

**Caught Between a Clock and a Hard Place:
Temporal Ambivalence and Time (Mis)management in Teams**

ABSTRACT

This paper examines how teams manage *temporal ambivalence*, or the simultaneous and conflicting perceptions of time as a resource, including how much time has passed versus how much remains for work and whether or not it is “enough.” Team members’ time perceptions influence how the team manages time; thus, effective time management requires some collective resolution of temporal ambivalence. To study the effects of temporal ambivalence on time management processes and performance in teams, we conducted a laboratory study in which we manipulated perceptions of time by engineering a wall clock to run at different speeds (normal, fast, or slow) to instantiate different types of temporal ambivalence. Using both quantitative and qualitative analyses, we found that managing temporal ambivalence effectively is essential for teams to appropriately allocate time to different phases of work. Specifically, teams often misallocated their time by either transitioning too late or too early between phases of work, both of which were associated with worse team performance than transitioning closer to the temporal midpoint. Teams with heightened temporal ambivalence were more likely to manage time poorly following one or more of three dysfunctional patterns: *bypassing comments*, *glossing over contradictions*, and *following passively*. By contrast, teams that managed temporal ambivalence effectively did so through *time management huddles*, in which team members briefly and collectively took time away from the main task to explicitly discuss how to allocate their time. We discuss the implications of these findings for research on team process, ambivalence, and time management in organizations.

Time is an important but ephemeral resource for teams and organizations (Aeon and Aguinis 2017, McGrath 1991). Valued resources are increasingly scarce in organizations, such that workers are constantly pushed to do more with less (Sonenshein 2014, Yu and Greer, 2023). However, teams often struggle to manage the time they have; they procrastinate, avoid probing others' suggestions, and overlook critical behaviors such as planning and discussing their work processes (Gurtner et al. 2007, Weingart 1992) until it is too late. Furthermore, time management problems in teams can create vicious cycles: When teams feel that they are behind schedule, they rush or omit crucial activities (Ericksen and Dyer 2004), amplifying the effects of failures to manage their time well. Given that organizations often rely on teams to get critical work done (Cohen and Bailey 1997, Fisher et al. 2018), understanding how teams successfully and unsuccessfully manage their time is important for organizational scholars and practitioners alike.

Time is a particularly difficult resource for teams to manage (Goh et al. 2022). This is because perceptions of time, like any resource (Sonenshein 2014), are inherently subjective (Ancona et al. 2001, Butler 1995, Shipp and Jansen 2021, Zerubavel 1985), which increases the chances that there is a conflict between subjective experiences and external indicators of time (McGrath 1991). For example, workers may look at the clock or calendar and be surprised at how quickly (or slowly) time has passed because the external temporal cues are at odds with their subjective, internal sense of time (Sackett et al. 2010, Gable and Poole, 2012, Moon and Chen 2014). Such discrepancies between one's internal sense of time versus external cues of time can result in simultaneous, conflicting perceptions of how much time has passed—an experience we refer to as *temporal ambivalence*.

Thus, understanding the role of time in organizations is not only about external temporal indicators such as deadlines, clocks, and calendars; it is also about one's subjective experience of time (Shipp and Jansen 2021). However, researchers of teams and temporality have focused almost entirely on external indicators of time, seldom considering how it may differ from subjective time, and to what effect. For example, in her classic studies, Gersick (1988, 1989) found that deadline-bound project teams reliably made radical changes in their work processes very close to the temporal midpoint between the beginning

of a project and its deadline, triggered by members' attention to external cues of time. Subsequent research on time management and teamwork has continued to focus on external indicators of time, including starting times and their cultural typicality (e.g., 3:00 vs. 3:07) (Labianca et al. 2005), changing deadlines (Waller et al. 2002), and formal interventions to pay close attention to time (Okhuysen and Waller 2002). Due to this focus on external indicators of time in research on team processes and effectiveness, we know little about what happens when subjective perceptions of time diverge from external temporal indicators and/or other members' perceptions, and how teams collectively respond to the resulting temporal ambivalence when managing their time.

In the current research, we ask: How do teams manage their time when members experience temporal ambivalence? To answer this question, we used data from a laboratory experiment in which we manipulated perceptions of time by altering the speed of the clock in the room. All teams were told they would have one hour to complete the task, but depending on the experimental condition, the clock ran (a) 33 percent faster than normal (such that the clock took 40 minutes in real time to display that an hour had passed), (b) 33 percent slower than normal (such that the clock took 80 minutes in real time to display that an hour had passed), or (c) at normal speed. While this experiment was originally designed to address a slightly different question, in examining our data we recognized an opportunity to explore an even more interesting question of how teams managed and mismanaged their time in response to different forms of temporal ambivalence.¹ We took an abductive approach to our analyses and conducted quantitative and qualitative analyses of the teams' processes and performance (e.g., Bettenhausen & Murnighan, 1985)..

We found that how teams engage with temporal ambivalence is an important determinant of how effectively they allocate their time to different phases and, ultimately, how well they perform. We found that teams could allocate their time ineffectively by either transitioning too late or too early between

¹ This study was originally designed to investigate the experience of "time distortion" in teams and its effects on teams' enjoyment of their work, the timing of task transitions, and performance. However, during the manuscript review and revision process, we realized that while our manipulation was effective in distorting team members' perceptions of time, the variance among teams both within and between conditions raised an even more interesting question related to how teams manage time in the face of different forms of temporal ambivalence. We thus reframed our initial approach and used the opportunity to explore this question.

phases, both of which were associated with worse team performance than transitioning closer to the midpoint. Teams that transitioned too late or too early were characterized by predictable dysfunctional patterns — *bypassing comments*, *glossing over contradictions*, and *following passively* — all of which were associated with collectively avoiding, rather than engaging with, time management. The dysfunctional patterns were more common in teams with heightened temporal ambivalence, although it was possible for teams experiencing temporal ambivalence to prevent such patterns and manage their time effectively. By contrast, teams that allocated their time effectively (i.e., closer to the midpoint) were more likely to engage in time management huddles— or brief episodes in which team members collectively took time away from the main task to explicitly discuss how to use their time. We use these findings to theorize about the micro-processes underlying effective and ineffective collective time management and highlight the importance of understanding how teams manage their time in the face of temporal ambivalence. In presenting these insights, the paper contributes to research on team processes, time management, and ambivalence in organizations.

Theoretical Background

Time is often viewed as a resource in organizational research because it can be “used, bought, and sold” (Ancona et al. 2001: 515). Resources are tangible and intangible assets (e.g., human, financial, physical, or social capital) that can be used in the accomplishment of organizational goals (Mayo and Woolley 2021). While resources are often treated as objective, particularly when they are easily quantified, team members’ perceptions of a given resource, such as whether there is “enough” of it, are subjective (Sonenshein 2014, Shipp and Jansen 2021, Zerubavel 1985). Moreover, when it comes to time, individuals’ perceptions of it are often “elastic and subjective” (Mainemelis 2001, p. 561), and one’s subjective sense of time may not align with external temporal cues (McGrath 1991). Such misalignment between internal and external temporal cues can result in temporal ambivalence, or simultaneous and conflicting perceptions of how much time has passed.

As with any resource, to use time effectively requires teams to actively manage it. But how do teams manage their time in the face of such temporal ambivalence? Although extant research does not provide a direct answer to this question, two distinct streams of research offer insight into important pieces of the puzzle: (1) research on ambivalence and (2) research on time and team process.

Ambivalence in Teams

Ambivalence is defined as the experience of simultaneous and opposing orientations (i.e., feelings or thoughts) toward a single target (Ashforth et al. 2014, Rothman et al. 2017). For instance, one might feel ambivalent toward one's boss, such that one holds strong, contrasting feelings (e.g., admiration, contempt) toward him or her. Similarly, people can also have ambivalent perceptions of time or other resources. In particular, research has found that people's subjective estimates of how much time has elapsed often diverge from external indicators of time, resulting in experiences of "time flying" or "time dragging" (Sackett et al. 2010, Droit-Volet 2018, O'Brien et al. 2011). These experiences occur when people are made aware of external "clock" time and are surprised by its lack of alignment with their internal experience. Such discrepancies between one's internal sense of time versus external cues of time can result in temporal ambivalence. Temporal ambivalence within individuals has been well-documented in the psychology literature (e.g., Sackett et al. 2010, Droit-Volet 2018, O'Brien et al. 2011). Meanwhile, studies of temporal ambivalence in teams have been rare, although there have been anecdotal accounts: For instance, Ancona and Waller (2007, p. 126) observed that members of software development teams appeared to behave in ways that diverged from stated deadlines and calendar milestones, noting that "if members were working on some internal clock, then that clock was often sped up or slowed down."

