- West, G.P. & Meyer, G.D. 1998. Temporal dimensions of opportunistic change in technology-based ventures. Entrepreneurship Theory & Practice, Winter: 31-52.
- Wickens, C. 1984. Engineering psychology and human performance. Columbus: Charles E. Merrill.
- Yarnold, P. R., & Grimm, L. G. 1982. Time urgency among coronary-prone individuals. Journal of Abnormal Psychology, 91: 175-177.
- Zakay, D. 1990. The evasive art of subjective time measurement: Some methodological dilemmas. In R.A. Block (Ed.), Cognitive models of psychological time, pp. 59-84. Hillsdale, N.J.: Lawrence Erlbaum.
- Zellmer-Bruhn, M., Giambatista, R.C., & Waller, M.J. 2000. Can they keep pace? Group behavior under ambiguous deadlines. Paper presented at the 2000 Academy of Management meeting, Toronto, ON.
- Zerubavel, E. 1979. Patterns of time in hospital life. Chicago: University of Chicago Press.
- Zerubavel, E. 1981. Hidden rhythms: Schedules and calendars in social life. Chicago: University of Chicago Press.



Zimbardo, P. G., & Boyd, J. N. 1999. Putting time in perspective: A valid, reliable individual-differences metric. Journal of Personality and Social Psychology, 77: 1271-1288.