Temporal ambivalence in teams can take one of two different forms. In one case, team members may all have a shared sense of ambivalence toward time (such as in the example above)—that is, they may collectively feel that their internal sense of time is misaligned with external cues such that time seems to be flying or dragging. Alternatively, members' subjective experiences of time may contradict one another: One member may feel anxious that time is slipping away too quickly, while another feels they are on track to finish their task in the given time, and a third feels that time is dragging by and the

team has more than enough time. Whether temporal ambivalence stems from conflicting perceptions of time within or between members, the team must collectively grapple with it.

Regardless of the target of ambivalence or whether it is experienced by a single individual or a team, a common response to ambivalence is avoidance. Because ambivalence is unpleasant— particularly when people need to make a choice that accepts one pole or the other (Rothman et al. 2017, van Harreveld et al. 2015)— people often avoid actively choosing between opposing feelings or thoughts, such as nurses who smoke avoiding discussions of smoking with patients (Radsma and Bottorff 2009). Avoidance can lead to positive or negative outcomes (Rothman et al., 2017), depending on whether immediate action is required, and whether the two poles of the tension are in active conflict. Avoidance can be so automatic that people are not consciously aware of their own ambivalence, making it difficult to address (Argyris 1993, Ashforth et al. 2014). Although it is often problematic, avoidance can also sometimes be functional. Indeed, avoidance can be more productive than directly engaging with ambivalence when “immediate action is not required or the opposing orientations are not actively in conflict” and, thus, “[k]eeping tensions at bay through avoidance may be all that is truly needed” (Ashforth et al. 2014, p. 1462).

However, these insights about ambivalence in general may not apply to temporal ambivalence. Time is a unique target of ambivalence because it is used as ambivalence unfolds; thus, avoiding a discussion of how to use time effectively constitutes a passive decision because the resource (i.e., time) is still being used, even if no decision is actively made. This means that avoidance is unlikely to be functional when it comes to temporal ambivalence. Moreover, avoiding temporal ambivalence has a “creeping” quality, as the consequences of inaction compound as the task progresses. For instance, failing to decide whether to move on to the next part of the task is not problematic five minutes into an hour-long task, but can be catastrophic 55 minutes into the task. Thus, the negative consequences of avoidance grow stronger as work progresses and need for action increases. Although collective ambivalence has been theorized to be mostly functional for teams because it is thought to increase flexibility in team members

and reduce conformity-seeking tendencies (see Rothman et al. 2017 for a review), this may not be the case when the target of that ambivalence is time.

Time Management and Transitions in Team Process

Research on time and team process suggests that a key aspect of time management lies in deciding when to transition from one phase of a task to another. Transitions are moments that lead to qualitative changes in teams' work processes, marking the movement from one activity to another and a major shift in collective attention (Gersick 1988, Chang et al. 2003, Leroy et al. 2020). Transitions bear on how teams deal with ambivalence around time because they are markers of teams' implicit or explicit time allocation decisions. In other words, a transition shows that the team feels it has spent "enough" time on one phase of a task and has decided to allocate time to another phase.

Research on team process offers insight into when teams tend to transition from one phase to another. Specifically, the punctuated equilibrium model of group development is among the most influential ways of understanding phase transitions in teams. Based on the discovery that project teams reliably made radical changes in their work processes very close to the temporal midpoint between the beginning of a project and its deadline (Gersick 1988, 1989), scholars sought to explain why and when external indicators of time played a role in shaping transitions from one phase of a task to another (Gersick 1989, Okhuysen and Waller, 2002, Okhuysen and Eisenhardt 2002). A central insight of this model is that patterns of team interaction coalesce quickly and that the patterns that emerge in the earliest moments of team interaction remain inertial, resisting efforts to change them until the temporal midpoint. At the midpoint, the team naturally turns its attention to time and pacing, leading them to sudden, punctuated changes in their process. The team then continues this new pattern of working together for the remainder of its work.

Although Gersick (1988, 1989) theorized that transitions occur around the temporal midpoint, subsequent research has found this is not always the case. Teams sometimes transition only near the end of their work (Lim and Murnighan 1994) or at times quite distant from the midpoint, even under conditions quite similar to Gersick's original studies (Okhuysen and Waller 2002). However, it is not

certain why teams fail to capitalize on the midpoint as a moment for change, or even whether transitioning around the midpoint leads to better performance (Fisher, 2017), although it has been theorized that transitioning around the midpoint should bolster team effectiveness (Hackman and Wageman 2005, Wageman et al. 2009, Woolley 1998). In sum, we know little about what it looks like for teams to manage their time effectively, and why they often fail to do so.

Regardless of when they occur, transitions are often triggered by time management behaviors—actions by individual team members related to monitoring or allocating time (Okhuysen and Eisenhardt 2002). The midpoint is a salient temporal milestone that is likely to elicit such time management behaviors; however, these behaviors can also happen at other points. When one team member switches their attention away from the content of the work and toward managing time, it can lead other members to do the same (Okhuysen 2001, Okhuysen and Eisenhardt 2002). Thus, time management behaviors can interrupt teams' existing interaction patterns and create opportunities for new activities to emerge. The attention to time and process triggered by time management behaviors therefore function as “windows of opportunity for change” (Okhuysen and Eisenhardt 2002): They give teams a chance to disrupt inertial forces and collectively reorient their activities (Gersick 1989, Okhuysen and Waller 2002). For teams to transition, however, multiple members need to switch their attention away from work content. This disrupts the inertial pattern, allowing the team to be open to new ways of working together. If, instead, time management behaviors do not lead to multiple team members turning their attention away from the content of their work, the team is likely to continue its inertial pattern.

Taken together, scholarship on team processes paints a picture of punctuated change and inertia in teams, with phase transitions being triggered by the temporal midpoint or team members' time management behaviors. Notably, most studies in this line of research have treated time as an externally determined, objective resource (Labianca et al. 2005), theorizing that transitions are based on attention to external indicators of time such as clocks or calendars (e.g., Waller et al. 2002, Okhuysen and Eisenhardt 2002). However, research on transitions and team processes has largely overlooked the subjective aspect of time management when explaining how and why teams allocate time as they do, and how teams

respond to temporal ambivalence, complicating joint decision making about time management. Thus, our current understanding of how teams grapple with temporal ambivalence remains limited.

METHOD

To address the question of how teams navigate temporal ambivalence and allocate time to different phases of their task, we used data from an experimental study. Although the study was originally designed to explore a slightly different research question, we used the opportunity created by our manipulation of time perceptions to explore our data abductively, an approach which is well-suited for developing new insights about puzzling phenomena (Bartel and Garud 2003, Behfar and Okhuysen 2018, Locke et al. 2008). Specifically, we conducted analyses in two main stages: In the first stage, we focused on examining how time management behaviors shape transition timing, and how transition timing, in turn, shapes team performance. In the second stage of data analysis, we conducted qualitative analyses of the teams' interactions to further explore puzzles emerging from the first stage, focusing in particular on collective dynamics around time management.

Participants and Research Design

During the experiment, four-person teams created audio advertisements for a fictitious airline, "Ocean Air," adapted from Gersick's (1989) classic study of temporality in teams (see also Labianca et al. 2005, Waller et al. 1999, 2002). We collected data from 67 teams (268 individual participants) recruited through the psychology study pool at a large university on the East Coast of the United States ($M_{age} = 24.5$ years, $SD = 10.4$, 54 % female). Participants were paid \$10 per hour or course credit for their participation and were also informed that the team with the best advertisement would receive a bonus of \$40 per person. All of the team interactions were video recorded and subsequently transcribed for analysis.

Teams were randomly assigned to one of three conditions. Following Sackett and colleagues' (2010) approach, we heightened temporal ambivalence in some teams by creating a conflict between

internal and external indicators of time. Specifically, we manipulated the speed of the clock² in the laboratory to create three conditions: (1) Fast Clock, where the clock ran 33 percent faster than normal; (2) Slow Clock, where the clock ran 33 percent slower than normal; and (3) Normal Clock, where the clock ran at normal speed.³ This manipulation heightened temporal ambivalence for Fast Clock and Slow Clock teams by creating a discrepancy between *real time*, or how much time has actually elapsed, and *displayed time*, which corresponds to the number of minutes elapsed according to the clock in the laboratory. In all conditions, teams were given 60 minutes of displayed time to complete the task, which means that in real time, Fast Clock teams had 40 minutes and Slow Clock teams had 80 minutes to complete the task.

Procedure

Upon arriving at the lab, participants read and filled out consent forms. To keep participants from becoming suspicious about the accuracy of the laboratory clock, the experimenter asked them to leave their watches and electronic devices in a safe box outside the study room before entering, providing a cover story that these devices may interfere with the sensitive audio recording equipment in the room.

After entering the study room, participants watched a short video clip explaining the task, followed a review of key requirements by the experimenter who reminded the team that they had 60 minutes to work on and record the commercial. At the end of 60 minutes of displayed time (corresponding to 40, 60 or 80 minutes of real time, depending on the condition), the team was asked to record the commercial. After completing the team task, all members individually filled out a post-task questionnaire before being debriefed.

² The clock in the study was a circular, analog clock and was hung on the wall above the door in the room. The second hand (indicating the number of seconds elapsed) was removed from the clock because it would have made the Fast Clock and Slow Clock conditions more evident to participants.

³ This study also featured a manipulation about how interdependent pre-task activities were, which was designed to explore questions not addressed in this manuscript. This manipulation does not significantly affect any of the variables described here, nor does it moderate any of the effects described.

Measures

Time Perceptions

As a check of our manipulation of time perceptions, we asked members to respond to two questions in the post-task survey: “Time seemed to fly by while I was engaging in this task” and “Time seemed to drag on while I was engaging in this task” (reverse scored), each measured on a 1-5 agree/disagree scale. These two items showed sufficient internal reliability ($r = .71, p < .001$; *Cronbach's* $\alpha = .83$); thus, they were averaged into a single scale for each individual.

Transition Timing

In analyzing the nature of the transitions that teams went through, we found that all 67 teams began the task with a pre-writing phase (i.e., orienting to the task and generating ideas for the ad). Next, 66 of the 67 teams then transitioned to the script writing phase. Fifty-six teams then moved to a rehearsing phase, although five of these teams iterated between going off-topic and rehearsing. Consistent with prior research using this paradigm (Gersick 1989, Okhuysen and Waller 2002), we focus on the timing of the main transition experienced by all teams, from pre-writing to writing.

Team Performance

To measure team performance, three raters, blind to the experimental conditions, assessed the quality of the advertisements on a 1 to 6 scale on the extent to which they satisfied the performance criteria they were given in the instructions (i.e., creative, engaging, memorable, and persuasive). We followed procedures from the consensual assessment technique commonly used for assessing performance on tasks requiring creativity (Amabile 1982, Kaufman et al. 2008). Internal consistency (*Cronbach's* $\alpha = .94$) and interrater reliability ($ICC(2) = .85$) for this scale were sufficient to justify aggregation. Our final measure of team performance is the average of the judges' assessments.

Time Management Behaviors

We coded the videos to capture team members' time management behaviors, or actions by individual team members related to monitoring and allocating time. Specifically, we operationalized time management behaviors as process statements (e.g., “Should we move onto writing the script?”), time

statements (e.g., “How much time do we have left?”), and looking at the clock.⁴ Two research assistants blind to hypotheses and team outcomes coded transcripts of videos while watching the actual video recordings and coded 68,317 speaking turns across the 67 videos. Twenty-three of the 67 videos were coded by both coders from which we calculated reliability ($n = 20,160$ speaking turns); the remaining 44,290 speaking turns were split between the two coders (22 videos each). As shown in Table 1, there was strong agreement on unitizing the transcripts into speaking turns, Guetzkow’s $U = .011$ (Guetzkow 1950, Weingart et al. 2004), and on all behaviors coded (*Cohen’s Kappa* = .75-.97).

[Insert Table 1 here]

RESULTS

Below, we present descriptive statistics and the manipulation check, followed by findings from the first and second stages of data analysis.

Descriptive Statistics

Table 2 provides descriptive statistics and correlations for all variables; Table 3 provides descriptive statistics of the main variables by experimental condition. It is important to note that there were no significant differences across conditions in team performance or the timing of the transition (in real time). The lack of difference in performance is particularly surprising, given that Slow Clock teams had twice the amount of actual time to work compared to Fast Clock teams, and thus, in theory, should have been able to perform better.

[Insert Table 2 and Table 3 here]

Manipulation Check

The experimental manipulations had their intended effects on time perceptions, such that teams in the Fast Clock condition experienced time as passing faster ($M = 4.25$, $SE = .11$) than teams in the

⁴ We also coded the interactions for other kinds of *attention-switching behaviors* (i.e., contacting the supervisor, talking about the study, socializing (Gersick 1989; Okhuysen and Waller 2002, Okhuysen and Eisenhardt 2002, Okhuysen 2001), and *non-verbal breaks* (i.e., laughter and silence), but do not use these in the main analyses.

Normal Clock condition did ($M = 3.84, SE = .10$), while those in the Slow Clock condition experienced time as passing significantly slower ($M = 3.17, SE = .12$). In addition, team members' perceptions of time tended to be similar to one another ($ICC(1) = .35, F(57, 174) = 3.13, p < .001; ICC(2) = .68$).

Findings from First Stage of Data Analysis: Antecedents and Consequences of Transition Timing

For all analyses in this stage, we use displayed time unless otherwise noted.⁵

Transition Timing and Team Performance

Previous work has theorized that transitioning around the midpoint improves team effectiveness relative to transitioning at other times (Hackman and Wageman 2005, Wageman et al. 2009); however, the effect of transition timing on team performance has seldom been empirically explored (cf. Goh et al. 2022). Thus, we began by examining the effects of transition timing on team performance, shown in Table 4.

[Insert Table 4 here]

Although in Model 1 we observe a linear effect of transition timing on team performance, such that transitioning later is worse for performance, this is qualified by a significant effect and improved model fit when including a squared term, indicating a curvilinear effect of transition timing on team performance (see Table 4, Model 2). These results suggest that some teams transition too early or too late, both of which were associated with worse team performance. As shown in Figure 1, the optimal point of transition was a bit before the clock midpoint, around 20 displayed minutes (slightly earlier than the average time of transition, which was around 27 minutes). Displayed time of the transition (squared) better explained this curvilinear effect than did real time of the transition (squared), explaining around 12 percent of the variation in team performance (Model 2). As shown in Models 3 and 4, these effects do not significantly vary by condition.

[Insert Figure 1 here]

⁵ We use displayed time because for certain analyses, conditions are incomparable using real time due to impossible values (e.g., it is impossible for Fast Clock groups to transition after 40 real minutes). Additionally, models have better fit using displayed time than real time. Results of analyses using real time are available upon request.

Time Management Behaviors and Transition Timing

Next, we examined the factors that led teams to transition at a given time. Specifically, we investigated the extent to which time management behaviors (i.e., process statements, time statements, looking at the clock) affected the probability of transitions, both in the moment and overall. Figure 2 shows the frequency of these behaviors over time. To investigate the local effects of time management behaviors, we divided the data into three-minute (real time) segments; we used real time to analyze equal amounts of actual time across all three conditions. Using Generalized Estimating Equations (GEEs), we used the frequency of each behavior within a three-minute period to estimate the probability of transitioning in the next three-minute period. We controlled for the effects of experimental condition and displayed time or real time in all analyses. The results are shown in Table 5.

[Insert Figure 2 and Table 5 here]

As shown in Model 2 of Table 5, the positive coefficient for displayed time indicates that transitions became more likely as time elapsed. In addition, each process statement increased the likelihood of transitions in the following three minutes, while each look at the clock decreased the probability of transition. Time statements did not significantly affect the likelihood of transition in the following 3-minute segment.

Next, we examined the cumulative effect of time management behaviors on transitions. We tested the effect of the cumulative number of each type of time management behavior on transition timing using Cox Regressions, a form of survival analysis. Naturally, the cumulative sums of all time management behaviors are correlated with the amount of time that has elapsed. We thus constructed a model with time-dependent covariates, which are calculated as interactions with time (Singer and Willett 2003). In all models, we controlled for the effects of experimental condition. The results are shown in Table 6 and Figures 3a-3c. In Table 6, Model 2, the time-dependent covariates (i.e., interactions with time) are the most informative for our purposes. Over and above the effect of time elapsing, more process statements were associated with later transitions (*Process Statements x Time* coefficient) (see Figure 3a). Accounting

for time dependence, time statements (*Time Statements x Time*) and looking at the clock (*Looking at the Clock x Time*) were not significant predictors of transition timing.

[Insert Table 6 and Figures 3a-3c here]

We deconstructed the interaction between process statements and time by splitting the sample based on transition timing, analyzing teams that transitioned earlier than the median (27 minutes) for their experimental condition separately from those that transitioned later than the median. We did this by computing Z-scores within each condition. We found that the effect of process statements for teams transitioning earlier than the median is stronger ($R^2 = .24$) than it is for teams transitioning later than the median ($R^2 = .03$, n.s.). This means that, for teams transitioning earlier than the median within each condition, more process statements were associated with transitioning closer to the midpoint (see Figure 3b). For teams transitioning later than the median, the relationship does not significantly differ from 0, meaning that process statements lacked a significant relationship with transition timing for these teams (see Figure 3c).

Next, we looked beyond simple frequencies of time management behaviors and examined the effects of centralization of time management behaviors among team members on transition timing. Specifically, we drew inspiration from the concept of network centralization (Wasserman and Faust 1994), calculating the centralization of behaviors in a teams as a ratio of the *actual* to the *maximum possible* sum of differences between each team member and the team member with the highest value (i.e., engaging in the most of the behavior) on the logic that this might indicate the leadership behavior by some team members. Specifically, we calculated the centralization of each type of time management behavior up until transition (for OLS regressions predicting transition timing) and as a rolling measure of all activity up until a particular time period (for GEEs predicting whether the team transitioned in a subsequent 3-minute period). The values of the resulting ratio range from 0 to 1, with 1 meaning that a single member accounted for all of the behavior, and 0 meaning all members exhibited equal amounts of the behavior. However, we found that the centralization of time management behaviors, like the frequency of such behaviors, did not predict transition timing or performance.

Summary of Findings from First Stage of Data Analysis

In summary, the first stage of analysis of our experimental data yielded several conclusions. First, we found evidence largely in support of extant work suggesting that transitions around the midpoint are beneficial to team performance (Hackman and Wageman 2005, Wageman et al. 2009): Transitioning too early or too late was associated with worse team performance than transitioning closer to the midpoint. Next, we found that the frequency of process statements in a given period was a predictor of transition in the next period. Specifically, team that made more process statements in a given three-minute period were more likely to transition within the next three minutes. Also, we found that for teams that transitioned earlier than the median within their experimental condition, more process statements led to transitioning closer to the midpoint; meanwhile, for teams that transitioned later than the median, the frequency of process statements had no effect on transition timing. Finally, further underscoring the notion that what constitutes enough time is inherently subjective, our manipulation did not lead to significant differences in team performance. The experimental conditions also did not moderate the effects of transition timing on performance, nor did they moderate the effects of time management behaviors on transition timing (See Table 4). In many ways, it is surprising that such large differences in time allotted (40, 60, and 80 real minutes, respectively) did not lead to larger differences in performance or time management behaviors; these findings suggest that how teams approached the task and managed their time—rather than how much real time they were given— was a key determinant of performance.

Several puzzles emerged from these findings. First, all teams—including those that had ill-timed transitions— had members frequently engaging in time management behaviors. However, while these behaviors facilitated better use of time in some teams, in others it did not. This contradicts prior work (Gersick 1989, Okhuysen and Waller 2002), which showed that heightened attention to time can disrupt inertial forces to enable a transition. Instead, our findings suggest that when teams failed to use their time well, it was not simply due to a lack of time management behaviors initiated by individual team members. Moreover, the relationship between time management behaviors and transition timing was not straightforward—in some teams, process statements facilitated well-timed transitions, while in others,

they did not. To better understand the variation in these responses, we conducted qualitative analyses of team collaboration using our video recordings, focused specifically on teams' responses to process statements.

Findings from Second Stage of Data Analysis: Collective Dynamics Around Time Management

To further explore these puzzles, we conducted qualitative analyses to identify collective processes around time management that unfolded in teams that transitioned at suboptimal points (i.e., too early or too late) versus those that managed their time more effectively. We reviewed the video recordings of the team interactions, paying particular attention to how teams responded to opportunities to discuss process. We started by focusing on “extreme cases” and analyzed the video recordings of the six teams (two from each condition) with the earliest transitions and six teams (two from each condition) with the latest transitions, taking detailed notes on how the teams responded to individual members' process statements. As a comparison point, we also analyzed the video recordings of six teams (two from each condition) that managed their time effectively and transitioned closer to the midpoint of their allotted time. Based on these observations, we started to see a set of common dysfunctional patterns in the teams that transitioned too late or too early, and a common functional pattern associated with many teams that transitioned on time. We then created a coding scheme and watched videos of all the teams, systematically coding them for signs of the functional and dysfunctional patterns we identified. For simplicity, we categorized teams into having transitioned “too early” if their transition time was more than one standard deviation below the mean, “too late” if their transition time was more than one standard deviation above the mean, and “on time” if their transition time was within one standard deviation of the mean. We found greater evidence of the functional pattern in teams without heightened temporal ambivalence (i.e., Normal Clock teams), and greater evidence of the dysfunctional patterns in teams where temporal ambivalence was heightened (i.e., Fast Clock and Slow Clock teams). Below, we describe the functional and dysfunctional patterns in detail. Unless otherwise noted, all times in the following section refer to displayed time (i.e., the time displayed on the clock in the study room).

Functional Pattern: Time Management Huddles

We found that teams with better-timed transitions were marked by a common behavioral pattern of team members “huddling” around process statements: Specifically, when someone made a process statement, the team “huddled” together around that statement, with most other team members actively acknowledging the statement and responding in a way that indicated understanding, as well as their own agreement or disagreement. Such huddles were often no more than a minute in length. The timing and frequency of this pattern varied greatly among teams in our study (See Table 7), but we found that as long as there was one strong instance of this pattern in the first half of their time together, teams were able to effectively allocate their time. For example, Team SlowClock-19 had a time management huddle about 18 displayed minutes⁶ into the task. Member A made a process statement, saying, “How much time do we think we need to compose a script, by the way?” Member B responded by actively engaging with this statement, saying, “We should probably budget, like, 20 minutes at least to actually write the script.” Member C agreed, saying, “That’s a good length.” Member D suggested “So we give ourselves, like, 10 more minutes to brainstorm because there’s 30 minutes-ish left to write a script and perform it.” The other members agreed with this proposal. Then the team shifted their focus back to the content of the work, and eventually transitioned at the 30-minute mark.

[Insert Table 7 here]

We label this pattern *time management huddles* because when teams enacted this pattern, they briefly turned their focus away from the task at hand and toward managing time and process before turning back to the task. Each process statement provided an opportunity for the team to have a time management huddle, although such opportunities were not always taken up. When teams did make use of such an opportunity in a meaningful way, we found that it was (1) *focused*, in that the team’s topic of discussion briefly shifted to time management before shifting back to the main task, and (2) *collective*, in that all or most team members were actively engaged in the time management discussion. Such huddles

⁶ All minutes in the qualitative analyses and findings section are in displayed time.

made it possible for members to develop a shared understanding of how to manage their time, which helped teams effectively allocate their time to different phases. This finding is consistent with previous work that has highlighted the importance of collective attention for effective teamwork (Mayo and Woolley 2021, Metiu and Rothbard 2012, Woolley et al. 2022). Notably, not all teams that managed their time effectively showed evidence of time management huddles; however, all teams that had at least one clear instance of this functional pattern allocated their time effectively (See Table 7).

We found greater evidence (i.e., both stronger and more frequent evidence) of time management huddles in teams without heightened temporal ambivalence (i.e., Normal Clock teams), as shown in Table 7. Interestingly, teams in the Slow Clock condition, which in reality had significantly more time for their work compared to teams in the Normal or Fast Clock conditions, were least likely to exhibit strong evidence of this functional pattern. This suggests that simply having an abundance of time does not necessarily translate into having better team processes, or using time more effectively.

Dysfunctional Patterns

In addition to the functional pattern described above, we also identified three dysfunctional patterns that were characteristic of teams that mismanaged their time and transitioned too early or too late. All involve different forms of avoidance (Rothman et al., 2017). That is, when teams transitioned too early or too late, it was never because they deliberately planned to do so. Rather, such ill-timed transitions were the result of some or all members avoiding engagement with and consideration of time management in response to the suggestions or activities of other members. We outline the three dysfunctional patterns below.

Bypassing Comments. One pattern that was characteristic of many teams that transitioned too late was bypassing comments about managing time when they came up. Specifically, when a process statement was made, someone immediately changed the subject, therefore avoiding collective discussion of how to manage their time. For example, in Team NormalClock-22, 6 minutes into the task, Member A suggested a change in process by saying, “We should probably create a brief plan for the hour, like, what we're going to do.” Member B responded by changing the subject to the content of the advertisement,

saying, “I think for the commercial we could use those words we have up there [on the whiteboard].” Member A accepted this shift in topic, saying, “Right. Yeah. I mean that's all good fodder for us, I think.” After this exchange, the team’s focus remained on the content of the advertisement. Then, 27 minutes into the task, this team repeated the same dynamic. This time, it was Member C that suggested a process change, saying “We’ve got to have a script.” Member D responded by changing the topic: “Um, do you know that Matthew McConaughey commercial where he was advertising for beef jerky?” Then Member D continued to talk about this commercial at length, suggesting that the delivery of the advertisement was important. After this, the team continued to focus on the style of how they should deliver the advertisement. This team repeated this pattern two more times (see Table 8), and eventually transitioned 46 minutes into the task.

[Insert Table 8 here]

Table 8 provides more examples of teams bypassing comments about managing time. This pattern was strongly associated with transitioning too late. Among the ten teams that transitioned too late in our sample, all ten showed some evidence of this pattern, with eight showing strong evidence. Meanwhile, only three of 43 teams transitioning on time showed any evidence of this pattern (See Table 7). Across the experimental conditions, we found greatest evidence of this pattern in the Fast Clock teams, but it was present in all conditions (See Table 7).

Glossing Over Contradictions. The second dysfunctional pattern associated with transitioning too late was glossing over apparent contradictions in team members’ proposals of how to use their time. This pattern was characterized by team members engaging in a conversation about time management that surfaced conflicting suggestions on how to allocate their time, which were superficially agreed to by others despite the contradictions that made it impossible for the team to follow them all. For example, in Team FastClock-21, after a short exchange about how much time they had left, Member A said, “Do you want to set an amount of time to just brainstorm and then at some point just start writing it?” Member B nodded and started to respond as if in agreement: “Should we brainstorm for, like 10 more minutes...” but then said, “and then quarter after is when we can start rehearsing, hopefully?” Thus, instead of agreeing to

writing as the next step (as Member A had suggested), Member B proposed *rehearsing* as the next step. This discrepancy seemed to confuse Member C, who first nodded, then shook his head, and then said, “No, it sounds... sounds...”, then trailed off and cleared his throat. Following this exchange, there was an extended silence (9 seconds), in which no one said anything. Then the team moved on and continued brainstorming without addressing the discrepancy between the two proposals. This team eventually transitioned 50 minutes into the task.

An identifying feature of this pattern was the suggestion of conflicting or mutually exclusive time allocation proposals, all met with surface-level agreement by others with no acknowledgement or resolution of the contradiction. As a result, this pattern enabled the team to move forward with the facade of a plan for managing time that was rooted in contradiction and lack of a shared understanding of how to use their time. This pattern became an informal norm in these teams, manifesting in an ongoing tendency to avoid probing each other’s views about how to manage their time. Table 8 provides more examples of other teams following this pattern.

By contrast, many teams did not fall into this dysfunctional pattern despite the possibility of doing so. In some teams, members *explicitly* disagreed with a proposed course of action (e.g., “I don’t think that’s going to help us.”) or proposed an alternative course of action (e.g., “Time out, guys. Let’s just move on. We’re down to 10 minutes.”) rather than glossing over the contradiction or doing so covertly, under the guise of agreement. Being explicit about disagreements allowed team members to actually develop a shared understanding of how to use their time. In other teams, there was an initial contradiction between proposed courses of action, but members stopped to acknowledge this contradiction (e.g., “I’m confused”; “Which one are we doing?”), giving the team a chance to clarify which course of action they should take. Thus, there were multiple ways in which teams could prevent this pattern, all of which involved collectively engaging with time management, rather than avoiding it. However, when teams fell into the dysfunctional pattern of glossing over contradictions, it often led them to miss windows of opportunity to transition until it was too late. Indeed, five of the ten teams that transitioned too late showed some evidence of this pattern, with three showing strong evidence.

Meanwhile, only two of 43 teams transitioning on time showed any evidence of this pattern, and both of these teams fell only slightly outside the bounds of “too late” (See Table 7). Interestingly, this pattern was relatively rarer than the other two dysfunctional patterns, and the greatest evidence of glossing over contradictions was found in the Normal Clock teams (See Table 7).

Following Passively. At the other extreme, too-early transitions also resulted from dysfunctional responses to process statements. The too-early transition often resulted from the team following a single member passively, allowing that member to initiate the transition prematurely while the team was in a malleable state. For example, in Team NormalClock-1, seven minutes after starting the task, team members had an exchange about how much time had passed. Following this exchange, Member A stood up and walked to the whiteboard, saying, “I’m just going to use this board.” She then asked, “What do we want to do?”, with a marker in hand. The team did not engage in a process discussion about whether they should start writing the script at that point, but instead passively accepted the transition triggered by Member A, with Member B suggesting the beginning of the script for Member A to write down. Such a passive acceptance of an initiative led by a single individual contributed to the development of a norm within the team that it was appropriate to be passive and avoid meaningful discussion about how to manage their time. Table 8 provides more examples of teams following this pattern.

Importantly, many teams did not fall into this dysfunctional pattern. In some of these teams, there was no strong attempt from any individual member to initiate a transition without buy-in from the team. In others, there was such an attempt, but the team responded huddling around time management (rather than following passively and avoiding it), and rejected the transition attempt as a result. For example, in Team SlowClock-21, 10 minutes into the task, Member A said, “So why don’t we write the script out?” Member B responded by drawing the team’s attention to how much time they had left, saying, “What time do we have to have this finished by?” The team discussed when they had started and when they would need to end, and Member B concluded, “So we have a lot of time to brainstorm this, don’t we?” The rest of the team agreed, and they went back to brainstorming lines for the advertisement, instead of transitioning to scripting. Eventually, this team transitioned around the clock midpoint. Thus, it was

possible for teams to not fall into the dysfunctional pattern of proposing and accepting ill-timed transition efforts led by a single individual. However, when teams did fall into this pattern, it ended up harming their performance. Indeed, of the 14 teams that transitioned too early, 11 showed some evidence of this pattern, with eight showing strong evidence. Meanwhile, only three of 43 teams transitioning on time showed any evidence of this pattern (See Table 7). The strongest evidence of this pattern was found in the Slow Clock teams (See Table 7).

Summary of Findings from Second Stage of Data Analysis

Taken together, we found that the functional pattern of having one or more time management huddles in the first half of the task was sufficient (although not necessary) for having well-timed transitions. That is, all teams exhibiting strong evidence of time management huddles transitioned on time, although not all teams that transitioned on time had such huddles. Meanwhile, we found three dysfunctional patterns associated with teams that transitioned too late or too early: (1) bypassing comments about managing time, (2) glossing over contradictions in team members' proposals of how to allocate time, and (3) following passively and accepting premature initiatives to transition. Among the 21 teams with strong evidence of one or more of these dysfunctional patterns, 18 transitioned at a sub-optimal time. Although each dysfunctional pattern was distinct, they all share in common an avoidance of collective engagement around time management. These findings highlight the importance of team members responding to process statements by collectively engaging in time management; even brief moments of strong collective engagement allowed teams to allocate their time effectively. Conversely, although the dysfunctional patterns were not inescapable or insurmountable, some teams continued to avoid collective engagement with time management and thus ended up misallocating their time as a result.

DISCUSSION

Time is an important resource for teams and organizations, and despite the fact that time can be quantitatively and objectively measured, individuals' subjective sense of time and perception of its

sufficiency can create an experience of temporal ambivalence. Our research shows that how teams engage with temporal ambivalence is a critical determinant of how effectively they allocate their time to different phases of their work and, ultimately, how well they perform. We found that teams could misallocate their time by either transitioning too late or too early, both of which were associated with worse team performance than transitioning closer to the midpoint. A key behavioral pattern that characterized teams that managed their time well was having *time management huddles*, in which all or most team members briefly and collectively took time away from the main task to discuss how to use their time. However, many teams — especially those in temporally ambivalent conditions— struggled to engage in these time management huddles, instead succumbing to dysfunctional, avoidant patterns with respect to time management. Different dysfunctional patterns characterized teams that transitioned too late versus too early. These findings highlight the importance of collectively engaging with time management in teams and allow us to theorize the micro-processes underlying effective and ineffective collective time management.

Toward a Better Understanding of Time Management in Teams

Specifically, this paper sheds light on two key questions that have received little attention in previous scholarship: (1) Why do teams often fail to manage their time well? (2) How do teams manage their processes effectively and ineffectively?

Why Do Teams Fail to Manage their Time Well?

First, regarding why teams often fail to manage their time effectively, our findings suggest that teams' responses to experiencing temporal ambivalence may be an important contributor. Prior research has established that ambivalence is a kind of uncertainty that people find aversive; hence, they seek to avoid or resolve it (Ashforth et al., 2014). We theorize that time is a unique target of ambivalence because it necessarily decreases in quantity as ambivalence unfolds. That is, teams may experience temporal ambivalence at any point in their work, but the perceived importance or urgency of that ambivalence is likely to change throughout the task. Specifically, dealing with any ambivalent feelings about time will likely be seen as a low priority early in the task when time is relatively plentiful, but gradually increase as

time goes on and it becomes more scarce. Thus, although avoidance is a likely and relatively innocuous response to temporal ambivalence early on in the task, the negative consequences of avoidance grow stronger over time as work progresses and need for action increases. These dynamics around avoiding addressing temporal ambivalence could help to explain why many teams fail to manage their time well, even in situations where resources are abundant.

How do Teams Manage their Processes Effectively and Ineffectively?

A second question this paper addresses is how teams manage their time effectively versus ineffectively. We illuminate key micro-processes—including time management huddles and avoidant responses—that set teams on positive and negative time management trajectories. Prior research suggested that windows of opportunity, in which team members were receptive to change, were relatively rare, and that they typically happened around the temporal midpoint. However, our research paints a different picture, suggesting that windows of opportunity were frequent, but not always taken up. In addition, although prior research focused primarily on the aspect of time management that has to do with individual team members paying attention to and monitoring time (e.g., Gersick 1989, Okhuysen and Waller 2002), our research suggests that it is not such individual attention to time that shapes how effectively teams manage their time; it is whether the team as a whole takes up opportunities to exhibit focused, collective engagement around time management. The dysfunctions we identified were not particularly difficult to avoid, nor were time management huddles particularly difficult or costly to enact; however, many teams did not manage to have such huddles and instead fell into dysfunctional patterns. This suggests that managing ambivalence collectively is, somewhat paradoxically, behaviorally simple, yet emotionally difficult enough that teams often avoid it.

Theoretical Contributions

In addressing these questions, this paper makes several important contributions to research on team process, ambivalence, and time management. First, team process research has generally focused on time management in relation to *external* indicators of time, overlooking the subjective nature of time perceptions and the implications for how teams manage their time (Shipp and Jansen 2021, Tang et al.

2019). Although how teams attend to such external temporal markers is critical, it does not tell the full story: Our findings highlight the importance of temporal ambivalence (which has a strong subjective component) —and teams’ responses to such ambivalence—in shaping team performance. While more work is needed to better understand the conditions under which teams experience temporal ambivalence and the factors that shape how team members collectively respond to such ambivalence, the current research serves as an important first step to shedding light on these relationships.

We also contribute to research on ambivalence. While the literature on ambivalence has focused mostly on emotional ambivalence (Ashforth et al. 2014, Rothman et al. 2017), this paper highlights the importance of examining ambivalent perceptions of time and other resources, where objective, quantitative indicators can conflict with one’s internal subjective sense of the amount and sufficiency of a given resource. In addition, the extant literature has predominantly examined ambivalence at the individual level; meanwhile, we know relatively little about collective ambivalence and how teams respond to it (Ashforth et al., 2014). Moreover, the few papers that have addressed collective ambivalence have theorized that experiencing collective ambivalence is likely functional for teams and organizations, as it is thought to increase flexibility and cognitive complexity (Rothman et al. 2017). However, we know little about the conditions under which collective ambivalence may be *dysfunctional*, or the specific processes through which collective ambivalence may enhance or impede collective outcomes. By illuminating key micro-processes in teams that can emerge as a response to collective ambivalence and that set teams on positive versus negative trajectories, we extend extant research on ambivalence.

Finally, our findings have implications for research on time and resource management. Although time is an especially intangible and subjective resource, our findings may generalize to other resources important to teams, such as money, raw materials, or social capital. With any resource, there are bound to be situations that require team members to navigate ambivalent thoughts and feelings regarding the quantity and possible uses of the resource. For example, team members may simultaneously feel that they have spent too much and not enough money, or that they have used both too little and too much social capital in pushing an initiative. Members of teams may avoid directly engaging with such ambivalence;

however, our findings suggest that not having collective discussions about how to manage key resources is likely to lead to suboptimal decisions about their use.

Managerial Implications

Finally, our findings also have implications for managerial practice. Specifically, equipped with the knowledge of what functional and dysfunctional micro-processes look like in teams, team leaders or coaches can identify cues that signal whether a team is on the right trajectory or not. It is difficult for teams to diagnose their own process issues without intervention (Woolley 1998, Wageman et al. 2009, Fisher 2017); however, knowing that time management huddles are signs of a positive trajectory and that there are specific avoidant patterns that signal a negative trajectory could aid in effectively diagnosing and managing team processes. For example, our findings suggest that situations in which one or a few team members dominate the discussion could make a team particularly vulnerable to transitioning too early, whereas situations in which comments about time management are repeatedly overlooked could signal that a team is in danger of transitioning too late. Beyond diagnosing such dysfunctional processes, our findings also suggest team and organizational leaders should actively strive to create structures that reduce teams' reluctance to collectively engage with time management.

Limitations and Future Directions

It is important to note the limitations of this study, which suggest directions for future research. First, using clocks running at different speeds is an imperfect way to examine temporal ambivalence and makes it difficult to directly compare team performance across conditions because it creates differences in the objective amount of time available. Although this manipulation has been used in prior studies (Sackett et al. 2010) and allowed us to create a discrepancy between internal and external cues of time, the extent to which this manipulation generalizes to other conditions in which teams experience temporal ambivalence is still an open question. Given the current study design, it is also possible that some effects of temporal ambivalence were offset by differences in the amount of time available. Field studies on the experience of temporal ambivalence (e.g., experience sampling studies) and laboratory studies that further separate duration from subjective time may be useful in overcoming these limitations of the current study.

Second, although we have video data of team members' behaviors and interactions, we were not able to observe their internal states, such as their real-time perceptions of time or their private understandings of how they should allocate their time. Nor were we able to examine individual differences in temporal preferences and orientations (Mohammed and Harrison 2013, Mohammed and Nadkarni 2011, 2014) and how such differences might shape some of the patterns we observed. For example, it may be the case that teams with greater diversity in members' temporal orientations are more susceptible to falling into one or more of the dysfunctional patterns outlined above. Examining how individuals' temporal perceptions or preferences impact team dynamics around time management is thus an important area for future research.

Third, in this paper we did not distinguish between temporal ambivalence that comes from conflicting perceptions of time within members versus between members. Although we posit that in either case, teams will need to collectively grapple with the resultant temporal ambivalence, there may be nuanced differences in the way in which the two forms of temporal ambivalence manifest or need to be managed. More work is therefore needed to examine these dynamics around temporal ambivalence in teams and organizations.

Conclusion

We investigated how teams manage their time in the face of temporal ambivalence. Our findings both reinforce and extend prior research on time management in groups and managing collective ambivalence. Reinforcing prior research, we found that many teams found a way to successfully transition somewhere around the middle of their time together, which was associated with better task performance. However, extending prior research, we found that teams that avoided collectively engaging with time management were vulnerable to predictable dysfunctions, leading them to transition too early or too late. We argue that even brief episodes of collective engagement around time management are critical in helping teams prevent such dysfunctional patterns and manage their time effectively. By shedding light on these relationships, we hope this research will advance understanding of—and spark further interest in—how teams navigate temporal ambivalence.

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Table 1*Behaviors Coded from Videos and Reliability*

Behavior	Sub-Categories	Cohen's <i>Kappa</i>
Phases	Pre-writing, Writing, Rehearsing, Off-Topic	.974
Time Statements	Time Planning, Ahead of Schedule, Behind Schedule, On Schedule, Other	.902
Looking at Clock	Single Member, Multiple Members	.746
Process Statements	Process Statement	.760
Other Attention-Switching Behaviors	Contacting Supervisor, Talking about the Study, Socializing	.810
Non-Verbal Breaks	Laughter, Silence	.880

 $n = 20,160$

Table 2*Descriptive Statistics and Correlations*

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Fast Clock Dummy	0.33	0.47										
2. Normal Clock Dummy	0.33	0.47	-.489***									
3. Slow Clock Dummy	0.34	0.48	-.506***	-.506***								
4. Team Performance	3.22	0.85	-0.187	0.041	0.145							
5. Transition Timing (Real)	26.11	11.38	-0.187	0.149	0.038	-0.172						
6. Transition Timing Squared (Real)	809.27	663.85	-0.238	0.135	0.102	-0.155	.972***					
7. Transition Timing (Displayed)	27.61	12.41	.398***	0.052	-.445***	-.330**	.770***	.691***				
8. Transition Timing Squared (Displayed)	913.87	727.89	.389**	0.022	-.407***	-.388**	.706***	.656***	.967***			
9. Looking at the Clock	13.60	11.83	-0.179	0.159	0.019	-0.016	.751***	.790***	.540***	.520***		
10. Process Statements	13.22	8.62	-0.167	.320**	-0.151	-0.012	.617***	.592***	.488***	.412***	.588***	
11. Time Statements	4.36	4.44	-0.179	.217	-0.037	0.098	.531***	.527***	.400***	.395***	.605***	.451***

*** $p < .001$ ** $p < .01$ * $p < .05$.

Process-Management Variables are pre-transition frequencies only.

$n = 67$

Table 3*Descriptive Statistics and ANOVAs by Experimental Condition*

Condition	Team Performance	Transition Timing (Displayed Time)	Transition Timing (Real Time)	Pre-Transition Process Statements per Real Minute	Pre-Transition Time Statements per Real Minute	Pre-Transition Looks at Clock per Real Minute
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Slow Clock	3.38 (.63)	20.03 (10.55)	26.70 (14.06)	.44 (.22)	.14 (.17)	.44 (.28)
Normal Clock	3.27 (.83)	28.52 (11.35)	28.52 (11.35)	.60 (.21)	.22 (.21)	.58 (.36)
Fast Clock	2.99 (1.03)	34.95 (11.10)	23.08 (7.40)	.50 (.33)	.13 (.16)	.46 (.32)
<i>Model Summary</i>						
<i>F</i>	1.27	10.01***	1.32	2.38	1.79	1.36
η_p^2	.04	.24	.04	.07	.05	.04

* $p < .05$, ** $p < .01$, *** $p < .001$ ^a $F(2, 61)$; ^b $F(2, 60)$; all others $F(2, 64)$

Table 4*OLS Regression Models for the Effects of Transition Timing on Team Performance (n = 67)*

Dependent Variable: Team Performance	Model 1	Model 2	Model 3	Model 4
<i>Predictors</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>
Intercept	3.88*** (.28)	3.01*** (.48)	3.28*** (.17)	3.27*** (.16)
Fast Clock Dummy (FCD)	-.14 (.26)	-.10 (.24)	.03 (.27)	-.03 (.26)
Slow Clock Dummy (SCD)	-.06 (.23)	.01 (.25)	.09 (.23)	.10 (.22)
Displayed Time (Min)	-.02* (.01)	.05 (.03)	-.02 (.01)	
Displayed Time Squared		-.0012* (.0005)		-.0004 (.0002)
FCD*Displayed Time			-.03 (.02)	
SCD*Displayed Time			.01 (.02)	
FCD*Displayed Time ²				-.0003 (.0003)
SCD*Displayed Time ²				.0003 (.0003)
<i>Model Summary</i>				
<i>F</i>	2.69*	3.53*	2.28	3.23*
<i>R²</i>	.11	.19	.16	.18
<i>F-change vs. Model 1</i>		5.47*	2.53	2.67
<i>R²-change vs. Model 1</i>		.07	.05	.03
<i>RMSE</i>	.81	.79	.80	.79

$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Note: Huber-White Heteroskedasticity Consistent Standard Errors.

Table 5*Generalized Estimating Equations Predicting Likelihood of Transition in Subsequent 3-minute Period*

	Model 1	Model 2
<i>Predictors</i>	<i>B (SE)</i>	<i>B (SE)</i>
Intercept	-2.29*** (.08)	-4.70*** (.53)
Fast Clock Dummy	-.33* (.14)	-.14 (.37)
Slow Clock Dummy	.26 (.16)	.93 (.49)
Displayed Time Elapsed		.09*** (.02)
Process Statements		.07** (.03)
Time Statements		-.02 (.03)
Looking at Clock		-.05** (.02)
<i>Model Fit</i>		
<i>QIC</i>	419.33	360.90
<i>QICC</i>	423.90	360.89

* $p < .05$, ** $p < .01$, *** $p < .001$

Notes: Unit of analysis is three-minutes chunks of real time
 Analyses nested within group (auto-regressive correlation structure)
 Logistic link function specified for dependent variable; coefficients displayed as log odds
 n = 67 groups, 616 observations (550 = no transition; 66 = transition)

Table 6*Cox Regression Models (Survival Analysis) Predicting Likelihood of Transition (Displayed Time)*

	Model 1	Model 2
<i>Time Independent Controls</i>		
	<i>B (SE)</i>	<i>B (SE)</i>
Fast Clock Dummy	-.54 (.32)	-1.60*** (.40)
Slow Clock Dummy	.77* (.31)	1.18*** (.36)
Process Statements		-.28*** (.08)
Time Statements		.09 (.13)
Looking at Clock		-.28*** (.08)
<i>Time Dependent Predictors</i>		
Process Statements x Time		.008*** (.002)
Time Statements x Time		-.005 (.005)
Looking at Clock x Time		.003 (.002)
<i>Model Fit</i>		
<i>Log Likelihood</i>	419.93	344.72
<i>Chi-Square</i>	17.39***	73.12***

* $p < .05$, ** $p < .01$, *** $p < .001$

Notes: n = 67 groups, 1 censored, 66 uncensored

Table 7

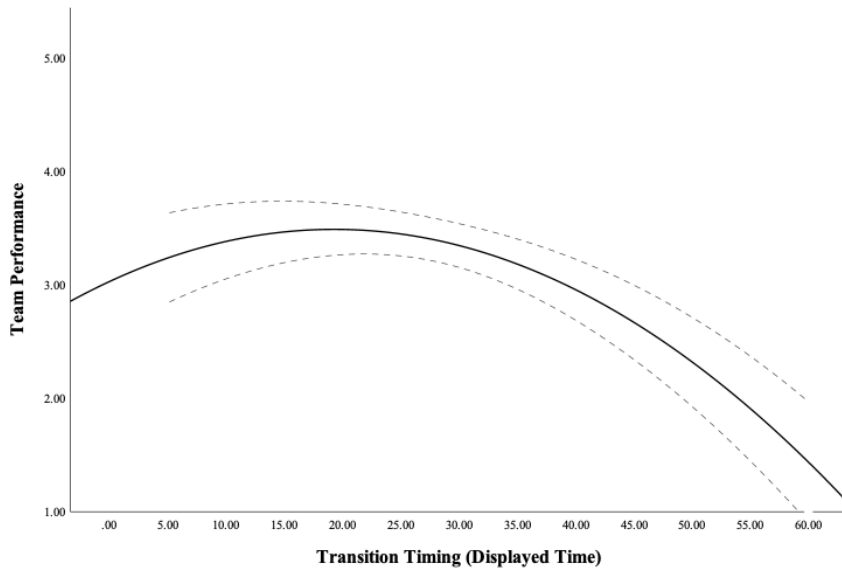
Transition Timing and Evidence of Functional and Dysfunctional Patterns by Group

Group ID	Transition Category	Functional Pattern: Time Management Huddles	Dysfunctional Pattern: Bypassing Comments	Dysfunctional Pattern: Glossing Over Contradictions	Dysfunctional Pattern: Following Passively
FastClock-1	Too early	.	.	.	strong
FastClock-2	On time	weak	.	.	weak
FastClock-3	On time	weak	.	.	.
FastClock-4	On time	weak	.	.	.
FastClock-5	On time	weak	.	.	.
FastClock-6	On time	strong	.	.	.
FastClock-7	On time	weak	.	.	.
FastClock-8	On time	weak	.	.	.
FastClock-9	On time	weak	.	.	.
FastClock-10	On time	strong	.	.	.
FastClock-11	On time	strong	.	.	.
FastClock-12	On time	strong	.	.	.
FastClock-13	On time
FastClock-14	On time	strong	.	.	.
FastClock-15	On time	weak	.	.	.
FastClock-16	On time
FastClock-17	Too late	.	strong	weak	.
FastClock-18	Too late	.	strong	.	.
FastClock-19	Too late	weak	strong	weak	.
FastClock-20	Too late	weak	strong	.	.
FastClock-21	Too late	.	weak	strong	.
FastClock-22	Too late	.	weak	.	.
NormalClock-1	Too early	.	.	.	strong
NormalClock-2	Too early	weak	.	.	weak
NormalClock-3	Too early	.	.	.	strong
NormalClock-4	On time	weak	.	.	.
NormalClock-5	On time	weak	.	.	.
NormalClock-6	On time	strong	.	.	.
NormalClock-7	On time	.	.	.	strong
NormalClock-8	On time	strong	.	.	.
NormalClock-9	On time	strong	.	.	.
NormalClock-10	On time	strong	.	.	.
NormalClock-11	On time	strong	.	.	.
NormalClock-12	On time	strong	weak	.	.
NormalClock-13	On time	strong	.	.	.
NormalClock-14	On time	strong	.	.	.
NormalClock-15	On time	weak	weak	.	.
NormalClock-16	On time	strong	.	.	.
NormalClock-17	On time	strong	.	.	.
NormalClock-18	On time	weak	.	weak	.
NormalClock-19	On time	strong	.	strong	.
NormalClock-20	Too late	.	strong	.	.
NormalClock-21	Too late	weak	strong	strong	.
NormalClock-22	Too late	weak	strong	strong	.
SlowClock-1	Too early	.	.	.	strong
SlowClock-2	Too early	.	.	.	strong
SlowClock-3	Too early	.	.	.	strong
SlowClock-4	Too early	weak	.	strong	weak
SlowClock-5	Too early	weak	.	.	strong
SlowClock-6	Too early	.	.	.	weak
SlowClock-7	Too early	.	.	.	strong
SlowClock-8	Too early	weak	.	.	.
SlowClock-9	Too early	weak	weak	.	.
SlowClock-10	Too early	weak	.	.	.
SlowClock-11	On time	weak	.	.	.
SlowClock-12	On time	weak	.	.	.
SlowClock-13	On time	weak	.	.	.
SlowClock-14	On time	weak	.	.	.
SlowClock-15	On time	.	.	.	weak
SlowClock-16	On time	weak	.	.	.
SlowClock-17	On time	weak	.	.	.
SlowClock-18	On time	weak	weak	.	.
SlowClock-19	On time	strong	.	.	.
SlowClock-20	On time	.	.	.	weak
SlowClock-21	On time	strong	.	.	.
SlowClock-22	On time	weak	strong	.	.
SlowClock-23	Too late	weak	strong	.	.

Table 8*Additional Examples of Groups Following Dysfunctional Patterns*

Dysfunctional Pattern	Examples
Bypassing comments	<p>Group NormalClock-22 turned away from process statements on two additional occasions:</p> <ul style="list-style-type: none"> ● This group repeated the same dynamic a third time 31 minutes into the task, when Member C suggested a process change, saying “Do you guys think we should start writing it?” Member A changed the subject to the delivery of the ad, saying: “Um, okay. So what are we going to—are we going to do the one voice?” After this, the delivery of the ad remained the focus of the group. ● This group repeated this dynamic a fourth time 40 minutes into the task. Member A said, “I think we need to start writing... um, because we’ve got about 25 minutes.” Member D agreed, but Member A himself changed the subject, saying, “So you’re thinking like—maybe having three questions, like: What are you doing this summer? How are you getting there? And come up with a third?” After this, the group remained focused on the content of the ad. <p>Group SlowClock-22 turned away from process statements on two occasions:</p> <ul style="list-style-type: none"> ● First, 16 minutes in, Member A suggested a change in process from generating ideas to writing the script by saying, “So I guess we should write down the script.” Rather than engaging with this process statement, Member B immediately shifted the focus to the <i>content</i> of the ad, saying, “Remember, it has to be creative and smart.” After this brief exchange, this new topic (i.e., the criteria for the content of the ad) remained the focus of the group’s attention. ● 34 minutes into the task, they repeated the same pattern: Member A suggested a change in process, saying, “Okay. So why don’t we try writing the script...” Rather than engaging with this process statement, Member C interrupted and shifted the focus to the content of the ad, saying, “Oh, do we want to do anything about getting to Nantucket early in the summer [and] beating the crowds?” After this exchange, the content of the ad remained the focus of the group’s attention.
Glossing over contradictions	<p>In Group NormalClock-21, 16 minutes into the task, Member A suggested a plan for managing their process: “Let’s work until half-past, like, brainstorming...” Member B interrupted, saying, “And then start scripting?” Member A continued, saying, “And then start structuring.” Instead of addressing the discrepancy in the two ways of allocating their time that were proposed (scripting versus structuring), Member A asked if anyone had been to Nantucket and said he had been there once, and the group moved on to talking about Nantucket island without addressing the lack of clarity in which process to follow.</p> <p>In Group NormalClock-22, 26 minutes into the task, Member C suggested a change in process by saying, “Should we start the script?” Member A responded as if in agreement but actually suggested a different course of action: “Um, yeah, we should. No. Yeah. Now, I think we need to, um, kind of come up with strategies for what we’re actually going to do.” Although C and A suggested different ways of allocating their time (starting the script versus coming up with strategies for what to do), no one addressed this discrepancy. Instead, Member D changed the topic, saying, “Who’s going to speak? Who’s the principal?” and the group moved on and discussed who should play which role in the ad without addressing the lack of clarity in which process to follow.</p>
Following passively	<p>In Group FastClock-2, 22 minutes into the task, Member A suggested a line for the ad: “Whoever said that getting there is half the fun never tried to drive to Hyannis.” Member B laughed and said, “That’s funny. Maybe that could be the opening.” Member C said, “yeah”. Member B stood up and walked to the board, then said, “Okay. Yeah. I’m just going to start writing.” The group did not engage in a discussion about whether they should start writing in response to this comment; instead, they passively accepted Member B’s initiative and the group transitioned right away to scripting.</p> <p>In Group SlowClock-1, 6 minutes into the task, Member A started writing as she read out loud the beginning of the script, “So do you want to get to your summer destination faster?” The group did not engage in a discussion about whether they were ready to transition to writing the script; instead, the other members passively accepted Member A’s initiative and the group transitioned to scripting.</p>

Figure 1
Curvilinear Effect of Transition Timing on Team Performance



Notes: Dotted lines represent 95% CI. Mean team performance = 3.21

Figure 2
Frequencies of Time Management Behaviors over Time Per Condition

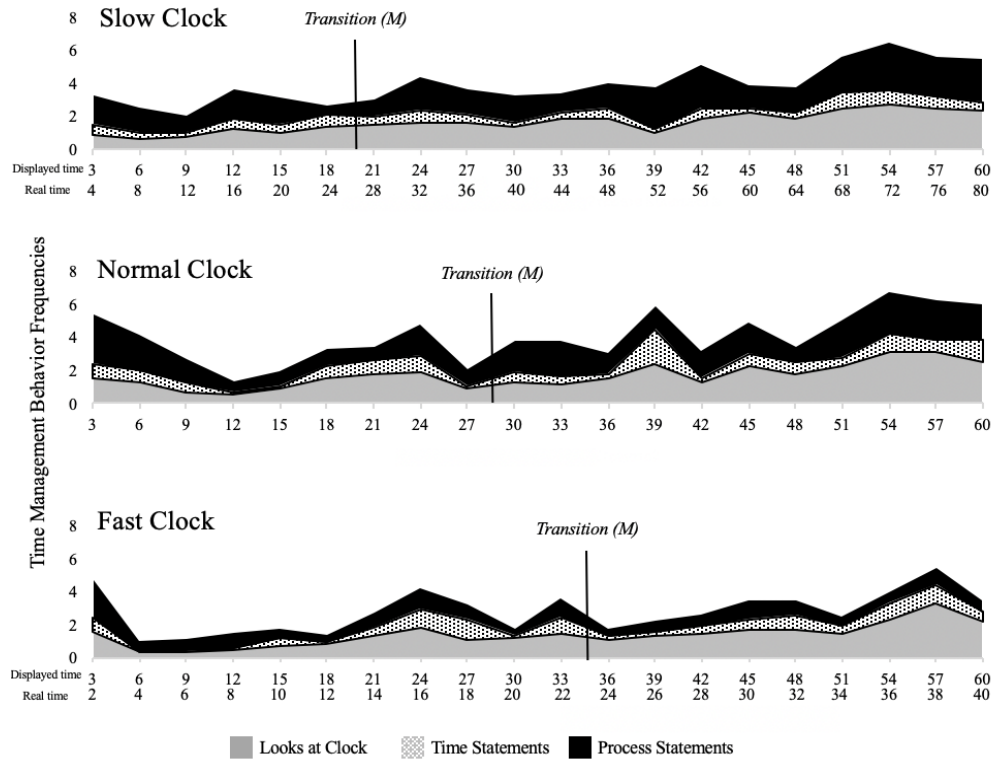


Figure 3a

Relationship between Process Statements and Transition Timing for All Groups

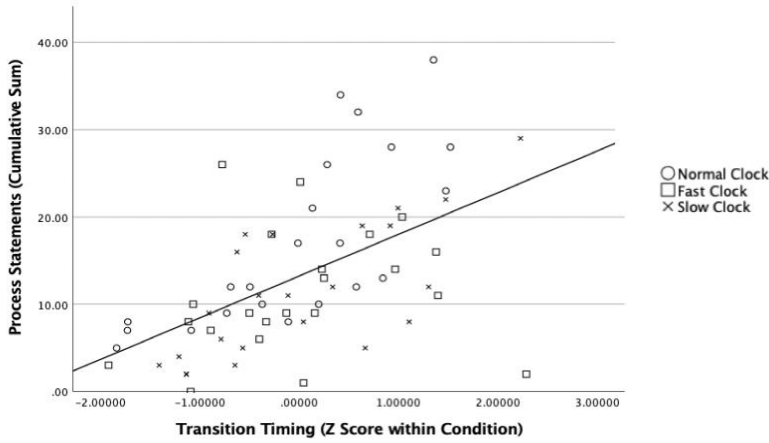


Figure 3b

Relationship between Process Statements and Transition Timing for Groups that Transitioned in the Earlier 50% (Within Condition)

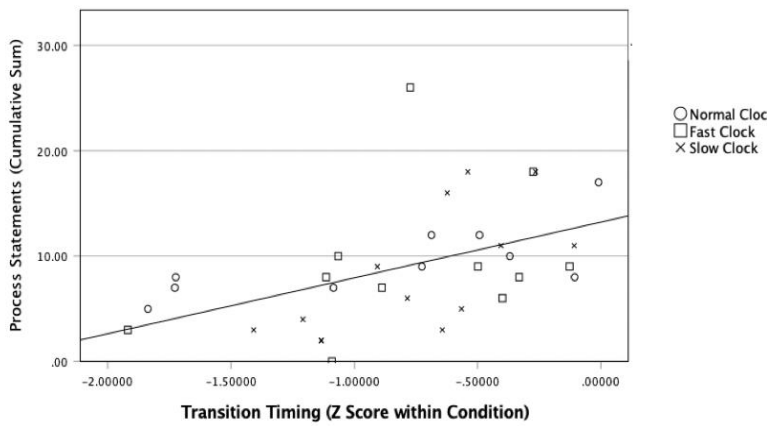


Figure 3c

Relationship between Process Statements and Transition Timing for Groups that Transitioned in the Later 50% (Within Condition)

